

# Technology Student Association (TSA)

## Middle School Competitive Events Guide

for the 2016 and 2017  
National TSA Conferences

With Correlations to Science, Technology,  
Engineering and Mathematics (STEM)  
Standards and Common Core State  
Standards (CCSS)



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Tenth Edition

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Bud Worley, Texas



# TSA, THE ORGANIZATION

 For more information about becoming a TSA member, visit [www.tsaweb.org](http://www.tsaweb.org) and click on Join TSA, or call TSA's toll free number, 888/860-9010.

The Technology Student Association (TSA) is devoted exclusively to the needs of students engaged in science, technology, engineering, and mathematics (STEM). Open to those who are enrolled in or who have completed technology education courses, TSA has over 230,000 middle and high school students, in 2,000 schools, spanning 49 states. TSA is supported by educators, parents, and business leaders who believe in the need for a technologically literate society. Our members learn through exciting competitive events, leadership opportunities, and membership activities.

Explore what TSA has to offer by using this guide and by visiting [www.tsaweb.org](http://www.tsaweb.org) for information. With competitive events that range from video game design to structural engineering and much more, there is something to capture the imagination of and bring out the best in all students. We hope, that with teacher guidance, students will enjoy the challenge of TSA's competitive events at local, state, regional, and national TSA conferences.

The competitions in this guide support a broad spectrum of goals related to science, technology, engineering and mathematics (STEM) curriculum, as well as the Common Core State Standards (CCSS). They also promote leadership skills and a focus on future career choices.



## TSA, INC. MISSION

The mission of the Technology Student Association, Inc. is to provide leadership and support to TSA through educational programs and services.

## TSA MISSION

The Technology Student Association fosters personal growth, leadership, and opportunities in Science, Technology, Engineering and Mathematics (STEM); members apply and integrate these concepts through co-curricular activities, competitions, and related programs.


## THE ROLE OF COMPETITIVE EVENTS

To follow its mission, TSA offers stimulating competitive events and recognition in both technology and leadership arenas. TSA believes that by participating in carefully designed competitions, students learn to do their best, thereby becoming “winners” whether or not they place in a competition. Many teachers find that TSA's competitive events provide an excellent motivational tool in the academic environment.

Every two years TSA's competitive events are reviewed and revised by the Competition Regulations Committee (CRC), a standing group of technology educators with hands-on classroom experience. The *2016 & 2017 Middle School Technology Activities, National TSA Conference Competitive Events Guide* is the result of the work of the CRC managers, competitive event coordinators, teachers, and the proposals of numerous TSA state and chapter advisors, and students whose suggestions make TSA competitive events current and dynamic. The guide presents rules and regulations for all national TSA conference competitive events, as well as a comprehensive view of each event's connection to science, technology, engineering, and mathematics (STEM) standards, and Common Core State Standards. Additionally, leadership skills, career choices (including connections to career clusters), and suggested careers are featured for each event. Relevant for all levels of competition (state delegations may choose to adopt the national guidelines for state-level competitions), the guide provides an excellent motivational tool for curricular activities in the classroom.

Thank you for your interest and support.

Rosanne T. White, Ed.D.  
TSA Executive Director

 Each competitive event has an *event coordinator* who is responsible for answering questions about the event's guidelines. Coordinator names and contact information can be found on the TSA website at [www.tsaweb.org](http://www.tsaweb.org) Directory/Competition Regulations Committee.

## LEVELS OF COMPETITION

- A. The following breakdown of grades is used to designate categories for curricular event entries. Each level has its own unique competitive events guide.


Middle School/Junior High School—Grades 5, 6, 7, 8, 9

High School—Grades 9, 10, 11, 12

Ninth graders must compete at the level in which the chapter affiliates. For example, if the ninth grade is housed in a high school 9-12, the student must compete in high school events. If the ninth grade is housed in a 6-9 or 7-9 school, ninth grade students must compete in middle school events.

- B. If the school has a K-12 configuration, or a configuration other than the examples above, contact national TSA for clarification and approval regarding the appropriate school designation.


## GENERAL RULES AND REGULATIONS

 General Rules apply to *all* competitive events and are in addition to each event's specific guidelines.

- A. It is the intent of TSA, Inc. to involve as many different TSA members as possible in competitive events and provide recognition in a setting of fair play practices using TSA event guidelines.
- B. Other than for the VEX event, TSA members, advisors, and chapters must be currently affiliated with TSA to enter any competitive event.
- C. TSA membership rights extend through the year of graduation. It is permissible for students who graduate midyear to compete at the national conference that immediately follows their end-of-year graduation.
- D. Students must be registered and be in attendance at the national TSA conference in order to enter and become a finalist in any event.
- E. It is the individual responsibility of each participant to obtain all rules and guidelines for the events. Lack of knowledge or understanding about a particular event is neither reason nor excuse for an individual to request an accommodating adjustment or change.
- F. It is essential that students and advisors routinely check the TSA website [www.tsaweb.org](http://www.tsaweb.org) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA



- competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.
- G. The TSA competitive event limit is six (6) per conference participant, individual and team events combined.
  - H. Team members must be affiliated with the same chapter. To enter a team event, the chapter designates only that it is participating; names of the individual team members are not necessary. Unless otherwise designated in a competition's eligibility guideline, the maximum size of a team is six (6) members.
  - I. Entries (projects and/or products) may be submitted for one (1) year, and one (1) competition only. An infraction of this rule results in disqualification.
  - J. For all entries that require documentation materials (comprising a "portfolio") secured in a clear front report cover, visit this [site](#) for a sample report cover.
  - K. Entries must be started and completed during the current school year. All entries must be in English. Unless otherwise specified, no identifying information—other than an ID#—is to be included on an entry. Exceptions to this rule are those events that require content aligned with a school or community (Children's Stories, Construction Challenge and Community Service Video).
  - L. Unless otherwise noted, for all events that require a display, the size of the display may not exceed 15" deep x 3' wide x 4' high.
  - M. Participants must provide—and bring to the test site—two (2) pencils (sharpened standard #2/HB grade with an eraser, or #2 mechanical with an eraser) for any competition that involves the use of a pencil (e.g., for taking a written test, for producing required sketches).
  - N. For all applicable competitive events, citations or references must follow MLA (Modern Language Association) style.
  - O. All entries must be the original work of the student participant or student team. All ideas, text, images, and sound from other sources must be cited (see Rule N above). If copyrighted material is used, written permission must be included. Failure to follow this procedure results in disqualification.
  - P. All competitive events with a semifinalist component will have a minimum of twelve (12) semifinalists. Semifinalists (individuals or teams, as applicable) will compete against one

 An Internet search about copyrighted material and copyright fair use is recommended if ideas, text, images, or sound from other sources is incorporated into an event entry.

For information about the use of the TSA logo, visit the TSA website at [www.tsaweb.org](http://www.tsaweb.org).



Rule (Y)  
highlights that  
student participants  
must be in attendance  
for the entire  
conference.

another to determine the top ten (10) finalists in an event. The decisions of judges related to competitive events is final.

- Q. Students must check in and pick up their event entries at the time and place stated in the conference program, or as announced during the national TSA conference.
- R. TSA is not responsible or liable for any personal property, equipment, or materials brought to the national TSA conference for use by a participant or attendee.
- S. When an event-scheduling conflict could prevent an individual from participating in an event, the individual has the right to decide which event is eliminated.
- T. Should a documented emergency arise in team events that involve written and semifinalist segments, team member substitution may be allowed if approved by the event manager and coordinator.
- U. All events are judged in accordance with the stated event criteria as noted in this competitive events guide. Concern about any event during the national TSA conference should be submitted in writing to the Rules Interpretation Panel (RIP) at the conference. The Rules Interpretation Panel will render a decision at the conference. The decisions of the RIP at the national conference are final. (For more information, refer to Rules Interpretation Panel section at the end of this guide.)
- V. Hazardous materials, chemicals, lighted or open flames, combustibles, wet cell batteries, and other similar substances are not allowed at the national TSA conference. Competition entries or presentations by participants must not include racial or ethnic slurs/symbols; reference to gang affiliation; or vulgar, violent, subversive, or sexually suggestive language or images. In addition, entries or presentations should not promote products that students may not legally buy, such as tobacco, alcohol, or illegal drugs. Images of guns, knives, or other weapons are discouraged and may be cause for disqualification.
- W. Recording devices are not allowed in certain competitive events. CRC manager and event coordinator approval is required before any event may be recorded.
- X. Out of courtesy to other competitors and to avoid any perception of impropriety, no electronic communication devices of any kind are permitted during competition. Cell phones, iPads/tablets, electronic readers, etc. *must* be turned off.



- Y. Anyone who wishes to attend the conference must complete conference registration. All adult advisors, chaperones, and student participants must be in attendance for the entire conference.
- Z. National TSA provides guidelines for student and team entry content, but does not bear responsibility for content choices made by participants. Entries are evaluated on the basis of the event's official rating form.
- AA. Rules violations and disqualifications: A rules violation that gives a contestant an unfair advantage will result in a twenty percent (20%) deduction of the total possible points. The manager of an event also has the right to disqualify a contestant when this type of incident occurs. The event manager must sign off on both a twenty percent (20%) deduction and a disqualification.
- AB. TSA may choose to keep national TSA conference student entries. Such entries may be used by national TSA for promotional purposes. Should that occur, credit for any such entry would be noted by TSA.

### NATIONAL TSA DRESS CODE

Chapter and state advisors, parents, and chaperones are responsible for seeing that all TSA student members wear TSA competition, general session, or casual attire as occasions may require. TSA attire may be purchased online via the SHOP tab on the TSA website at [www.tsaweb.org](http://www.tsaweb.org). TSA competition, general session, and casual attire are considered appropriate dress for conference activities and public appearances. Because adults (advisors, parents, and guests) serve as role models at TSA conferences and activities, they are expected to dress appropriately for all TSA occasions they attend. Students must adhere to the TSA dress code requirements as listed below.

- A. During general sessions at the national TSA conference, student members must wear competition or general session TSA attire. Adults must dress appropriately. No flip flops, halter tops, tank tops, or shorts are permitted for anyone at general sessions.
- B. When students compete in any competitive event they must wear competition attire. For Chapter Team only, at both the middle school and high school levels, competitors also must wear a navy blue blazer with an official TSA patch; males (only) must wear the official TSA logo neck tie.



Buying TSA apparel is a mouse click away on the TSA website at [www.tsaweb.org](http://www.tsaweb.org). Click on the SHOP tab to purchase TSA official attire, as well as TSA hoodies, polo shirts, and much more!

- C. Students not in appropriate competition attire when they compete may be allowed to participate in an event, but they will lose twenty percent (20%) of the total possible competition points.

### Competition Attire

Shirt or blouse: official TSA shirt (royal blue)  
Pants or skirt: gray  
Socks: black or dark blue  
Shoes: black dress shoes (unacceptable: athletic shoes, army boots, combat, or work boots)  
Sandals: females only may wear black open-toe shoes or sandals

***Required for middle school or high school level Chapter Team only, but may be worn for other competitions if preferred by a contestant:***

Blazer: navy blue with official TSA patch  
Tie: scarlet red imprinted with official TSA logo (males only)

### General Session Attire

Shirt or blouse: button-up shirt with a turned down collar, or a polo/golf shirt; however, the official TSA shirt (royal blue) is preferred  
Dress skirt or pants: gray (unacceptable: jeans, baggy pants, exterior pocket pants, shorts)  
Socks: black or dark blue  
Shoes: dress shoes or dress boots (unacceptable: athletic shoes, combat, or work boots); females only may wear open-toe shoes or sandals


### Casual Attire

The same as general session attire, OR appropriate t-shirts, shorts, or jeans.

***National TSA conference registrants must wear conference identification badges at all times.***

## COMPETITION REGULATIONS COMMITTEE

The Competition Regulations Committee (CRC) is charged with reviewing TSA's competitive events, updating them as necessary, and presiding over the competitive events at the annual national TSA conference. Questions about specific events may be addressed to event coordinators or to event managers. *Please refer to the TSA Directory on the TSA website at [www.tsaweb.org](http://www.tsaweb.org) for complete contact information.*

 The CRC is composed of dedicated technology teachers and education professionals from across the country who have made major commitments to create and maintain the high quality of national TSA's competitive events. See who they are by clicking "TSA Directory" on the national TSA website at [www.tsaweb.org](http://www.tsaweb.org).



Ideas and feedback regarding events are always welcome. There are guidelines and forms at the end of this guide for proposing a new event or for suggesting revisions to existing events.

## RULES INTERPRETATION PANEL

The Rules Interpretation Panel (RIP), a group made up of at least three (3) CRC members, monitors and oversees the competitive events during the national TSA conference. The panel provides a means by which advisors may express grievances and concerns about on-site situations that pertain to events, and it ensures continuity from year to year for competitive event rules and regulations. RIP members will maintain a panel throughout national TSA conferences.

Immediately following the initial contact of an individual with concern about a rule, the RIP panel will meet to discuss and analyze the situation. Depending upon the severity of the problem, the individual may be asked to submit the grievance in writing, using the Rules Interpretation Panel grievance form (see Forms Appendix). It is the intent of the panel to resolve all grievances at the conference with a response in writing to the advisor.


## EVENT COORDINATOR REMINDERS

TSA is grateful for the support of its event coordinators, many of whom are teachers attending the conference with students from their chapters. The busy schedules of these individuals prompt the reminders that follow.

- A. Competitive event coordinators must be present for conference event check-in and check-out if they are coordinating an event in which these activities take place. Generally speaking, “check-in” is on the evening of registration day, and “check-out” is held on the day before the awards ceremony. Tentative schedule information is available before the conference on the TSA website.
- B. The Competition Regulations Committee, which consists of all the event managers, is available throughout the conference to support coordinators as they supervise competitive events.

## AWARDS

- A. At the conference awards ceremony, ten (10) finalists in each event are identified in random order and called to the stage for recognition.

 Following the annual national TSA conference, the top ten (10) finalists in middle and high school competitions will be posted on the TSA website. Visit [www.tsaweb.org](http://www.tsaweb.org) shortly after the conference for this information!



- B. From those ten (10) finalists, first, second, and third place awards are presented to the individual or team representative, as determined by each event.
- C. Rankings beyond third place are not announced at the awards ceremony.
- D. A list of the top ten (10) finalists only for each event is available on the national TSA website shortly after the conference.



# COMPETITIVE EVENTS ELIGIBILITY

2016 & 2017 MIDDLE SCHOOL COMPETITIONS	ELIGIBILITY
Biotechnology	three (3) teams per state
CAD Foundations	two (2) individuals per state
Career Prep	one (1) individual per chapter
Catapult Design	three (3) teams of up to four (4) individuals per state
Challenging Technology Issues	three (3) teams of two (2) individuals per state
Chapter Team	one (1) team of six (6) individuals per chapter
Children's Stories	one (1) team per chapter (entries may be submitted by a team or an individual)
Community Service Video	one (1) team per chapter (entries may be submitted by a team or an individual)
Construction Challenge	one (1) team per chapter
Digital Photography	three (3) individuals per state
Dragster	two (2) individuals per chapter, one (1) entry each
Electrical Applications	two (2) individuals per chapter
Environmental Engineering	one (1) team per chapter
Essays on Technology	three (3) individuals per state
Flight	two (2) individuals per chapter, one (1) entry each
Forensic Technology	one (1) team of two (2) individuals per chapter
Geospatial Technology	one (1) team of two to five (2-5) individuals per chapter
Inventions and Innovations	one (1) team of at least three (3) individuals per chapter, one (1) entry per team
Junior Solar Sprint	one (1) team of two to four (2-4) individuals per chapter
Leadership Strategies	one (1) team of three (3) individuals per chapter
Mass Production	one (1) team of at least two (2) individuals per chapter, one (1) entry per team
Medical Technology	three (3) teams of two (2) or more individuals per state
Microcontroller Design	one (1) team of three to five (3-5) individuals per chapter
Prepared Speech	one (1) individual per chapter
Problem Solving	one (1) team of two (2) individuals per chapter
Promotional Marketing	one (1) individual per chapter
STEM Animation	three (3) teams per state, one (1) entry per team
Structural Engineering	one (1) team of two (2) individuals per chapter
System Control Technology	one (1) team of three (3) individuals per state, one (1) entry per team
Tech Bowl	one (1) team of three (3) individuals per chapter
Technical Design	one (1) team of two (2) individuals per chapter
Video Game Design	one (1) team of at least two (2) individuals per chapter, one (1) entry per team
Website Design	one (1) team of three to six (3-6) individuals per chapter, one (1) entry per team



# SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) INTEGRATION

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In recent years, not only educators, but also political, civic, and industry leaders have pushed for a greater emphasis on science, technology, engineering, and mathematics (STEM) education in our schools. These groups feel that in order for our nation to be competitive, healthy, and vibrant, our young people must have competency in the 21<sup>st</sup> century skills afforded through the STEM fields. TSA promotes a vision of students literate in these fields, as well, and believes that the competitions within this guide help make that vision a reality.

STEM education is not just the isolated and discreet acquisition of knowledge and skills related to science, technology, engineering, and mathematics. Rather, STEM education demands the interweaving and application of these academic fields for the purpose of comprehending, communicating, and solving problems. Indeed, it is now commonly accepted that to understand (and apply) any one of these STEM areas, one must, at the same time, have a grasp of and apply the others. For example, to design and engineer with any degree of complexity, one also must be familiar with technology, mathematics, and science; or to practice science, one must have a firm knowledge of mathematics and technology.

Beyond necessity, there is another reason for STEM education in our schools — and why the TSA program of activities inherently aligns with STEM goals. This reason revolves around teaching and learning, and what motivates students. STEM education is intrinsically exciting, rewarding, and meaningful for instructors and students alike. It is our belief that, as with STEM education, TSA's activities provide the kind of stimulation, challenge, and relevancy for all involved.

Deserving of mention are two other essential areas imbedded in most of TSA's competitive events – those of art and ethics. It is difficult to design without considering aesthetics, and it is irresponsible to create without contemplating ethical consequences. When students participate in TSA competitions they find they must not only embrace the value of design when





they compete, they also must envision and assess the effects of what they develop.

The competitions found in this guide provide a hands-on venue for learning about science, technology, engineering, and mathematics. By participating in TSA's competitive events, students gain a broader understanding of these content areas, and at the same time, experience the satisfaction that comes from applying them to real-life problem-solving situations.

*This section of the guide includes commonly accepted national standards for the areas of science, technology, and mathematics, as well as the Accreditation Board for Engineering and Technology (ABET Inc.) criteria for accrediting higher education engineering programs. In using these materials, keep in mind that their power and beauty lie in their synergistic nature.*

**SCIENCE CONTENT STANDARDS (GRADES 5-8)**

- A. Unifying concepts and processes
  - 1. Systems, order, and organization
  - 2. Evidence, models, and explanation
  - 3. Change, constancy, and measurement
  - 4. Evolution and equilibrium
  - 5. Form and function
- B. Science as inquiry  
Students should develop
  - 1. Abilities necessary to do scientific inquiry
  - 2. Understanding about scientific inquiry
- C. Physical science  
Students should develop an understanding of
  - 1. Properties and changes of properties in matter
  - 2. Motions and forces
  - 3. Transfer of energy
- D. Life science  
Students should develop an understanding of
  - 1. Structure and function in living systems
  - 2. Reproduction and heredity
  - 3. Regulation and behavior
  - 4. Populations and ecosystems
  - 5. Diversity and adaptations of organisms
- E. Earth and space science  
Students should develop an understanding of
  - 1. Structure of the earth system
  - 2. Earth's history
  - 3. Earth in the solar system
- F. Science and technology  
Students should develop
  - 1. Abilities of technological design
  - 2. Understanding about science and technology
- G. Science in personal and social perspectives  
Students should develop an understanding of
  - 1. Personal health
  - 2. Populations, resources, and environments
  - 3. Natural hazards
  - 4. Risks and benefits
  - 5. Science and technology in society
- H. History and nature of science  
Students should develop an understanding of
  - 1. Science as a human endeavor
  - 2. Nature of science
  - 3. History of science



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The standards listed are reprinted with permission from National Science Education Standards, 1996, by the National Academy of Sciences, courtesy of the National Academies Press, Washington, DC.



		SCIENCE CONTENT STANDARDS																												
Event	Standard Number	A1	A2	A3	A4	A5	B1	B2	C1	C2	C3	D1	D2	D3	D4	D5	E1	E2	E3	F1	F2	G1	G2	G3	G4	G5	H1	H2	H3	
Biotechnology		X	X				X	X												X	X							X	X	X
CAD Foundations				X		X	X	X												X							X			
Career Prep			X				X	X												X	X									
Catapult Design			X	X	X	X				X										X	X									
Challenging Technology Issues		X	X																	X	X	X	X	X	X	X	X	X	X	X
Chapter Team		X																												
Children's Stories																				X		X								
Community Service Video				X																X	X									
Construction Challenge			X			X																								
Digital Photography		X	X			X														X	X									X
Dragster			X	X		X	X			X	X									X	X									
Electrical Applications			X								X									X	X									
Environmental Engineering		X	X	X	X		X	X	X	X	X	X		X	X	X	X		X	X	X		X	X		X	X	X	X	X
Essays on Technology		X	X				X	X													X									
Flight			X	X		X	X	X		X	X									X	X									X
Forensic Technology		X		X			X	X																X		X		X		
Geospatial Technology		X	X	X			X											X		X	X	X		X	X		X	X		
Inventions and Innovations		X	X				X	X												X	X									X
Junior Solar Sprint			X	X		X	X	X		X	X									X	X									X
Leadership Strategies			X		X																							X		
Mass Production		X	X																		X									
Medical Technology			X		X		X	X	X			X		X		X				X	X	X					X	X	X	X
Microcontroller Design																				X	X									
Prepared Speech			X																							X	X	X	X	X
Problem Solving			X			X	X	X												X	X									
Promotional Marketing		X																		X	X	X	X	X	X	X				
STEM Animation		X	X				X	X												X	X						X	X		
Structural Engineering			X	X	X	X				X	X									X	X									
System Control Technology		X	X	X			X	X		X	X									X	X							X	X	
Tech Bowl		X					X	X	X												X						X			X
Technical Design		X	X	X		X	X	X												X	X						X			
Video Game Design		X				X																						X		
Website Design		X		X						X	X									X	X		X	X	X	X				

## TECHNOLOGY CONTENT STANDARDS

- Standard 1: Students will develop an understanding of the characteristics and scope of technology.
- Standard 2: Students will develop an understanding of the core concepts of technology.
- Standard 3: Students will develop an understanding of the relationships among technologies and the connections between technologies and other fields of study.
- Standard 4: Students will develop an understanding of the cultural, social, economic, and political aspects of technology.
- Standard 5: Students will develop an understanding of the effects of technology on the environment.
- Standard 6: Students will develop an understanding of the role of society in the development and use of technology.
- Standard 7: Students will develop an understanding of the influence of technology on history.
- Standard 8: Students will develop an understanding of the attributes of design.
- Standard 9: Students will develop an understanding of engineering design.
- Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
- Standard 11: Students will develop the abilities to apply the design process.
- Standard 12: Students will develop the abilities to use and maintain technological products and systems.
- Standard 13: Students will develop the abilities to assess the impact of products and systems.
- Standard 14: Students will develop an understanding of and be able to select and use medical technologies.
- Standard 15: Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.
- Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.
- Standard 17: Students will develop an understanding of and be able to select and use information and communication technologies.
- Standard 18: Students will develop an understanding of and be able to select and use transportation technologies.
- Standard 19: Students will develop an understanding of and be able to select and use manufacturing technologies.
- Standard 20: Students will develop an understanding of and be able to select and use construction technologies.

These technology content standards are noted in *Standards for Technological Literacy: Content for the Study of Technology* (ITEEA/ITEA, 2000/2002/2007) and are used with permission. ([www.iteea.org](http://www.iteea.org))



TECHNOLOGY CONTENT STANDARDS																					
Event	Standard Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Biotechnology		X	X	X	X	X					X		X	X							
CAD Foundations						X			X	X	X	X	X	X							
Career Prep															X	X	X	X	X	X	X
Catapult Design									X	X	X	X	X								
Challenging Technology Issues					X	X								X	X	X	X	X	X	X	X
Chapter Team											X										
Children's Stories									X			X						X			
Community Service Video				X					X				X					X			
Construction Challenge									X		X							X			
Digital Photography									X	X	X	X	X					X			
Dragster									X			X					X				
Electrical Applications									X	X	X	X	X	X	X	X	X	X	X	X	X
Environmental Engineering		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Essays on Technology		X	X	X	X	X	X							X							
Flight				X					X	X	X	X							X		
Forensic Technology				X							X				X						
Geospatial Technology		X	X	X		X			X	X	X	X	X			X		X	X	X	X
Inventions and Innovations					X	X		X	X	X	X	X	X		X	X	X	X	X	X	X
Junior Solar Sprint				X					X	X	X	X	X				X				
Leadership Strategies											X										
Mass Production						X	X		X	X	X	X	X	X							X
Medical Technology					X	X	X		X	X	X	X	X		X						
Microcontroller Design		X	X	X	X			X	X	X	X	X	X	X			X				
Prepared Speech		X	X	X	X	X	X	X										X			
Problem Solving									X	X	X	X									
Promotional Marketing									X	X	X	X	X								
STEM Animation		X							X		X	X						X			
Structural Engineering											X	X									
System Control Technology				X					X	X	X	X	X				X		X	X	X
Tech Bowl																		X	X	X	X
Technical Design									X	X	X	X									
Video Game Design									X	X	X	X									
Website Design									X	X	X	X	X	X							

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**CRITERIA FOR ACCREDITING ENGINEERING PROGRAMS**  
**ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY (ABET, Inc.)**

Engineering programs must demonstrate that their students attain the following outcomes:

- A. An ability to apply knowledge of mathematics, science, and engineering
- B. An ability to design and conduct experiments, as well as to interpret data
- C. An ability to design a system, component, or process to meet desired needs
- D. An ability to function on multi-disciplinary teams
- E. An ability to identify, formulate, and solve engineering problems
- F. An understanding of professional and ethical responsibility
- G. An ability to communicate effectively
- H. The broad education necessary to understand the impact of engineering in global and social contexts
- I. A recognition of the need for and an ability to engage in life-long learning
- J. A knowledge of contemporary issues
- K. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

The outcomes listed above are found in *2008-2009 Criteria for Accrediting Engineering Programs* and used with permission from the Engineering Accreditation Commission of ABET, Inc. The outcomes were designed for higher education engineering programs but are relevant for both middle school and high school level engineering-related courses.



CRITERIA FOR ACCREDITING ENGINEERING PROGRAMS (ABET, INC.)		Event															
		A	B	C	D	E	F	G	H	I	J	K					
A. An ability to apply knowledge of mathematics, science, and engineering	Biotechnology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	CAD Foundations	X				X		X									
	Career Prep	X					X	X									
	Catapult Design	X	X			X	X	X								X	
	Challenging Technology Issues							X	X	X	X	X	X	X	X		
	Chapter Team									X	X						
	Children's Stories			X	X		X	X		X				X			
	Community Service Video				X			X						X			
	Construction Challenge	X			X			X									
	Digital Photography								X	X	X	X	X	X	X	X	X
B. An ability to design and conduct experiments, as well as to interpret data	Dragster	X	X	X		X		X		X	X	X	X	X	X	X	
	Electrical Applications	X	X	X		X		X		X		X	X	X	X	X	
	Environmental Engineering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Essays on Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Flight	X	X	X		X		X		X		X		X		X	
	Forensic Technology	X	X									X					
	Geospatial Technology	X	X	X		X				X		X					
	Inventions and Innovations	X		X	X	X						X		X			
	Junior Solar Sprint	X	X	X		X						X				X	
	Leadership Strategies									X		X		X			
C. An ability to design a system, component, or process to meet desired needs	Mass Production	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Medical Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Microcontroller Design	X		X								X				X	
	Prepared Speech											X	X	X	X		
	Problem Solving	X	X	X		X						X					
	Promotional Marketing	X									X						
	STEM Animation			X	X	X	X	X	X	X	X	X	X	X	X	X	
	Structural Engineering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	System Control Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Tech Bowl													X			
D. An ability to function on multi-disciplinary teams	Technical Design			X		X		X		X		X					
	Video Game Design			X	X	X	X	X	X	X	X	X	X	X	X	X	
	Website Design			X	X	X	X	X	X	X	X	X	X	X	X	X	



## NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS (NCTM) PRINCIPLES AND STANDARDS FOR SCHOOL MATHEMATICS

1. Numbers and operations
  - A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems
  - B. Understand meanings of operations and how they relate to one another
  - C. Compute fluently and make reasonable estimates
2. Algebra
  - A. Understand patterns, relations, and functions
  - B. Represent and analyze mathematical situations and structures using algebraic symbols
  - C. Use mathematical models to represent and understand quantitative relationships
  - D. Analyze change in various contexts
3. Geometry
  - A. Analyze characteristics and properties of two- and three-dimensional geometric shapes, and develop mathematical arguments about geometric relationships
  - B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems
  - C. Apply transformations and use symmetry to analyze mathematical situations
  - D. Use visualization, spatial reasoning, and geometric modeling to solve problems
4. Measurement
  - A. Understand measurable attributes of objects and the units, systems, and processes of measurement
  - B. Apply appropriate techniques, tools, and formulas to determine measurements
5. Data analysis and probability
  - A. Formulate questions that can be addressed with data, and collect, organize, and display relevant data to answer them
  - B. Select and use appropriate statistical methods to analyze data
  - C. Develop and evaluate inferences and predictions that are based on data
  - D. Understand and apply basic concepts of probability
6. Problem solving
  - A. Build new mathematical knowledge through problem solving
  - B. Solve problems that arise in mathematics and in other contexts
  - C. Apply and adapt a variety of appropriate strategies to solve problems
  - D. Monitor and reflect on the process of mathematical problem solving
7. Reasoning and proof
  - A. Recognize reasoning and proof as fundamental aspects of mathematics
  - B. Make and investigate mathematical conjectures
  - C. Develop and evaluate mathematical arguments and proofs
  - D. Select and use various types of reasoning and methods of proof
8. Communication
  - A. Organize and consolidate mathematical thinking through communication
  - B. Communicate mathematical thinking coherently and clearly to peers, teachers, and others



- C. Analyze and evaluate the mathematical thinking and strategies of others
  - D. Use the language of mathematics to express mathematical ideas precisely
9. Connections
- A. Recognize and use connections among mathematical ideas
  - B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
  - C. Recognize and apply mathematics in contexts outside of mathematics
10. Representation
- A. Create and use representations to organize, record, and communicate mathematical ideas
  - B. Select, apply, and translate among mathematical representations to solve problems
  - C. Use representations to model and interpret physical, social, and mathematical phenomena

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# COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

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An influential set of national standards today is the *Common Core State Standards* (CCSS). These standards are designed to help guide teachers, administrators, and state and local education agencies to determine what all elementary, middle, and high school students should know and be able to do in English Language Arts (ELA) and Mathematics. The CCSS are written in the form of performance statements and may be found at <http://www.corestandards.org/>. Developed by the National Governors Association Center for Best Practices (NGA – Center) and the Council of Chief State School Officers (CCSSO), the CCSS have been adopted by many states and the District of Columbia.

The successful implementation of these standards will only succeed through the strategy of curriculum integration. TSA believes that the application of many of the understandings and skills identified in the CCSS are found in technology and engineering programs, such as the competitive events and activities of the Technology Student Association. TSA's competitive events and activities provide an excellent context for students to apply the CCSS Standards; they tend to be reflective of today's workplace, are authentic, complex, and interesting to most students, and often give meaning to concepts and skills that might otherwise seem meaningless or solely academic.

The following pages are matrixes of the CCSS with correlations to TSA middle school competitive events. The matrixes are designed to assist teachers and administrators in identifying the events that best incorporate the understandings and skills identified within the CCSS. It is our hope that the matrixes, along with the events in this guide, will help teachers and administrators as they strive for excellence.

A brief description of the CCSS ELA Literacy and Mathematics standards may be found on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)).

**COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS, SCIENCES, AND TECHNICAL SUBJECTS**

**GRADES 6 - 8**

	Reading Standards for Science and Technical Subjects										Writing Standards for Science and Technical Subjects										Speaking and Listening Standards						Language Standards							
	Key Ideas			Craft and Structure			Integration of Ideas				Text Types and Purposes			Writing Production			Research			Range			Comprehension Collaboration			Presentation of Ideas			Conventions		Apply Knowledge		Vocabulary	
	R.1	R.2	R.3	R.4	R.5	R.6	R.7	R.8	R.9	R.10	W.1	W.2	W.3	W.4	W.5	W.6	W.7	W.8	W.9	W.10	SL.1	SL.2	SL.3	SL.4	SL.5	SL.6	L.1	L.2	L.3	L.4	L.5	L.6		
<b>EVENT STANDARD</b>	R.1	R.2	R.3	R.4	R.5	R.6	R.7	R.8	R.9	R.10	W.1	W.2	W.3	W.4	W.5	W.6	W.7	W.8	W.9	W.10	SL.1	SL.2	SL.3	SL.4	SL.5	SL.6	L.1	L.2	L.3	L.4	L.5	L.6		
Biotechnology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
CAD Foundations			X					X	X	X																								
Career Prep							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Catapult Design				X			X	X	X	X							X																	
Challenging Technology Issues	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Chapter Team														X										X	X	X	X	X	X	X	X	X		
Children's Stories	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Community Service Video				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Construction Challenge				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Digital Photography				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Dragster				X			X	X	X	X							X																	
Electrical Applications				X			X	X	X	X																	X	X	X	X	X	X		
Environmental Engineering	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Essays on Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Flight				X			X	X	X	X																								
Forensic Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Geospatial Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Inventions and Innovations				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Junior Solar Sprint				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Leadership Strategies				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Mass Production				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Medical Technology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Microcontroller Design				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Prepared Speech											X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Problem Solving				X			X	X	X	X											X	X	X	X	X	X	X	X	X	X	X	X		
Promotional Marketing				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
STEM Animation				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Structural Engineering				X			X	X	X	X											X	X	X	X	X	X	X	X	X	X	X	X		
System Control Technology				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Tech Bowl	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Technical Design				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Video Game Design				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Website Design	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		



COMMON CORE STATE STANDARDS FOR MATHEMATICS														Conceptual Categories and Domain			
GRADES 6 - 8														Key Math Domains			
EVENT	STANDARD	Math Standards Grade 6					Math Standards Grade 7					Math Standards Grade 8				RP = Ratios & Proportions NS = Number System EE = Expressions & Equations F = Functions G = Geometry  SP = Statistics & Probability	
		6.RP	6.NS	6.EE	6.G	6.SP	7.RP	7.NS	7.EE	7.G	7.SP	8.NS	8.EE	8.F	8.G		8.SP
Biotechnology		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CAD Foundations		X	X	X	X		X										
Career Prep																	
Catapult Design Challenge		X	X	X	X		X		X								
Challenging Technology Issues		X	X			X	X	X		X							
Chapter Team																	
Children's Stories																	
Community Service Video																	
Construction Challenge		X	X	X	X		X		X		X			X			
Digital Photography																	
Dragster		X	X	X	X		X		X					X			
Electrical Applications		X	X	X			X		X								
Environmental Engineering		X	X	X		X	X	X	X		X			X			X
Essays on Technology																	
Flight			X		X				X					X			
Forensic Technology																	
Geospatial Technology		X	X	X	X		X		X		X			X			X
Inventions and Innovations			X		X		X		X		X			X			
Junior Solar Sprint		X	X	X	X		X		X		X			X			
Leadership Strategies																	
Mass Production			X		X				X		X			X			
Medical Technology		X	X	X	X		X		X		X			X			X
Microcontroller Design		X	X	X			X		X		X			X			X
Prepared Speech																	
Problem Solving			X		X				X					X			
Promotional Marketing																	
STEM Animation			X		X				X					X			
Structural Engineering		X	X		X				X		X			X			
System Control Technology			X		X				X		X			X			
Tech Bowl		X	X	X			X		X		X			X			
Technical Design			X		X				X		X			X			
Video Game Design			X		X				X		X			X			
Website Design																	



# TSA AND THE LEADERSHIP ACTIVITIES

National TSA recognizes the importance of all TSA members acquiring leadership skills. By learning and practicing leadership skills, young people are empowered to succeed not only in school, but in their careers and in life.

Based on Standards for Technology Literacy, a publication of the International Technology and Engineering Educators Association (ITEEA/ITEA), TSA has identified core leadership skills (see the sidebar) that students may use/learn when they participate in TSA's competitive events program. In the 2016 & 2017 middle school guide, three primary leadership skills with suggested activities, are noted for each competition. A glossary of core leadership skills and a sample leadership activity follow.

TSA believes that acquiring leadership skills is critical to the success of young people in the 21st century. The middle school leadership activities (found in Total TSA) present TSA advisors with a venue for teaching, and students an opportunity to practice these all-important skills.

## GLOSSARY OF LEADERSHIP SKILLS

The following leadership skills are defined in the Technology Content Standards of the International Technology and Engineering Educators Association (ITEEA/ITEA) publication, ***Standards for Technological Literacy, Content for the Study of Technology.***

**Communication** – the successful transmission of information through a common system of symbols, signs, behavior, speech, writing, or signals

**Creative thinking** – the ability or power used to produce original thoughts and ideas based upon reasoning and judgment

**Critical thinking** – the ability to acquire information, analyze and evaluate it, and reach a conclusion or answer by using logic and reasoning skills



### Core leadership skills:

- communication
- creative thinking
- critical thinking
- decision making
- ethics
- evaluation
- organization
- problem solving
- self-esteem
- teamwork



**Decision making** – the act of examining several possible behaviors and selecting from them the one most likely to accomplish the individual's or group's intention; cognitive processes such as reasoning, planning, and judgment are involved

**Ethics** – the adherence to an established set of principles or accepted professional standards of conduct

**Evaluation** – the collection and processing of information and data in order to determine how well a design meets the requirements and to provide direction for improvements; a process used to analyze, evaluate, and appraise a student's achievement, growth, and performance through the use of formal and informal techniques; cognitive

**Organization** – the act or process of organizing or being organized; good organization will not only ensure success of a program, but without it, the success can be limited or fail to materialize at all

**Problem solving** – the process of understanding a problem, devising a plan, carrying out the plan, and evaluating the plan in order to solve a problem or meet a need or want

**Self-esteem** – confidence and satisfaction in oneself; trusting one's ability and instincts

**Teamwork** – the process that allows individuals to pool their strengths in order to arrive at better solutions to problems, with all subordinating personal prominence to the efficiency of the whole





## MIDDLE SCHOOL LEADERSHIP ACTIVITIES SAMPLE

# ▶ TAKE ACTION

### OBJECTIVE

Students will understand the key elements required to communicate a “take-action” (persuasive) message.

### TIME

40 minutes (25 minutes for the activity, 5 minutes for group presentations, 10 minutes for questions/ observations)

### MATERIALS

four or five sheets of poster board

markers and crayons

### ACTIVITY

Tell students they are involved in a national campaign to build TSA membership across the country. Their specific assignment is to create a promotional billboard that will encourage students to join TSA. Briefly describe a “take-action” message. A “take-action” kind of communication should answer the following questions:

1. Why is this communication needed?
2. What will get the most attention?
3. When should this communication occur?
4. Who is the targeted market for this communication?
5. Where should this communication occur?

Next, create groups of three or four students each. Allow 20 minutes for the groups (separately) to design a billboard, using the “take-action” communication components as a guideline.

### DISCUSSION POINTS

What was the greatest challenge in creating a persuasive message (i.e., one that encourages a listener to “take-action”)?

What kind of “take-action” messages might you respond to?



# TSA AND CAREERS

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Choosing a career is one of the more important decisions made in life. This section of the guide may help students focus on career areas that appeal to them in the world of work, as well as show them how their involvement in TSA's program of activities has the ability to guide them toward those areas.




Career clusters (categories) are groups of similar occupations and industries. They were developed by the U.S. Department of Education in order to organize career planning and help schools better prepare learners for their futures. *The 16 Careers Clusters* chart offers general information about career categories and the kinds of work opportunities prominent in those areas. The *TSA Competitions and Career Clusters* grid illustrates the interconnectedness between individual TSA competitions and the 16 career categories. Use the information in this section of the guide as a starting point to help your students become informed about careers and develop a plan to reach their life goals.



The Career Clusters icons and definitions are being used with permission of the States' Career Clusters Initiative, 2009, [www.careerclusters.org](http://www.careerclusters.org)

## THE 16 CAREER CLUSTERS

	<p>The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources. <b>(A)</b></p>
	<p>Careers in designing, planning, managing, building and maintaining the built environment. <b>(B)</b></p>
	<p>Designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services. <b>(C)</b></p>
	<p>Planning, organizing, directing and evaluating business functions essential to efficient and productive business operations; career opportunities are available in every sector of the economy. <b>(D)</b></p>
	<p>Planning, managing and providing education and training services, and related learning support services. <b>(E)</b></p>
	<p>Planning services for financial and investment planning, banking, insurance, and business financial management. <b>(F)</b></p>
	<p>Executing governmental functions to include governance; national security; foreign service; planning; revenue and taxation; regulation; and management and administration at the local, state, and federal levels. <b>(G)</b></p>
	<p>Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development. <b>(H)</b></p>
	<p>Careers in management, marketing and operations of restaurants and other food services, lodging, attractions, recreation events and travel related services. <b>(I)</b></p>
	<p>Preparing individuals for employment in career pathways that relate to families and human needs. <b>(J)</b></p>
	<p>Building linkages in IT occupations framework for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services. <b>(K)</b></p>
	<p>Planning, managing, and providing legal, public safety, protective services, and homeland security, including professional and technical support services. <b>(L)</b></p>
	<p>Planning, managing, and performing the processing of materials into intermediate or final products; related professional and technical support activities such as production planning and control, maintenance, and manufacturing/process engineering. <b>(M)</b></p>

	<p>Planning, managing, and performing marketing activities to reach organizational objectives. <b>(N)</b></p>
	<p>Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering), including laboratory and testing services, and research and development services. <b>(O)</b></p>
	<p>Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water; related professional and technical support services, such as transportation infrastructure, planning and management, logistics services, mobile equipment and facility maintenance. <b>(P)</b></p>

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 <b>TSA COMPETITIONS AND THE 16 CAREER CLUSTERS</b>		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Biotechnology									X							X	
CAD Foundations		X	X									X	X				
Career Prep		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Catapult Design		X								X				X			
Challenging Technology Issues		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Chapter Team					X			X					X				
Children's Stories			X		X					X						X	
Community Service Video			X						X		X					X	
Construction Challenge		X												X			
Digital Photography			X													X	
Dragster														X		X	X
Electrical Applications			X											X			
Environmental Engineering		X	X		X	X	X	X	X	X	X	X	X	X		X	X
Essays on Technology			X	X			X						X		X		
Flight													X	X		X	X
Forensic Technology													X			X	
Geospatial Technology		X					X		X		X	X				X	X
Inventions and Innovations			X	X								X		X	X	X	
Junior Solar Sprint														X		X	X
Leadership Strategies		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mass Production		X	X		X	X			X					X		X	
Medical Technology								X		X						X	
Microcontroller Design																	
Prepared Speech			X	X	X		X		X				X		X		
Problem Solving		X										X		X		X	
Promotional Marketing			X									X			X		
STEM Animation			X									X				X	
Structural Engineering		X											X			X	X
System Control Technology		X											X	X		X	X
Tech Bowl					X							X				X	
Technical Design		X	X									X				X	
Video Game Design			X									X				X	
Website Design			X									X				X	

# MIDDLE SCHOOL

## National TSA Conference Competitive Events



# THE TSA COMPETITIVE EVENT RATING FORM/RUBRIC

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The *2016 & 2017 Middle School Technology Activities, National TSA Conference Competitive Events Guide* contains a rating form (rubric) for each competition. Rubrics are embraced by STEM educators because they provide a sure way to evaluate subjective assessments. The use of descriptors for each criterion being measured in a rubric increases consistency and a greater understanding of the evaluation process.

The TSA rating form/rubric provides a way for TSA members to better prepare for competitions, for advisors to carefully assist them in the process, and for judges to effectively evaluate participants and their entries.

## MIDDLE SCHOOL COMPETITIVE EVENTS

The officially approved middle school events for the 2016 and 2017 national TSA conferences are as follows:



New and updated events:

- CAD Foundations
- Catapult Design
- Chapter Team
- Children's Stories
- Dragster
- Environmental Engineering
- Forensic Technology
- Mass Production
- Promotional Marketing

Every two years the specifics of many events are changed, keeping the competitions dynamic!

Biotechnology  
CAD Foundations  
Career Prep  
Catapult Design  
Challenging Technology Issues  
Chapter Team  
Children's Stories  
Community Service Video  
Construction Challenge  
Digital Photography  
Dragster  
Electrical Applications  
Environmental Engineering  
Essays on Technology  
Flight  
Forensic Technology  
Geospatial Technology  
Inventions and Innovations  
Junior Solar Sprint  
Leadership Strategies  
Mass Production  
Medical Technology  
Microcontroller Design  
Prepared Speech  
Problem Solving  
Promotional Marketing  
STEM Animation  
Structural Engineering  
System Control Technology  
Tech Bowl  
Technical Design  
Video Game Design  
Website Design





## OVERVIEW

Advances in science have had a tremendous impact in biotechnology, helping us grow more disease-resistant plants, using our planet’s resources more wisely, and understanding and using genetic engineering to our benefit. In this event, participants conduct research on a contemporary biotechnology issue of their choosing, document their research (student-performed research or a re-creation or simulation of research performed by the scientific community), and create a display. If appropriate, a model or prototype depicting an aspect of the issue may be included in the display. Semifinalist teams create a presentation and are interviewed about their topic.

## ELIGIBILITY

- A. Participants are limited to three (3) teams per state.
- B. A minimum of two (2) and a maximum of three (3) team members must be involved in the semifinalist presentation/interview.

## TIME LIMITS


- A. Entries must be completed during the current school year.
- B. The semifinalist presentation/interview will be no longer than ten (10) minutes.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Team members select a contemporary issue concerning biotechnology.
- B. Team members research the issue using resources, including—but not limited to—books, interviews, websites, magazines, professional journals, etc.

 Biotechnology is “any technique that uses living organisms, or parts of organisms, to make or modify products, improve plants or animals, or to develop microorganisms for specific purposes.”  
– from *Standards for Technological Literacy*, ITEEA/ITEA, p. 149.

- C. Participants prepare their documentation and display according to the regulations below.
- D. Participants check in their entries at the time and place stated in the conference program. No more than two (2) team members set up the display.
- E. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.
- F. Two (2) or three (3) members of each semifinalist team report to the event for a presentation/interview at the time and place stated in the conference program.
- G. Semifinalist team members are allowed ten (10) minutes for a presentation/interview.
- H. No more than two (2) team members pick up their entry from the display area at the time and place stated in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**



Work for this event must be original or cited. For details, refer to the General Rules and Regulations section of this guide.

### REGULATIONS

- A. All work must be completed during the current school year.
- B. Students must understand the fundamental concepts and principles of the contemporary biotechnology issue they plan to research. Research about the issue should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.
- C. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  - 1. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
  - 2. Table of contents
  - 3. Definition and explanation of the issue; one (1) page

4. An explanation of the importance of the issue in human life today, including possible problems and solutions; maximum three (3) pages
  5. Support materials such as logs, graphs, sketches, drawings, illustrations, photographs, etc.; maximum four (4) pages
  6. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments (see Plan of Work log)
  7. A list of references and credible resources; a minimum of three (3) different types of resources must be used; examples of resources include, but are not limited to, books, interviews, professional journals, websites, magazines, etc.; pages as needed
- D. Display guidelines:
1. The size of the display may not exceed 15" deep x 3' wide x 4' high.
  2. Models or prototypes, if included, must fit within the allotted display space.
  3. A/C electricity may not be used.
  4. Dry cell or photo-voltaic cells may be used for power, if desired.
  5. Any power source used must fit within the maximum display area.
  6. If operating instructions are necessary, they must be clearly displayed.
  7. **No viruses, live plants, or animals may be used as a part of the display. No harmful or illegal substances may be displayed. Violation of this regulation will result in disqualification.**
- E. The semifinalist interview, which must include two to three (2-3) team members, will not exceed ten (10) minutes.

## EVALUATION

Evaluation is based on the documentation, the display, and the semifinalist presentation/interview. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Through a presentation/interview, students communicate their understanding of the issue. Use leadership activities: *Chefs in the Kitchen* and *Mirror Mirror*
- Evaluation: Students research and interpret a contemporary biotechnology issue of their choice. Use leadership activities: *Evaluation Methods* and *Grading the Advertisement*
- Organization: Students organize the information acquired, as well as their thoughts, opinions, and interpretations on the issue in order to effectively address it. Use leadership activities: *Organizing the Stress Away* and *Story Creation*

Additional leadership skills promoted in this event:

- Decision making
- Teamwork

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Botanist
- Chemical engineer
- Food scientist
- Molecular biologist
- Plant geneticist



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
<b>1</b>				
<b>2</b>				
<b>3</b>				
<b>4</b>				
<b>5</b>				
<b>6</b>				

Advisor signature \_\_\_\_\_

## BIOTECHNOLOGY

# EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators for initial review, two (2) or more
- C. Evaluators for semifinalist presentations/interviews, two (2) or more (preferably the same evaluators who completed the initial review)
- D. Monitor, one (1)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Marking pens for evaluators
  - 6. Results envelope with coordinator forms
- B. Measuring tape for evaluators
- C. Display tables for entries
- D. Table and chairs for event coordinator and evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, tables, chairs, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time and place stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the

participant's control. Requirements for attire do NOT apply during check-in.

- D. Each entry must include the participant's identification number in the upper right-hand corner of the entry. Have participants position displays for viewing.
- E. Meet with evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Evaluators independently assess the entries.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Evaluators determine the twelve (12) semifinalists.
- I. Submit semifinalist results to the CRC for posting.
- J. Meet with semifinalist evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- K. Oversee semifinalist presentations/interviews; the same official rating form is used for both the preliminary and semifinalist round of evaluation.
- L. Evaluators determine the ranking of the ten (10) finalists. Evaluators discuss and break any ties.
- M. Submit the finalist results and all related items/forms in the results envelope to the CRC room.
- N. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

<b>BIOTECHNOLOGY</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Documentation (50 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation C (X1)	Portfolio is unorganized and/or missing three or more components.	Portfolio has most components and it is somewhat organized.	One or no components are missing in the portfolio; content and organization are clearly evident.
<b>Definition and explanation of issue</b> (X1)	Definition and explanation of the issue are unclear.	Issue is defined and explained appropriately.	Clear and concise definition and explanation of the issue are evident.
<b>Research base</b> (X1)	Research is inadequate, and/or very few credible sources are referenced.	Research has been conducted appropriately, with some credible sources included.	Research indicates evidence of a comprehensive assortment of materials that are credible sources.
<b>Support materials</b> (X1)	Support materials do not help clarify the documentation or are of little significance to the issue.	Support materials are appropriate and help supplement documentation by providing clarity to the issue.	Support materials are of excellent quality; if not original, they are cited; support materials clarify the issue.
<b>Quality, effectiveness, and mechanics</b> (X1)	Portfolio appears to have been thrown together; distracting errors in punctuation, grammar, and spelling are evident in the documentation.	Portfolio is generally organized; punctuation, grammar, and spelling are generally correct, with few errors.	Work is of exceptional quality and well organized; punctuation, grammar, and spelling are correct, with no errors.
<b>SUBTOTAL (50 points)</b>			
Display (40 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Communication of problem</b> (X1)	It is difficult to understand the problem being communicated in the display; an illogical explanation is presented.	Problem is communicated in the display, and thoughts are generally organized and/or concise.	Problem is clearly stated in an organized and concise manner in the display.
<b>Communication of solution</b> (X1)	It is difficult to understand the solution being communicated in the display; an illogical explanation is presented.	Solution is communicated in the display, and thoughts are generally organized and/or concise.	Solution is clearly stated in an organized and concise manner in the display.
<b>Creativity</b> (X1)	Display lacks originality; none or very few design principles are integrated in the display.	Some resourcefulness and ingenuity are evident in the display; essential design principles are generally used effectively.	There is clear evidence of an inventive, unique, and creative display; essential design principles and elements are integrated.
<b>Aesthetics and artisanship</b> (X1)	Display reveals unorganized, sloppy work; it seems to be an afterthought or thrown together.	Display shows a generally organized presentation of essential issues in a logical format.	Display exhibits exemplary artisanship to logically communicate important data.
<b>SUBTOTAL (40 points)</b>			

Record scores in the column spaces below.





Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Semifinalist Presentation/Interview (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation/interview, with an illogical explanation of the problem and solution.	Participants are generally prepared for the presentation/interview; explanation of problem and solution are communicated and generally organized.	The presentation/interview is logical, well organized, and easy to follow; the problem and solution are communicated in an organized and concise manner.
<b>Articulation</b> (X1)	The presentation/interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation/interview is somewhat logical, generally easy-to follow, and/or there is sufficient information provided describing the project.	The presentation/interview is clear, concise, and there is ample information provided describing the project.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation/interview; participants' posture, gestures, and lack of eye contact diminish the delivery.	The team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact result in an acceptable delivery.	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective delivery.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.
<b>Team participation</b> (X1)	The majority of the presentation/interview is made by one member of the team; the partner(s) may be disengaged.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	All team members are actively involved in the presentation/interview and responses to questions.
			<b>SUBTOTAL (60 points)</b>

Rules violations (a deduction of 20% of the total possible points) for the semifinalist section must be initiated by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (150 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# CAD FOUNDATIONS

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## OVERVIEW

Participants in this event have the opportunity to demonstrate their understanding of CAD fundamentals as they create a two dimensional graphic representation of an engineering part or object. (Examples might include a machine part, tool, device, or manufactured product.)

## ELIGIBILITY

Participants are limited to two (2) individuals per state.

## TIME LIMITS

- A. Thirty (30) minutes set-up time
- B. Two (2) hours to develop the drawing(s)
- C. One (1) hour for final evaluation

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants check in to the event area at the time and place stated in the conference program.
- B. Each participant, with one (1) assistant (an instructor, fellow student, or adult chaperone), is allowed thirty (30) minutes to set up and test equipment. At the end of the thirty (30)-minute set-up period, assistants are required to leave the area.
- C. Participants are given a design problem to solve during a two (2)-hour work session.
- D. Participants work independently, without assistance from evaluators, teachers, fellow participants, other students, or observers.
- E. Participants are advised to save their work onto their hard drives every fifteen (15) minutes.

- F. At the end of the session, participants save their work on their hard drives and on a USB flash drive.
- G. One (1) additional hour is spent interviewing participants and evaluating the entries from each participant's computer monitor.
- H. Participants break down and remove their equipment.


**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**


## REGULATIONS

- A. Participants provide their own systems, including hardware (only one [1] CPU and one [1] monitor are allowed per student), software, two blank USB flash drives, power strip/surge protector, 20' extension cord, and reference materials. It is not necessary to bring a printer for this event. Laptop computers are recommended; computers must be equipped with a flash drive port.
- B. Participants will be provided with sketching paper and electricity. Participants are required to provide their own pencils.
- C. Participants are not permitted to leave the event room without permission from the event coordinator. If a participant must use the restroom, s/he is accompanied by an escort.
- D. Participants are not permitted to share solutions to problems, reference materials, hardware, or software.
- E. Participants identify their work using only their conference identification number.
- F. All flash drives and the work they contain become the property of TSA, Inc., and will not be returned.
- G. Breakdown of equipment is permitted only after the work of all participants has been evaluated.

## EVALUATION

Entries are evaluated on the quality of the entry submitted for the on-site problem. Please refer to the official rating form for more information.

 Read the General Rules and Regulations in the front of this guide for information that applies to all of TSA's competitive events.

 Participants must provide—and bring to the event site—two (2) pencils (sharpened standard #2/HB grade with an eraser, or #2 mechanical with an eraser) for this competition.

## STEM INTEGRATION

This event aligns with the STEM educational standards noted below. Please refer to the STEM Integration section of this guide for more information.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## PRIMARY LEADERSHIP SKILLS

Leadership skills promoted in this event:

- COMMUNICATION — Students use CAD to communicate and design. Suggested leadership activities: *Chefs in the Kitchen* and *Communication Breakdown*
- CREATIVE THINKING — Students create representations of ideas. Suggested leadership activities: *Open Minded* and *Around the World*
- EVALUATION — Students evaluate a design according to requirements. Suggested leadership activities: *Evaluation Methods* and *The Great Evaluate*

Additional leadership skills promoted in this event:

- Problem-solving
- Teamwork

## TSA AND CAREERS

This competition connects to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and The 16 Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Engineer
- Automobile designer
- CAD professional
- Machine designer



# CAD FOUNDATIONS

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, one (1)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. One (1) ream of 8½" x 11" white copier paper
- C. Statement of problem as a hard-copy sketch, fifty (50) copies or more, as needed
- D. Tables and chairs for event coordinator, evaluators, and participants

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. At least one (1) hour before the event is to begin, meet with evaluators and assistants to review time limits, procedures, regulations, evaluation, and all other details related to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. As participants arrive, check the entry list and assign them to work stations. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis



and only when the lateness is caused by events beyond the participants control.

- E. Begin the event at the scheduled time. (All participants and evaluators should be in the room at this time.) Participants not present may be disqualified. In order to compete, participants must be on the entry list or must have CRC approval.
- F. Allow thirty (30) minutes for participants and their assistants (no more than one [1] per participant) to set up equipment. At the end of the thirty (30)-minute set-up time, non-participants are required to leave the event area. Review with the participants the time limits, procedures, regulations, and protocol of the event.
- G. Remind participants to save their work at regular time intervals.
- H. Distribute copies of the CAD problem. Answer any appropriate questions concerning the problem. Begin the event and announce the ending time.
- I. During the event, evaluators and assistants monitor and evaluate participant progress and work.
- J. Announce the time remaining to work at one (1) hour, thirty (30) minutes, fifteen (15) minutes, and five (5) minutes before time is called.
- K. When time is called, participants stop and save their work on their hard drives and on their USB flash drives.
- L. Each entry must include the participant's identification number.
- M. Participants remain at their computers for up to one (1) hour as evaluation of the entries is completed.
- N. Evaluators determine the ten (10) finalists.
- O. For participants who violate the rules, the decision either to 1) deduct 20% of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and a CRC manager; who all must initial either of these actions on the rating form.
- P. Breakdown of equipment is permitted only after the work of ALL participants has been evaluated.
- Q. Submit the finalist results and all related forms in the results envelope to the CRC room.
- R. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

<b>CAD FOUNDATIONS</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Solution to problem (40 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Design</b> (X1)	The drawing as presented does not create an effective model for the problem assigned.	The layout and design of the drawing as presented are somewhat effective in modeling the problem assigned.	The layout and design of the drawing completely and effectively model the problem assigned.
<b>Functionality</b> (X1)	The design as drawn lacks order of direction and is impractical.	The design is somewhat practical in directional flow and overall organization.	The design is completely effective, practical, and functional.
<b>Originality</b> (X1)	The design drawing provides no quality of newness or deviation from tradition.	The design drawing shows some attempt to be creative and less non-traditional.	The design drawing provides a unique and creative quality of newness that departs from tradition.
<b>Aesthetics</b> (X1)	The design is unappealing and fails to "capture the eye" of the observer.	The design is somewhat pleasing and appealing and attempts to capture the observer's attention.	The design as drawn is pleasing and appealing and effectively draws attention to its appearance/beauty.
<b>SUBTOTAL (40 points)</b>			
Layout (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Correct geometry</b> (X2)	The correct views and orientation have not been selected or used throughout the drawing process and final layout.	Most of the views and orientation selected and used are correct and in the proper layout.	All of the views and orientation that have been selected and used are correct and in the proper layout.
<b>Detailing</b> (X1)	Many of the details are missing or placed incorrectly.	Most of the details are included and are correctly placed.	All necessary details are included and correctly placed.
<b>Lettering</b> (X1)	The choice of font style, size, color, and application is inappropriate for the drawing assignment.	The choice of font style, size, color, and application is appropriate, with few inconsistencies/variations.	The choice of appropriate font style, size, color, and application is clearly evident and applied consistently.
<b>Dimensioning</b> (X1)	Many of the necessary dimensions are missing and/or placed incorrectly.	Most of the required dimensions are included and placed correctly.	All of the necessary dimensions are included and correctly placed.
<b>Scale</b> (X1)	The scale selected for the drawings is incorrect and not properly noted.	The scale for some or most aspects of the drawings is correct and properly noted.	The scale selected for all aspects of the drawings is correct and properly noted.
<b>SUBTOTAL (60 points)</b>			

Record scores in the column spaces below.



Engineering Application (20 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Application of practices</b> (X1)	Many, if not most, of the engineering practices selected and used are incorrectly applied.	Most of the engineering practices selected and used are correctly applied.	All of the engineering practices selected and used are correctly and appropriately applied.
<b>Appropriate use of conventions</b> (X1)	There is little or no evidence of appropriate application of engineering conventions in the completed design and drawings.	There is some evidence of effective application of engineering conventions in the completed design and drawings.	There is clear evidence of an effective and knowledgeable application of engineering conventions in the completed design and drawings.
			<b>SUBTOTAL (20 points)</b>
Software Utilization (20 points)			
<b>CAD functions</b> (X1)	There is little evidence of an understanding and application of CAD functions.	There is evidence of a general understanding and effective application of CAD functions.	A complete and effective understanding and application of CAD functions is evident.
<b>CAD features</b> (X1)	There is little evidence of an understanding and application of CAD special features.	There appears to be a general understanding and application of CAD special features.	There is complete understanding and application of the various special features of CAD.
			<b>SUBTOTAL (20 points)</b>

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (140 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_





## OVERVIEW


Participants conduct research on a selected technology-related career and use this knowledge to prepare a letter of introduction and a chronological skills resume. Semifinalists participate in a mock interview.

In 2016, students choose one (1) of these careers:

- Civil engineer
- IT manager
- Computer programmer
- Project manager

In 2017, students choose one (1) of these careers:

- Environmental engineer
- Cloud infrastructure architect
- Bioengineer
- Computer repair technician

 Ever wonder what it takes to have a great career in a technology-related field? This event provides the chance to find out first-hand!

## ELIGIBILITY

Participants are limited to one (1) individual per chapter.

## TIME LIMITS

- A. Research must be conducted during the current school year.
- B. Semifinalists participate in a mock interview of approximately ten (10) minutes.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. In preparation for this event, participants thoroughly research the selected career and must be able to answer job-specific questions. Students enter this event with the following scenario in mind:



1. You have graduated from high school and have the appropriate level of education and training (four [4]-year college, technical school, certification and training, etc.) for an entry-level position that is required for successful employment in your selected career.
  2. Your training, education, and other qualifications for the entry-level position are realistic for successful employment in your chosen career and are reflected in your resume and letter of introduction.
- B. Participants report to the event area at the time and place stated in the conference program.
  - C. Each participant brings a completed resume and letter of introduction (in a plain 9" X 12" envelope) to the event area. For security purposes, each participant should use fictitious home contact information, Social Security number, and telephone number when completing the documents.
  - D. Entries are reviewed by evaluators to determine the twelve (12) semifinalists. Neither students nor advisors are present at this time.
  - E. A semifinalist list in random order is posted.
  - F. Semifinalists report to the event area at the time and place stated in the conference program to schedule and participate in a mock interview.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### REGULATIONS

- A. The resume and letter of introduction must be completed prior to the event.
- B. The resume must be typed and is limited to two (2) single-sided, 8½" x 11" pages.
- C. The letter of introduction (which must include an opening, body, and conclusion) must be typed and is limited to one (1) single-sided, 8½" x 11" page.



- D. Each participant brings into the event area only the resume and letter of introduction (in the envelope). The envelope will be turned in to the event coordinator.
- E. Only participants are allowed in the event area.

### **EVALUATION**

Evaluation is based on the quality of the resume, letter of introduction, and—for semifinalists—the mock interview. All scores carry over to the final score. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students communicate effectively to judges, or “employers,” in a genuine and convincing manner. Use leadership activities: *Communication Breakdown* and *Take Action*
- Creative thinking: Students create a fictional, yet realistic persona and background. Use leadership activities: *And the Next Contestant Is...* and *Fashion Forward*
- Organization: Students develop an organized, concise, informative resume and letter of application. Use leadership activities: *Report It* and *Story Creation*

Additional leadership skills promoted in this event:

- Ethics
- Self-esteem

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

Careers will vary, based on the student’s area of interest.

# CAREER PREP

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more for written entries
- C. Evaluators, two (2) or more for mock interviews (preferably the same evaluators who reviewed the written entries)
- D. Assistants, two (2)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick on labels for identifying entries
  - 5. Marking pens for evaluators
  - 6. Results envelope with coordinator forms
- B. Interview questions appropriate to the annual selection of technology-related careers
- C. Stapler and staples
- D. Tables and chairs for event coordinator, evaluators, and participants

### RESPONSIBILITIES

#### Resume and letter of introduction

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Meet with assistants and evaluators to review time limits, procedures, and regulations. If questions arise that cannot

be answered, speak to the event manager before the event begins.

- D. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- E. Each entry must include the participant's identification number in the upper right-hand corner of the entry.
- F. Evaluators determine twelve (12) semifinalists.
- G. Submit semifinalist results to the CRC for posting.

### **Mock interview**

- A. Inspect the area(s) in which the interviews will be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- B. Meet with your evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- C. Each student is interviewed by the evaluators.
- D. Evaluators review and determine the ten (10) finalists, discussing and breaking any ties.
- E. Submit the finalist results, and all related forms in the results envelope to the CRC room.
- F. If necessary, manage security and the removal of materials from the area.

# CAREER PREP

**2016 & 2017 OFFICIAL RATING FORM**
**MIDDLE SCHOOL**

## Letter of Introduction (40 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Introduction</b> (X1)	Introduction fails to describe the participant, and/or does not clearly identify the position or reason for contact, and/or does not indicate how the position was discovered, and/or does not indicate interest, and/or does not grab the employer's attention.	Introduction describes many of the elements (e.g., participant description, how the position was identified, reason for applying, etc.) and briefly addresses others (e.g., how the position was discovered, interest level, etc.), resulting in an adequate introduction.	Introduction incorporates all elements—the participant, the position or reason for contact, how the position was discovered, and genuine interest in the position—and ultimately grabs the employer's attention.
<b>Body</b> (identification of skills) (X1)	Participant fails to identify any skills or qualifications, does not explain interest, and does not indicate how his/her skills would provide benefit to the company.	Participant indicates his/her skills, with a general explanation of how the skills relate to the position at hand; participant conveys interest, and briefly connects the skills to benefits for the company.	Participant provides one or two strong qualifications and clearly relates these skills to the job at hand; participant clearly explains how his/her interest and skills can benefit the company.
<b>Conclusion</b> (X1)	The conclusion does not include a thank-you to the employer and/or, does not note contact information, is not assertive, and/or lacks mention of follow-up after a given period of time.	The conclusion may or may not include a thank-you and follow-up to the employer with contact information; overall, it is adequate.	The conclusion includes a thank-you to the employer for his/her time and the applicant's contact information; it is assertive and mentions a method of follow-up within a given period of time.
<b>Overall writing quality and grammar</b> (X1)	Writing does not make sense; participant has written too much or too little; there are multiple spelling and grammatical errors.	Writing is average, and includes relevant information and content; it is somewhat convincing to an employer; there are minor spelling or grammatical errors.	Writing flows well, is clear, concise, and gets right to the point; it is convincing and contains no spelling or grammatical errors.

**SUBTOTAL (40 points)**

## Resume (30 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Audience and purpose</b> (X1)	Resume does not address a particular audience; the purpose is not clearly stated; revision is needed.	Audience and purpose are generally implied; the resume is somewhat tailored to the employer.	Audience is clearly addressed and the resume is tailored to the employer; the purpose is clearly stated.
<b>Presentation and format</b> (X1)	Resume does not have a clear design format; headers are not used or are used incorrectly or inappropriately; resume does not use reverse chronological format.	Resume attempts (and partially succeeds) to use a reverse chronological format; headers are used for a somewhat professional and concise presentation.	Resume follows a reverse chronological format; it uses clear and appropriate headers to organize information; it has a professional appearance.
<b>Language and style</b> (X1)	Participant fails to use action words; phrasing is wordy and lacks focus, and/or phrases need revision to make them concise and clear.	Participant uses some action words and some concise and clear words in parts of the resume.	Participant consistently uses strong, clear, and concise words throughout the resume; clarity of expression is consistent.

**SUBTOTAL (30 points)**

Record scores in the column spaces below.



Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

**Semifinalist Interview (50 points)**

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participant is unorganized and unprepared for the interview; an illogical explanation of the career choice is presented.	Participant is generally prepared for the interview; an explanation of the career choice is communicated and generally organized.	Interview is logical, well organized, and easy to follow; the career choice is communicated in an organized and concise manner.
<b>Knowledge</b> (X2)	Participant seems to have little understanding of the concepts in the career choice; answers to questions may be vague.	Participant exhibits an understanding of the concepts in the career choice.	Participant shows clear evidence of a thorough understanding of the career choice.
<b>Delivery</b> (X1)	Participant is verbose and/or uncertain in the interview; participant's posture, gestures, and lack of eye contact diminish the interview.	Participant is somewhat well-spoken and clear in the interview; participant's posture, gestures, and eye contact are acceptable in the interview.	Participant is well-spoken and distinct in the interview; participant's posture, gestures, and eye contact result in a polished, natural, and effective interview.
<b>Articulation</b> (X1)	Interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided about the career choice.	Interview is somewhat logical, easy-to-follow, and/or there is sufficient information provided describing the career choice.	The interview is clear and concise, and there is ample information provided about the career choice.
			<b>SUBTOTAL (50 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (120 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_





# CATAPULT DESIGN

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## OVERVIEW

Participants design and produce a working catapult, within specified guidelines, that is adjustable and propels hollow plastic practice golf balls (weighing about 14.5 grams each) at a scoring target between 15' and 25' away.

## ELIGIBILITY

Participants are limited to three (3) teams of up to four (4) individuals per state.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. The catapult and design portfolio must be picked up at the designated time at the conclusion of the event.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants check in their entries at the time and place stated in the conference program.
- B. Catapults are inspected by evaluators to determine among other things, safety. Catapults that meet all Go/No-Go regulations will be approved for the performance stage of the event. Any unsafe devices will be disqualified. (Unsafe catapults include those with parts that detach during operation or those with a dangerous rotation or throwing motion, either of which could cause harm or damage.) Judges will make a final determination about the operational safety of a catapult.
- C. If an entry's catapult is approved for the performance stage of the event, the entry's design portfolio will be evaluated.
- D. A time sheet will be provided for sign up at check-in.

- E. Students must be present for the performance stage of the event.
- F. Teams will receive a bucket of three (3)-dozen hollow plastic practice golf balls (each weighing approximately 14.5 grams) for the performance stage.
- G. Students must bring and wear safety glasses for this stage of the event.
- H. One (1) team member will use a 25' tape measure for measuring and recording the distance from the catapult to the target as it is set for the given test day.
- I. The team will be given five (5) minutes to adjust its catapult for accuracy to that distance.
- J. Teams will position their catapult on the "firing line" and wait for the command to fire.
- K. Multiple teams with different colored hollow plastic practice golf balls will launch at the same time.
- L. When teams receive their bucket and the fire command is given, they will have one (1) minute to launch as many hollow plastic practice golf balls as possible to accumulate as many points as possible in the net. Each team must cease firing at one (1) minute. No shots made after time has been called will count.

- M. The center of the scoring net (red circle) will be approximately 15' from the launching area. The scoring net will consist of a golf chipping target and three (3) color-coded scoring sections. The red center target is 10" in diameter, the green is 25" in diameter, and the blue target is 40" in diameter.



- N. Scoring is as follows: red target, 5 points; green target, 2 points; blue target, 1 point.
- O. Hollow plastic practice golf balls must enter the target on the fly and be fully in the scoring net to score points. No points will be earned for bounced-in or half-in/half-out hollow plastic practice golf balls.
- P. Ties will be broken as follows: 1) the team with the highest score and least amount of hollow plastic practice golf balls in the target, and/or 2) the team with the shortest time recorded to score the most points.



- Q. Final ranking will be determined from points earned 1) for the design portfolio and 2) the catapult's performance.
- R. Lack of catapult compliance may result in disqualification.
- S. Team members must collect all hollow plastic practice golf balls once judges complete recording points and before leaving the event area.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information can be found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Each team must record its research and development process—from inception through testing and modification—to the performance stage for competition. This documentation should be submitted as a design portfolio, complete with sketches, pictures, and descriptions of the processes, successes, and failures related to the designed catapult.
- B. Documentation materials (comprising the "design portfolio") are required and should be secured in a clear front report cover. The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  1. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
  2. Table of contents
  3. Materials list; one (1) page
  4. Details of the research and inspiration to help determine the design for a catapult
  5. A design log (that includes testing and adjustment notes) from the start date to the present; pages as needed
  6. Sketches and pictures of the design process; pages as needed
- C. Participants must bring and wear safety goggles during the performance stage of the event.
- D. Teams must provide their own tape measure (at least 25' length).
- E. The catapult may be no larger than 2' tall x 2' long x 1.5' wide.
- F. The base of the catapult should accommodate the provided ballast. The ballast will be one (1) 50-pound bag of playground sand, provided by TSA on site.



- G. The catapult must operate completely within the given area; the launch arm may extend beyond the front of the catapult only while launching.
- H. The catapult may have any type of spring mechanism to power the arm, but all parts must be contained within the 2' tall x 2' long x 1.5' wide maximum footprint prior to launch.
- I. The catapult's total weight must not exceed fifteen (15) pounds.
- J. All parts of the catapult must initiate behind the launch line, but parts may extend over the line during and after the last launch.
- K. The catapult cannot have wheels.
- L. The catapult must be made entirely from PVC pipe, with the exception of the launch mechanism, firing mechanism, fasteners, and safety items. These items may be wood or metal and must be constructed in a safe way, so as not to damage the device, the testing area, or cause harm to others.
- M. The following may not be used:
  - 1. Glass
  - 2. Flammable, corrosive, or explosive materials
  - 3. Compounds that produce odors or gases
- N. The catapult must have at least a five (5)-foot pull cord to launch from a safe distance.
- O. When the catapult is on display or not in the performance stage, it must be fully disabled and unable to be readied for firing.
- P. Catapult Go or No-Go Compliance

**A catapult that receives a "No" answer to any of the requirements below will not advance to the performance stage of the event.**

- 1. Does the team have safety goggles? . . . . . (Yes/No)
- 2. Can the catapult be weighed down with a sand bag? . . . . . (Yes/No)
- 3. Is the catapult within the size specifications? . . . . . (Yes/No)
- 4. Is the catapult built with the correct materials? . . . . . (Yes/No)
- 5. Does the catapult launch with a pull cord? . . . . . (Yes/No)
- 6. Does the catapult have a safe launching mechanism? . . . . . (Yes/No)
- 7. Is the catapult safe to operate? . . . . . (Yes/No)

**EVALUATION**

Evaluation is based on the portfolio and points earned for the catapult's performance. Please refer to the official rating form for more information.

## STEM INTEGRATION

This event has connections to the STEM areas noted below.  
Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Critical thinking: Students learn and use necessary skills in order to design an efficient and accurate catapult. Use leadership activities: *Guess The Famous Leader* and *Rebus Puzzles*
- Evaluation: Students improve the catapult based on testing and adjustment. Use leadership activities: *Grading the Advertisement* and *The Great "Evaluate"*
- Problem solving: Students construct a catapult that is accurate and meets all requirements. Use leadership activities: *Finding A Way* and *Resolving Conflict*

Additional leadership skills promoted in this event:

- Communication
- Team building
- Decision making
- Organization

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Designer
- Industrial designer
- Industrial engineer
- Mechanical engineer
- Modeler

## CATAPULT DESIGN EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two to three (2-3) to assist with check-in and management of the performance stage of the event (preferably one (1) per catapult being tested simultaneously).

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries (one for the catapult and one for the design portfolio)
  - 5. Performance record sheet
  - 6. Results envelope with coordinator forms
- B. Up to four (4) golf scoring chipping targets (one per catapult on the firing line at the same time)
- C. Up to four (4) baskets or buckets large enough to hold the different colored hollow plastic practice golf balls
- D. Four (4) sets of different colored hollow plastic practice golf balls
- E. Up to four (4) bags of playground sand, each 50 pounds in weight
- F. Tape to mark the firing line
- G. Tape measures for all evaluators
- H. Bathroom weight scale
- I. Rope/stanchions or saw horses covered with plastic sheeting (in a semicircle behind the targets to control loose hollow plastic practice golf balls in the area)
- J. Tables for displaying and evaluating catapults

## RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in. Secure the entries in the designated area.
- D. Each entry (catapult and design portfolio) must include the participant's identification number in the upper right-hand corner of the entry. Position entries for evaluation and viewing. Secure the entries in the designated area.
- E. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Assist the evaluators as needed as they review the catapults and design portfolios.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Begin the performance stage at the posted time.
- I. One assistant will manage the stop watch to begin ("Fire") the one (1)-minute time and to end ("Stop") the testing period.
- J. Position another assistant at each target to calculate the score for each team performing.
- K. Evaluators determine the ten (10) finalists. Evaluators should break any ties, as necessary.
- L. Submit the finalist results and all related forms in the results envelope to the CRC room.



- M. If necessary, manage security and the removal of materials from the event area.





Participant/Team ID# \_\_\_\_\_

Record scores in the column spaces below.

<b>CATAPULT DESIGN</b>		
<b>2016 &amp; 2017 OFFICIAL RATING FORM</b>		<b>MIDDLE SCHOOL</b>
<b>Catapult Design Specifications Compliance Go or No-Go</b>		
A catapult that is marked No-Go for any of the requirements below will not advance to the performance stage of the event.		
Team members must have safety goggles.	<b>Go</b>	<b>No-Go</b>
The catapult can be weighed down with a sand bag.	<b>Go</b>	<b>No-Go</b>
The catapult is the correct size.	<b>Go</b>	<b>No-Go</b>
The catapult is built with the correct materials.	<b>Go</b>	<b>No-Go</b>
The catapult launches with a pull cord.	<b>Go</b>	<b>No-Go</b>
The catapult has a safe launching mechanism.	<b>Go</b>	<b>No-Go</b>
The catapult is safe to operate.	<b>Go</b>	<b>No-Go</b>

<b>Design Portfolio (50 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Portfolio</b> (X1)	Portfolio is unorganized and/or missing three or more components.	Portfolio has most components, and it is somewhat organized.	One or no components are missing in the portfolio, and content and organization are clear.
<b>Research</b> (X1)	There is little evidence of research to help determine the design for a catapult.	Some research is present to help determine the design for a catapult.	Ample and thorough research to help determine the design for a catapult is evident.
<b>Design log</b> (X2)	Design log lacks information about the design process (including testing and adjustments) for the final catapult.	Design log adequately conveys the design process (including testing and adjustment) for the final catapult.	Design log provides thorough and quality information about the design process (including testing and adjustments) for the final catapult.
<b>Sketches and pictures</b> (X1)	Sketches and/or pictures do not help illustrate the design process.	Sketches and/or pictures are appropriate and help illustrate the design process.	Sketches and/or pictures are of excellent quality and thoroughly illustrate the design process.
			<b>SUBTOTAL (50 points)</b>
<b>Catapult Performance</b>			
	# Hollow Plastic Practice Golf Balls	Score	
Red target - 5 points each			
Green target - 2 points each			
Blue target - 1 point each			
<b>PERFORMANCE SUBTOTAL</b>			



Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL SCORE**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_



# CHALLENGING TECHNOLOGY ISSUES

## OVERVIEW

Team members work together to prepare and deliver an extemporaneous, debate-style presentation with participants explaining opposing views of a current technology issue. The issue is randomly selected on site.

## ELIGIBILITY

Participants are limited to three (3) teams of two (2) individuals per state.

## TIME LIMITS


- A. Team preparation time for the presentation is limited to fifteen (15) minutes.
- B. The team presentation must be a minimum of two (2) minutes up to a maximum of four (4) minutes.
- C. Both members of a team must be present at the time stated in the conference program.


## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants report to the event area at the time and place stated in the conference program to receive an assigned presentation time.
- B. Teams report to the preparation room at their assigned time.
- C. Using a random draw procedure, the coordinator will draw one (1) topic from those listed in the sidebar on the next page. (The topics will be written on individual slips of paper; they will be shuffled and the drawing will occur in the presence of the judges.)

 Successful participants should plan on a presentation that involves speaking for a minimum of two (2) minutes, up to a maximum of four (4) minutes. Participants should maintain eye contact with the audience throughout the presentation!

 Topics will be chosen from the following:

- the United States government's monitoring of its citizen's communication (phone calls, emails, and other types)
- societal and political impacts of television, computers, the Internet, and cell phones
- the potential lasting influence created through the vivid exposure to violent computer games
- the danger associated with establishing online friendships in good faith that may lead to an unsuspected outcome

- D. At the end of the fifteen (15)-minute preparation time, each team will be escorted to the presentation room where the team will present opposing views of the selected issue.
- E. Evaluators determine the semifinalist teams. A semifinalist list, will be posted.
- F. Semifinalist teams report to the preparation room at their assigned time for the same procedure used in the preliminaries.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### REGULATIONS

- A. Team members may bring non-electronic reference materials for use while in the preparation room. No other form of assistance is allowed.
- B. Students must provide their own pencils or pens for this event.
- C. Note cards may be used during the presentation; however, the use of note cards may result in score deductions if they detract from the effectiveness of the presentation.
- D. The coordinator will draw one (1) topic from the topics listed in the sidebar on this page.
- E. Each team states the selected issue when prompted by the evaluators. After stating the selected issue, the presentation time will begin once a team member begins to speak.
- F. Teams present opposing views of the selected issue in debate style. Teams may use the following suggested format to present opposing views:

Introduction (pro)	Introduction (con)
Position (pro)	Position (con)
Conclusion (pro)	Conclusion (con)



- G. A timekeeper will notify a presenting team thirty (30) seconds before the end of the four (4)-minute time limit by holding up a “30-seconds remaining” card. Time is called at four (4) minutes, at which time the presentation must stop. No overtime speaking is allowed.

### **EVALUATION**

Evaluation is based upon the effective presentation of opposing views of an issue. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students communicate genuinely and effectively as public speakers. Use leadership activities: *Acting Out!* and *Communication Breakdown*
- Creative thinking: Students extemporaneously produce original thoughts and ideas regarding an issue. Use leadership activities: *And the Next Contestant Is...* and *Open Minded*
- Teamwork: Students work efficiently, effectively, and equally with a partner to address both viewpoints of an issue. Use leadership activities: *Bozo's Balloons* and *Jump Rope*

Additional leadership skills promoted in this event:

- Critical thinking
- Ethics
- Evaluation

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Lobbyist
- Management executive
- Motivational speaker
- Politician
- Public policy specialist



# CHALLENGING TECHNOLOGY ISSUES EVENT COORDINATOR INSTRUCTIONS

## PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two (2) per preparation room
- D. Timekeeper, one (1) per presentation room

## MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. Lined paper and 3" x 5" note cards
- C. Stopwatch, one (1) per preparation room and one (1) for the presentation room
- D. Written issue selections
- E. A card with "30 seconds remaining" printed clearly, one (1) per presentation room
- F. Tables and chairs for event coordinator, evaluators, and participants

## RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.



- D. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- E. When the teams report to the event area, assign times for their presentations. Times should be scheduled at ten (10)-minute intervals. Depending upon the number of entries, heats may be necessary to determine semifinalists.
- F. After each team reports to the preparation room at the assigned time and participants have been seated, review the time limits and distribute paper and note cards.
- G. Present the team with the topic selected.
- H. Start the time and inform participants of the end of the preparation time.
- I. Monitor students during the preparation time and supply extra paper if needed.
- J. At the end of the fifteen 15-minute preparation time, collect the topic and escort the team to the presentation room.
- K. After the team is in position, introduce the team by entry number only.
- L. Evaluators tell the team to begin and start timing the event.
- M. The timekeeper notifies the team thirty (30) seconds before the end of the four (4)-minute time limit by holding up a “30 seconds remaining” card. Time is called at four (4) minutes, at which point the speakers must stop.
- N. Evaluators score each team and determine twelve (12) semifinalist teams.
- O. Submit semifinalist results to the CRC for posting and assign a time for each team's final presentation.
- P. Remove all materials from the event area and return the coordinator's packet with its contents to the CRC room for safekeeping until time for the final portion of the competition.
- Q. When the semifinalist teams report to the presentation room at their assigned times, follow the same procedure used in the preliminaries.
- R. Evaluators determine the ten (10) finalist teams.
- S. Submit the finalist results and all related forms in the results envelope to the CRC room.





- T. If necessary, manage security and the removal of materials from the area.



Participant/Team ID# \_\_\_\_\_

<b>CHALLENGING TECHNOLOGY ISSUES</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Pro Side (70 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Introduction</b> (X1)	Introduction does not show an attempt to get the attention of the audience, and/or it does not outline points clearly and distinctly.	Introduction shows an effort to grab attention of the audience; previewing points are somewhat organized in a logical manner.	Introduction employs an attention-getter, clearly states the thesis, and previews main points of the issue.
<b>Organization</b> (X1)	Ideas may not be focused or developed; the main purpose is not clear; transitions may be needed.	Main idea is evident, and the organizational structure is generally strong; ideas are relevant and flow smoothly; the purpose is satisfactorily stated.	Ideas are clearly organized, developed, and supported.
<b>Topic knowledge</b> (X1)	Team does not have a grasp of the topic; inaccurate, generalized, or inappropriate support material is used; over dependence on notes is evident.	Team has a general grasp of the topic; support material is adequate; the team is at ease when it elaborates on the topic.	Team exhibits a clear grasp of the topic; support material is introduced and referenced accurately; the team demonstrates full knowledge of the topic.
<b>Conclusion</b> (X1)	Conclusion ends abruptly (no logical and/or organized conclusion presented); it does not restate main points of the position.	Conclusion is generally engaging; it restates main points and wraps up with reference to the topic.	Conclusion restates main points of the topic in a summative yet fresh way; the position is well stated and closes with a connection to the introduction.
<b>Voice and language</b> (X1)	Vocabulary choice may be limited; speech is peppered with slang or jargon; presentation is too effusive or too dull; language is questionable or inappropriate for the setting.	Presentation is respectful and/or inoffensive; language is appropriate for the setting and word choices are generally precise.	Language is appropriate for the setting and free of bias; vocabulary choices are vivid and precise.
<b>Delivery</b> (X2)	Delivery detracts from the message; eye contact may be limited; presenters may tend to look at the floor, mumble, speak inaudibly, fidget, or read from cards; gestures and movements may be excessive.	Delivery is generally appealing; some hesitancy may be observed; posture, eye contact, gestures, facial expressions, volume, pace, etc. do not detract from the message.	Delivery is extemporaneous, natural, confident, and enhances the message; posture, eye contact, gestures, facial expressions, volume, pace, etc. indicate confidence.
<b>SUBTOTAL (70 points)</b>			

Record scores in the column spaces below.



Con Side (70 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Introduction</b> (X1)	Introduction does not show an attempt to get the attention of the audience and/or does not outline points clearly and distinctly.	Introduction shows an effort to grab attention of audience; previewing points are somewhat organized in a logical manner.	Introduction employs an attention-getter, clearly states the thesis, and previews main points of the issue.
<b>Organization</b> (X1)	Ideas may not be focused or developed; the main purpose is not clear; main points are difficult to identify; transitions may be needed.	Main idea is evident, and the organizational structure is generally strong; ideas are relevant and flow smoothly; the purpose is satisfactorily stated.	Ideas are clearly organized, developed, and supported.
<b>Topic knowledge</b> (X1)	Team does not have a grasp of the topic; inaccurate, generalized, or inappropriate support material is used; over dependence on notes is evident.	Team has a general grasp of the topic; support material is adequate; the team is at ease when it elaborates on the topic.	Team exhibits a clear grasp of the topic; support material is introduced and referenced accurately; the team demonstrates full knowledge of the topic.
<b>Conclusion</b> (X1)	Conclusion ends abruptly (no logical and/or organized conclusion presented); it does not restate main points of the position.	Conclusion is generally engaging; it restates main points and wraps up with reference to the topic.	Conclusion restates main point of the topic in a summative yet fresh way; the position is well stated and closes with a connection to the introduction.
<b>Voice and language</b> (X1)	Vocabulary choice may be limited; speech is peppered with slang or jargon; presentation is too effusive or too dull; language is questionable or inappropriate for the setting.	Presentation is respectful and/or inoffensive; language is appropriate for the setting and word choices are generally precise.	Language is appropriate for the setting and free of bias; vocabulary choices are vivid and precise.
<b>Delivery</b> (X2)	Delivery detracts from the message; eye contact may be limited; presenters may tend to look at the floor, mumble, speak inaudibly, fidget, or read from note cards; gestures and movements may be excessive.	Delivery is generally appealing; some hesitancy may be observed; posture, eye contact, gestures, facial expressions, volume, pace, etc. do not detract from the message.	Delivery is extemporaneous, natural, confident, and enhances the message; posture, eye contact, gestures, facial expressions, volume, pace, etc. indicate confidence.
<b>SUBTOTAL (70 points)</b>			
Participation (10 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Team member participation</b> (X1)	One team member does the majority of the speaking and/or debating on the topic; the other seems disengaged from the presentation.	Both team members are engaged in the debate, but one clearly takes the lead; the other only replies to or refutes statements.	Both team members are actively involved in the presentation, debate, and rebuttals of the topic; shared responsibility is evident throughout.
<b>SUBTOTAL (10 points)</b>			



Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (150 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_

## OVERVIEW

Participants take a written parliamentary procedures test in order to qualify for the semifinals, in which they perform an opening ceremony, dispose of five (5) items of business, and perform a closing ceremony within a specified time period.

## ELIGIBILITY

Participants are limited to one (1) team of six (6) members per chapter. Team members do not have to be elected officers of the local chapter. Teams that take the written test and advance to the semifinalist portion of the event must be comprised of the same six (6) members.


## TIME LIMITS


- A. All teams are allowed one (1) hour to complete a written parliamentary procedures test.
- B. Semifinalist teams have fifteen (15) minutes with no penalty and up to seventeen (17) minutes with penalty (see below) to complete required parliamentary actions, items of business, set-up time, and a presentation. The time begins when the team is handed the prompt; the time ends when the gavel is rapped to close the meeting, or at seventeen (17) minutes. (At that point all team members other than the secretary must leave the room). The secretary will then have five (5) additional minutes to complete the minutes of the meeting. Teams are penalized five (5) points per thirty (30) seconds for going over the allotted time, based on the following scale:


### Time over fifteen (15) minutes    Penalty


15:01 to 15:30	five (5) points
15:31 to 16:00	ten (10) points
16:01 to 16:30	fifteen (15) points
16:31 to 17:00	twenty (20) points

No team may go beyond seventeen (17) minutes.

 Chapter Team is one of TSA's most popular events, attracting as many as 400 participants (middle and high school combined) at the national conference.

 Read the General Rules and Regulations in the front of this guide for information that applies to all of TSA's competitive events.

 For a complete description of TSA competition attire, be sure to read the National TSA Dress Code section in the front of this guide. Especially note the specific attire requirements for Chapter Team.

 Participants must provide—and bring to the test site—two (2) pencils (sharpened standard #2/HB grade with an eraser, or #2 mechanical with an eraser) for any competition that involves a written test.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required. Note the specific attire requirements for Chapter Team.

## PROCEDURE

- A. Participants report for the written test at the time and place stated in the conference program.
- B. A written parliamentary procedures test is administered at the same time to all team members.
- C. Twelve (12) teams with the highest averaged scores are selected as semifinalists for the oral presentation. A semifinalist list in random order is posted.
- D. Semifinalists teams report for oral presentations at the time and place stated in the conference program.
- E. Each team follows the procedure for opening and closing a local chapter meeting. Each team follows an order of business to dispose of five (5) given parliamentary items or actions provided by the event coordinator and then closes the meeting according to the prescribed procedure. Concerning the reading of the TSA Creed by the secretary during the closing ceremony, a chapter has the option to recite the creed using one (1) or more of its team's members.


**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Team members take the written test individually.
- B. Teams consist of a president, vice president, secretary, treasurer, reporter, and sergeant-at-arms.
- C. The semifinalist portion of the event includes the call to order, pledge to the flag, roll call, order of business, and closing ceremony.
- D. Written materials, other than those provided by National TSA, may not be taken in the event room.



- E. A set of secretary's minutes, a treasurer's report, a copy of the TSA Creed, and a list of parliamentary actions are provided by the event coordinator when the team members enter the performance room. The event coordinator will also supply each team with paper, six (6) pens, a calculator, and six (6) 3" x 5" note cards.
- F. Any team that fails to appear at the designated time is placed at the end of the list and allowed to participate at the discretion of the evaluators and event coordinator if time permits.
- G. Officer symbols and gavel (only) are placed on a long table with the United States flag standing to the right of the president's rostrum and the host state flag to the left. The president's rostrum should be centered between the two (2) flags. The symbols of the officers should be placed in front of the respective officers. The host state banners are optional and do not add to or subtract from a team's score.
- H. A timepiece and/or a non-programmable calculator may be used by a team if desired.
- I. Semifinalist teams have a time limit of fifteen (15) minutes to complete required parliamentary actions, items of business, set-up time, and a presentation. Official timing will begin as soon as the problem is given and will stop at the team's final gavel to end the meeting. Five (5) points will be deducted for every thirty (30)-second interval over the allotted time (see TIME LIMITS).
- J. Bonus points will be awarded for additional motions and parliamentary actions by the officers, other than the president.
- K. At the conclusion of the oral presentation, each team secretary has five (5) minutes to write a copy of chapter minutes that will be submitted to an evaluator. The coordinator will begin timing the five (5) minutes when the secretary is seated at the area designated for writing of the minutes.
- L. All materials given to team members, and the chapter minutes recorded during the presentation, must be handed to the evaluators before the team leaves the room.
- M. No reference should be made to a team's school, chapter name, city, or state. However, the state name on a TSA patch is acceptable.

 Teams are asked not to reveal their school, chapter name, or city, but a state name on an official TSA patch is acceptable.

## EVALUATION

Scores on a test of fifty (50) questions determine the individual winners of the written exam and the semifinalist teams for the oral presentation portion of the event. (Each team's average written test score is used to determine the twelve (12) semifinalist teams.) A team's average test score is included in the final results. Semifinalist teams are evaluated according to the criteria on the official rating form. Please refer to the official rating form for more information.

## NOTE

There are a number of ways to learn about parliamentary procedure. The standard reference is *Robert's Rules of Order, Newly Revised*. Information about parliamentary procedure websites may be found online at [www.rulesonline.com/parliamentary\\_procedure\\_websites.htm](http://www.rulesonline.com/parliamentary_procedure_websites.htm).

For writing proper minutes, also refer to *Robert's Rules of Order, Newly Revised*.





## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Technology, Engineering

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students perform an opening and closing ceremony. Suggested leadership activities: *Listening Skills* and *Put it Together*
- Self-esteem: Students exhibit confidence during the performance portion of the event. Suggested leadership activities: *Define U!* and *Paper Plate Awards*
- Teamwork: Students effectively work together as a team. Suggested leadership activities: *Effective Meetings* and *Stepping Stones*

Additional leadership skills promoted in this event:

- Decision making
- Organization
- Problem solving

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

Careers will vary based on the student's area of interest.

## CHAPTER TEAM

# EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two (2) or more for the written test and two (2) or more for the oral presentations
- D. Timekeeper

### MATERIALS


- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Copies of parliamentary procedures test
  - 5. Opening and closing ceremonies script
  - 6. List of parliamentary actions; six (6) for the officers and two (2) for the judges
  - 7. Copies of secretary's minutes
  - 8. Copies of treasurer's report
  - 9. Paper, pens, one (1) calculator, and six (6) 3" x 5" note cards, per team
  - 10. Results envelope with coordinator forms
- B. Officer's symbols and gavel
- C. United States flag
- D. State flag (optional)
- E. Stopwatches
- F. Table rostrum, if available
- G. One (1) long table or two (2) tables and six (6) chairs for team members
- H. One (1) table and three (3) chairs for evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the

event guidelines and check to see that enough evaluators/assistants have been scheduled.

- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and evaluators should be in the room at this time. Participants not present may be disqualified. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Administer the written test.
- F. Determine individual and team scores.
- G. Submit semifinalist results to the CRC for posting.
- H. Check in semifinalists at the time stated in the conference program. Inform the teams of their order of performance and review the procedure to be followed.
- I. When each team enters the performance room, pass out the five (5) items of business to all members. (one [1] to each member other than the president). There is no consultation between members. At this point, the team's allotted time begins.
- J. The event coordinator or an assistant is responsible for introducing each team by entry number only when the evaluators have finished with the previous team.
- K. Teams may take chapter paraphernalia (officer symbols and gavel only) into the performance room if desired, or they may use what is provided by the event coordinator.
- L. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- M. Evaluators determine the ten (10) finalists. Any ties should be broken by using the teams' written test scores.
- N. Complete and submit the finalist results and all related forms in the results envelope to the CRC room.

 Scoring on the Chapter Team test of fifty (50) questions is as follows: All six (6) team members take the written test. An average of their scores is calculated. That average is divided by five (5), and the resulting number is the score the team will receive out of ten (10) points.



- O. If necessary, manage security and the removal of materials from the area.



## CHAPTER OPENING AND CLOSING CEREMONIES

### OPENING CEREMONY

At the prescribed time for meetings, the president assumes his/her position behind the rostrum in the front center of the room. Other officers are seated to the left and right of the president. They are seated in this order from stage left to right: vice president, treasurer, secretary, president, reporter, and sergeant-at-arms.

#### Host State Banner (Optional)

**U.S. Flag Sgt.-at-Arms Reporter President Secretary Treasurer Vice Pres. State Flag**  
(Officers facing audience)

#### Audience

- President: (raps gavel twice) The meeting will please come to order. Mr./Ms. Sergeant-at-Arms, are all the officers in their places?
- Sergeant-at-Arms: They are, Mr./Ms. President.
- President: (raps three [3] times for assembly to rise) Mr./Ms. Sergeant-at-Arms, please lead the assembly in the Pledge to the Flag of the United States of America.
- Sergeant-at-Arms: (leads Pledge to the Flag)
- President: (raps once and assembly is seated) Mr./Ms. Secretary, will you please call the roll.
- Secretary: Mr./Ms. Sergeant-at-Arms.
- Sergeant-at-Arms: Present. The symbol of my office is the “hearty handshake” (officer points to symbol), and it is my responsibility to see that the assembly is comfortable and properly welcomed. It is also my duty to serve as doorkeeper for this organization.
- Secretary: Mr./Ms. Reporter.
- Reporter: Present. The symbol of my office is the beacon tower (officer points to symbol), and it is my duty to see that our school, community, and national association have a complete report of our organization’s activities.
- Secretary: Mr./Ms. President.
- President: Present. The symbol of my office is the gavel (officer points to symbol). The duties vested in me by my office are to preside at all regular and special



meetings of this organization and to promote cooperation in carrying out the activities and work of our organization. Mr./Ms. Secretary.

Secretary: Present. The symbol of my office is the pen (officer points to symbol), and it is my responsibility to see that accurate and proper records are kept of all business and correspondence of this association. Mr./Ms. Treasurer.

Treasurer: Present. The symbol of my office is a balanced budget (officer points to symbol), and it is the duty of my office to keep accurate records of all funds and see that our financial obligations are met promptly.

Secretary: Mr./Ms. Vice-President.

Vice President: Present. The symbol of my office is a star (officer points to symbol), and it is the duty of my office to see that we always have a strong membership, a good work program, and are alert to the welfare of our chapter.

Secretary: Mr./Ms. President, all officers are present and in their place.

President: Mr./Ms. Sergeant-at-Arms, do we have guests present?

Sergeant-at-Arms: if so, introduce guest(s); if not, state the following: No, Mr./Ms. President.

President: Mr./Ms. Secretary, we are ready to transact our business.

Teams dispose of the assigned business following the suggested order of business.

### CLOSING CEREMONY

President: (raps three [3] times; assembly rises) Mr./Ms. Secretary, will you please (read) or (lead us in) the TSA Creed.

Secretary: (recites the TSA Creed; when presented at state and national competitions, the creed may be presented in some more original method.)

President: Will the assembly repeat the TSA Motto after me. (Motto is spoken.) Does anyone know of any reason why this assembly should not adjourn? If not, I will entertain a motion to adjourn. (following motion to adjourn, a second, and a vote) I now declare this meeting adjourned until a special meeting is called or until our next regular meeting (raps once with gavel).



## SUGGESTED ORDER OF BUSINESS FOR CHAPTER MEETINGS

1. The president calls the meeting to order with opening ceremonies.
2. Roll call is taken and a quorum is established.
3. The secretary reads the minutes of the preceding meeting. Any necessary corrections and/or additions are made and the minutes are approved as read or corrected.
4. The treasurer's report is received as read and placed on file subject for audit. The chair so states.
5. The chairperson calls for committee and officer reports as necessary. If a committee has no report, let the committee so state.
6. Unfinished business is addressed.
7. New business is addressed.
8. The program, if any, is held at this time. The chairperson presides with the assistance of the program chairperson or the committee chairperson.
9. Announcements.
10. Adjournment with closing ceremonies.



## CHAPTER TEAM OFFICIAL MINUTES

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Team number

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Date

---

Location of conference

(Use the back of this page, if necessary)

---

Secretary's signature

Date





Participant ID#1 \_\_\_\_\_ ID#2 \_\_\_\_\_ ID#3 \_\_\_\_\_ ID#4 \_\_\_\_\_ ID#5 \_\_\_\_\_ ID#6 \_\_\_\_\_

Team ID#1 \_\_\_\_\_

# CHAPTER TEAM

2016 &amp; 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Team Written Test (10 points)

Record the scores of the six (6) team members in the boxes below. Calculate the average of their scores. Divide the average by five (5) for the score that the team will receive out of ten (10) points. Record the score in the column space to the far right.

#1	#2	#3	#4	#5	#6	
						<b>SUBTOTAL (10 points)</b>

## Business Meeting Demonstration (170 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
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Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1, X2, or X3 (or up to X5) notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points; an "exemplary" score of 7 for an X3 criterion = 21 points, etc.)

### Preparation for Meeting (30 points)

<b>Competition attire/poise</b> (X2)	Appearance is untidy; grooming is lacking; clothing is not consistent in coloration and visual appearance; shoes are the wrong color; poise is missing.	Overall appearance is neat and consistent; grooming is good, and professional appearance is adequate.	Overall appearance is cohesive, polished, professional, and businesslike.
<b>Placement of flags and officer symbols; officer seating</b> (X1)	Flags are not placed in the correct order, and/or officer symbols are not in the correct order, and/or are not aligned properly on the table, and/or not all officers are seated in the proper arrangement, resulting in a disorganized and haphazard appearance.	Placements and seating are generally businesslike and professional, with some inconsistencies (e.g., flags are in the correct order but are not aligned with other aspects of the officer gear, and/or several of the symbols are in proper order but are out of alignment, and/or officers are seated in the proper arrangement, but the chairs are misaligned, etc.).	Flags are completely aligned and in proper order and placement; officer gear is placed in the correct order and in proper alignment on the table; the seating arrangement is precise, businesslike, and professional.

### Knowledge of TSA (20 points)

<b>Opening ceremony</b> (X1)	Many items of sequence and order are incorrect; officers make several mistakes.	Officers make few, if any, sequence and order mistakes, resulting in a fairly smooth opening ceremony.	The opening is smooth and efficient; everything progresses as it should.
<b>Closing ceremony</b> (X1)	Officers make several mistakes; creed recitation is sloppy; the effort is unpolished.	Appropriate procedures are followed, with some mistakes made (e.g., creed recitation).	The closing is outstanding, with no mistakes; the presentation is very polished and professional.

### Knowledge of Parliamentary Procedure (120 points)

<b>Order of business</b> (X1)	Order of business is incorrect; officers appear confused and unprepared.	Officers follow correct order of business, but some appear distracted or unprepared.	Officers follow efficient, orderly, and correct order of business.
<b>Voting procedures</b> (X1)	Several obvious mistakes are made in voting procedures.	Only a few mistakes are made in voting procedures.	All voting procedures are correct, smooth, and efficient.

Record scores in the column spaces below.



Knowledge of Parliamentary Procedure (continued)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Debate (exclude president)</b> (X3)	Only a few officers participate effectively in the debate, which is loosely presented.	Most officers participate in the debate process, and they are generally convincing.	All officers participate in and present a very cohesive debate.
<b>Parliamentary actions</b> (X5)	Only one of the required actions is completed correctly.	Three of the actions are completed correctly, with adequate, but not inspiring, effort.	All five actions are completed correctly, with notable and inspiring effort.
<b>Communication</b> (X2)	Communication is unclear; some mumbling occurs and/or voices are too loud or too soft, and/or problems occur with verbal expression (e.g., grammar, sentence structure, etc.).	Communication is generally clear, with appropriate volume of voices and only minor problems with articulation or verbal expression.	Communication is clear, concise, and easy to understand; voices are well modulated and speakers are articulate.
<b>Chapter minutes</b> (X2)	The format of the minutes is incorrect or not complete; poor grammar and spelling errors are evident.	The format of the minutes is generally correct, with few grammar and/or spelling errors.	The minutes are formatted correctly, are complete, and have no grammar or spelling errors.
			<b>SUBTOTAL (170 points)</b>

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

<b>BONUS For additional motions and parliamentary actions (by officers other than the president)</b> (X2)	Only one or two of the additional actions is/are completed correctly; the effort is uninspiring.	Three or four of the actions are completed correctly.	All five of the supplementary actions are completed correctly in an efficient and effective manner.
			<b>SUBTOTAL (20 points)</b>

**TIME DEDUCTIONS (NO TEAM MAY GO BEYOND 17 MINUTES)**

A five-(5) point deduction will be incurred for every thirty (30)-second interval over the allotted time. Multiply the number of intervals by five (5) and record the total deduction in the column to the right.

# of intervals X 5 = \_\_\_\_\_ (total deduction)

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (200 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# CHILDREN'S STORIES

## OVERVIEW

A team creates an illustrated children's story that will incorporate educational and social values. The story may be written in a genre of choice. Examples are fables, adventures, non-fiction, fiction, and fairy tales. The story must revolve around the theme chosen for the given year. The theme will be posted on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems.

## ELIGIBILITY

Participants are limited to one (1) team per chapter. A team of one (1) is permitted.

## TIME LIMITS

Each semifinalist team will be given up to twelve (12) minutes to read its story and share its illustrations with judges, and an additional five (5) minutes to answer judges' questions.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE


- A. In preparation for the event (and throughout the story development), participants research writing and illustrating children's books and literature. Participants must cite their research sources in their documentation.
- B. Participants develop a children's story with illustrations. The illustrations must be positioned in the text in a way that best enhances the effectiveness of the story's narrative and illustrations. Participants prepare their stories and required documentation for submission. All work is submitted in a portfolio.
- C. To prepare for evaluation (as the story nears final draft stages), the team will read to, or give the story to children to read, in order for the team to assess the story's quality and impact. The children's responses will be recorded in the team's Plan of Work log.

### What is a story?

For the purposes of this event, the term "story" refers to all types of literature structures—fables, fairy tales, poems, or instructional literature—and the included illustrations.

### Who is a child?

For the purposes of this event, children are defined as those twelve years or younger.

 Children's stories can play a key role in the development of a child, and can help in the development of a child's literacy, social and psychological maturity, and understanding of the world in which we live. Stories that are designed to be read to children by adults provide the added value of intimacy and caring.


- D. Participants check in their portfolios at the time and place stated in the conference program. No more than two (2) team members drop off the team's entry.
- E. Portfolios are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.
- F. Semifinalist teams report to the event area at the time and place stated in the conference program. Semifinalists sign up for a reading and interview time.
- G. Semifinalist teams will have no more than two (2) members. One member will be the team's reader, who will read the story to the judges. The reader will be given up to twelve (12) minutes to read the story. The other team member should be prepared to discuss illustrations included in the story. Both members will participate in the interview process following the reading of the story. The interview process will last up to five (5) minutes.
- H. No more than two (2) team members pick up the team's entry from the display area at the time and place stated in the conference program.
- I. Ten (10) finalists will be announced during the conference award ceremony.




It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.

## REGULATIONS

- A. Participants write and illustrate an age-appropriate children's story.
- B. The story (narrative with accompanying illustrations) should take between five (5) and ten (10) minutes to read and view (as would be needed in an actual quality reading to or by a child). The maximum reading time is twelve (12) minutes. There is not a minimum length assigned to the reading time.
- C. The story should be no more than fifteen hundred (1500) words. There will be a five (5)-point deduction for every hundred (100) words over the fifteen hundred (1500) word limit. **Stories containing two thousand (2000) or more words will be disqualified.** There is no minimum number of words required.
- D. The narrative and illustrations will be organized in a "book" format of 8½" X 11". The book's orientation may be portrait or landscape. There must be a minimum of seven (7) unique illustrations. These illustrations will enhance the story and deepen the child's understanding and enjoyment of the reading experience. One illustration will be placed on the book's cover. The team may use the cover illustration within the story as well.
- E. Both the narrative and the illustrations must be the original work of the team members. NO copyrighted material is permitted. If the narrative or illustrations that appear in the story are not the work of one (1) of the team members, the team will be disqualified.
- F. All illustrations MUST be original, freehand, and/or computer-generated drawings by the team member(s). All computer-generated work MUST be developed from primitive lines and shapes and be the sole work of the team member(s). Physical or computer templates, previously existing drawings, characters, backgrounds, etc., are NOT PERMITTED. All work must have been developed during the current school year.

 Story entries should not exceed 1500 words. Word processing software should be used to count the number of words in the story to make sure the entry adheres to this regulation.

 The story should be designed so that it can be read at the same pace it would be read to a child, finishing within twelve (12) minutes.

- G. Pop-up books are permitted, but they are not encouraged. Students should focus on creating exemplary narratives and illustrations.
- H. The team's work will be submitted—as hard copies AND on a USB flash drive included in the team's portfolio—at the designated time and place.
- I. Documentation materials (comprising “a portfolio”) are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  - 1. Title page with the title of the story, the event title, the conference city and state, the year; and the team/chapter ID number; one (1) page
  - 2. Table of contents; pages as needed
  - 3. Purpose of story; one (1) page, to include:
    - a. Story's intent
    - b. Summary of storyline, and theme
    - c. Intended audience (age, gender, demographics, and special disabilities, if any)
    - d. Word count—number of words comprising the story's narrative
  - 4. Two (2) hard copies of the story, separately stapled (one [1] for the team's reader, one [1] for the judges)
  - 5. Each copy of the story will include the following 8½" X 11" pages:
    - a. Cover with story title, an illustration, and the names of the author(s) and illustrators (this entry is exempt from General Rules J, which states that identifying information must not appear in the entry)
    - b. Inside pages as needed (may be one [1]-sided or two [2]-sided); page orientation may be portrait or landscape; the team will determine the format that best presents the team's narrative and illustrations
  - 6. Plan of Work log that describes the development of the story and illustrations and the story's assessment (periodic readings to or by children), as noted by date, task, time involved, name of team member responsible, and comments (see Plan of Work log); pages as needed
  - 7. Professional and technical information; one (1) page containing:
    - a. A brief narrative of the research, writing strategies, and problems encountered in the writing and illustrating of the story
    - b. A list of artist tools, software used (if any), and techniques in the creation of the illustrations
  - 8. References; one (1) page



9. A USB flash drive containing all the above documents saved as PDF files; the story with its incorporated illustrations must be saved as a separate PDF file.
  10. The USB flash drive and its contents become the property of TSA for communication purposes only. Publishing rights remain with the authors and illustrators.
- J. Two (2) members only of each semifinalist team will report to the event area at the time and place stated in the conference program to sign up for a reading and interview time.
- K. The team's reader will be given up to twelve (12) minutes to read the story to the judges. Both team members will participate in the interview process (lasting up to five [5] minutes) following the reading of the story.

## EVALUATION

Evaluation is based on the portfolio, the story (narrative and illustrations), the performance and animated reading of the story, and the interview. Please refer to the official rating form for more information.

## NOTE

Research for this event might begin with information found at these websites.

<http://www.ala.org/alsc/awardsgrants>

<http://www.ala.org/alsc/awardsgrants/bookmedia/caldecottmedal/caldecottmedal>

### STEM INTEGRATION

Depending upon the subject of the story this event may align to one or more STEM areas. Please refer to the STEM Integration section of this guide for more information.

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### PRIMARY LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication – Students communicate through written language. Suggested leadership activities: *Take Action and Mirror Mirror*
- Creative thinking – Students create an original children's story. Suggested leadership activities: *And The Next Contestant Is* and *Open Minded*
- Teamwork – Students work together to create a narrative and illustrations for a children's story. Suggested leadership activities: *Jumping Rope and Match Face*

Additional leadership skills promoted in this event:

- Critical thinking
- Evaluation
- Organization

### TSA AND CAREERS

This competition connects to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and The 16 Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Writer
- Illustrator
- Educator
- Editor
- Publisher
- Graphic artist





# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
<b>1</b>				
<b>2</b>				
<b>3</b>				
<b>4</b>				
<b>5</b>				
<b>6</b>				

Advisor signature \_\_\_\_\_

## CHILDREN'S STORIES

### EVENT COORDINATOR INSTRUCTIONS

#### PERSONNEL

- A. Event coordinator
- B. Assistants for check-in, two (2)
- C. Evaluators for portfolios, two (2) or more
- D. Evaluators for semifinalist readings/interviews, two (2) or more

#### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and for each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Marking pens for evaluators
  - 6. Results envelope with coordinator forms
- B. Stopwatch
- C. Display tables for entries (minimum width 18")
- D. Table and chairs for evaluators and two (2) semifinalist team representatives

#### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators and assistants have been scheduled.
- B. Inspect the area in which the portfolios are being placed for appropriate set-up including sufficient number and size of tables.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.



- D. Each entry must include the participant's identification number in the upper right-hand corner of the entry. Position the entries for evaluation and viewing. Secure the entries in the designated area.
- E. Meet with evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Evaluators independently assess the entries.
- G. For participants who violate the rules, the decision either to 1) deduct 20% of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and the CRC manager, who all must initial either of these actions on the rating form.
- H. Evaluators determine the twelve (12) semifinalists.
- I. Submit semifinalist results to the CRC for posting.
- J. Inspect the area in which the readings/interviews are to take place. Ensure that there is a table and seating for the interviews.
- K. Meet with semifinalist evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- L. Conduct semifinalist readings/interviews using the same official rating form used by the first set of evaluators. Evaluators should be sure to ask interview questions.
- M. Evaluators determine the ten (10) finalists. Evaluators discuss and break any ties.
- N. Submit the finalist results and all related forms in the results envelope to the CRC room.
- O. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

<b>CHILDREN'S STORIES</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Documentation (50 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1, X2, X3, or X4 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points; an "adequate" score of 7 for an X3 criterion = 21 points; an "adequate" score of 7 for an X4 criterion = 28 points.)			
<b>Portfolio components</b> (X1)	Portfolio is unorganized and/or is missing three or more components.	Portfolio is missing one or two components and/or is loosely organized.	Portfolio has all required components and is well organized.
<b>Purpose of story</b> (X1)	Story's intent, story-line, and theme are poorly explained and/or the intended audience is not identified.	Story's intent, story-line, theme, and intended audience are adequately explained.	Story's intent, storyline, theme, and intended audience are complete and well explained.
<b>Plan of Work log</b> (X1)	Log is poorly organized and/or incomplete.	Log is adequately detailed and organized and contains all the required components, including a record of the periodic readings to children.	Log is well documented and contains all the required components, with special attention given to periodic readings to children.
<b>Professional and technical information</b> (X1)	Summary of the research, design, and writing process is poorly done and/or is incomplete.	Summary of the research, design, and writing process is clear and complete.	Summary of the research, design, and writing process is extremely well written, detailed, clear, and complete.
<b>Research base</b> (X1)	There are few references listed, and/or the references listed show little relevance to the project's goal.	There are a sufficient number of references listed; the quality is good.	Many quality references are listed, reflecting research in writing and illustrating for children and child development.
<b>SUBTOTAL (50 points)</b>			
The Story (100 points)			
CRITERIA	Minimal performance Research base	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Story narrative</b> (X3)	Narrative is poorly written; there is little apparent purpose; it is lacking a coherent theme and storyline.	Narrative's purpose is clear, with a focused theme and storyline; the narrative has good pacing and development of characters and/or events.	Narrative is extremely well written with a clear purpose; storyline is fast paced and exciting; the details are rich and enchanting.
<b>Illustrations</b> (X3)	Artisanship of the illustrations reflects little technical skill; illustrations add little value to the story's narrative, storyline, and/or theme.	Artisanship of most illustrations reflects good technical skill; illustrations add to the story's narrative, story-line, and theme.	Artisanship of illustrations is excellent, reflecting sophisticated technical skills; illustrations enhance the story's narrative, story-line, and theme, and they are of high esthetic quality.

Record scores in the column spaces below.



<b>Impact</b> (X4)	Story (narrative, with the illustrations) is lacking in purpose and coherence; it is not very interesting; it lacks artistic, and/or instructional, and/or social value.	Story (narrative, with the illustrations) reflects a purpose and incorporates artistic, instructional, and social value; it is compelling and entertaining.	Story (narrative, with the illustrations) is beautifully told; it is compelling, entertaining, purposeful, and it reflects high artistic, instructional, and social value.
<b>SUBTOTAL (100 points)</b>			

**Story length violation:** For stories exceeding 1500 words, a deduction of 5 points will be incurred for every 100 words more than 1500 and up to 2000. Stories of 2000 words or greater will be disqualified. Example: 1600 – 1699 words, 5 points; 1700 – 1799 words, 10 points; 1800 – 1899 words, 15 points; 1900 – 1999 words, 20 points; 2000 words and above, disqualified.

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

<b>Semifinalist Reading and Interview (30 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Story's reading</b> (X1)	Story's reading is lackluster; reader shows little enthusiasm; delivery is halting and difficult to understand; story is read too quickly to permit viewing of the illustrations.	Story's reading is generally good; reader's speech is clear and usually well-paced and enthusiastic; sufficient time is given for reflection on the illustrations.	Story's reading is exemplary; reader's speech is clear, well-paced, and enthusiastic; sufficient time is given to reflect upon and appreciate the illustrations.
<b>Interview</b> (X2)	Team's responses to the judges' questions are incomplete and/or poorly articulated; responses show little understanding of the research or development of the project.	Team answers most of the judges' questions; team's answers are articulate and show some understanding of most of the concepts addressed in the project.	Team's responses to the judges' questions are detailed and articulate; answers reflect a high degree of understanding of the development of children's literature, including the artistic and technical concepts in both writing and illustrating for children.
<b>SUBTOTAL (30 points)</b>			

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (180 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# COMMUNITY SERVICE VIDEO

## OVERVIEW

Participants create and submit a video that depicts the local TSA chapter's service with the American Cancer Society (ACS), national TSA's community service partner.

## ELIGIBILITY

Participants are limited to one (1) team per chapter. Entries may be submitted by an individual or group.

## TIME LIMITS

The video should last no more than two and one-half (2½) minutes. There is no minimum length restriction. The video will be timed from the first sound or picture to the final sound or picture.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE


- A. Entries must be submitted at the time and place stated in the conference program.
- B. Entries are reviewed by the evaluators.
- C. All entries become the property of national TSA.
- D. Ten (10) finalists are announced at the awards ceremony.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

It takes a lot of time and effort, and sometimes a lot of extra footage, to produce a finished video. The entry should include only the footage considered as the final product.

## REGULATIONS

- A. Participants are encouraged to develop the entry in a "video yearbook" fashion. This is not a requirement, but simply a suggested format. Participants should develop the video chronologically, illustrating their chapter's involvement with ACS over the course of a particular academic year. This entry is exempt from General Rule K, which states that a chapter name must not appear in an entry.
- B. The year should be clearly illustrated at the beginning of the video.
- C. The entry should be submitted on a USB flash drive.
- D. All video footage, graphics, special effects, and/or audio clips must be originally created/filmed by the participants. No commercial or copyrighted material may be used, regardless of copyright fair use policy. All ACS graphics, including the ACS logo, may be used providing they are not modified. This includes, but is not limited to, background color, the addition of other words/images, and/or removal of any item. Participants must complete the student copyright checklist and save it as a pdf on a USB flash drive.
- E. If the entry contains images of people, proof of consent must be provided for each person in the video. Minors require parental consent. (See Photo/Film/Video Consent and Release form that follows for any individuals included in the video footage.)
- F. Participants must scan each completed consent form and save it as a PDF file on a USB flash drive. Consent form PDFs must be submitted with the USB flash drive entry.
- G. All entries will be retained by national TSA and may be used for promotional purposes.

 This entry is exempt from General Rule K, which states that a chapter name must not appear in an entry.

## EVALUATION

Evaluation is based on the effectiveness of the video in portraying and highlighting their TSA chapter's involvement with the American Cancer Society over the course of an academic year. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM Integration section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students effectively communicate the message of the video. Use leadership activities: *Acting Out!* and *Chefs in the Kitchen*
- Creative thinking: Students use original thoughts to create video elements. Use leadership activities: *And the Next Contestant Is...* and *Around the World*
- Teamwork: Students work with actors/team members to create a video. Use leadership activities: *Find Someone Who...* and *Match Face*

Additional leadership skills promoted in this event:

- Decision making
- Ethics
- Organization

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Videographer
- Director
- Actor
- Screenplay writer
- Audiovisual technician





# COMMUNITY SERVICE VIDEO EVENT COORDINATOR INSTRUCTIONS

## PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more

## MATERIALS

- A. Coordinator's packet, containing:
  1. Event guidelines, one (1) copy for the coordinator and each evaluator
  2. TSA Event Coordinator Report
  3. List of evaluators/assistants
  4. Marking pens for evaluators
  5. Stick-on labels for identifying entries
  6. One (1) stopwatch for every twenty (20) entries
  7. Results envelope with coordinator forms
- B. Table and chairs for evaluators

## RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate setup, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.
- D. One (1) hour before the event is scheduled to begin, meet with evaluators to review time limits, procedures, and regulations. Distribute the evaluators' materials. If questions arise that cannot be answered, contact the event manager before the event begins.



- E. Evaluators independently review the entries.
- F. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. Evaluators determine the ten (10) finalists. All ties should be broken by the evaluators.
- H. Submit the finalist results and all related forms in the results envelope to the CRC room.
- I. If necessary, manage security and the removal of materials from the event area.



## PHOTO/FILM/VIDEO CONSENT AND RELEASE

I hereby give permission for images of my child or myself (as applicable), captured during Technology Student Association (TSA) activities through film, photo or digital camera, to be used solely for the purposes of TSA promotional materials and publications, and I waive any rights of compensation or ownership thereto.

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Name of minor in images (please print)

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Name of minor's parent/guardian (please print)

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Name of adult in images (please print)

---

Parent/guardian or adult's signature (as applicable)

---

Date



Participant/Team ID# \_\_\_\_\_

COMMUNITY SERVICE VIDEO			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Video Production (70 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Planning</b> (X1)	Video shows little or no evidence of planning, analysis, or research.	Video shows good analysis of the project; concepts make sense.	Video shows a complete and insightful analysis; content is outlined properly and treatment is applied.
<b>Camera</b> (X2)	Serious problems are evident with camera focus, steadiness, and framing.	Camera work is clearly focused and framed; creative and close-up shots are not prominent.	Steady and creative shots that enhance the video are evident in the camera work; there is good use of close-ups.
<b>Audio</b> (X1)	Audio is of poor quality; sound is recorded primarily from an on-camera microphone.	Correct microphones and technique are used to provide clear audio, recorded with good levels.	Audio is excellent, with additional audio clips/cues that enhance the video production.
<b>Lighting</b> (X1)	Poor ambient lighting choices and/or heavy back-lighting are evident.	Adequate lighting on subjects and proper lighting techniques are evident.	Excellent and creative use of lighting to propel story emotionally is evident.
<b>Continuity and pacing</b> (X2)	Show sequencing in the video is incomprehensible; shots are left too long; edit points have glitches.	Pace and timing of the video are well structured; clips move along, telling the story; moderate use of transitions is evident.	Shots logically pace the story in an interesting way; excellent and purposeful use of transitions is evident.
<b>SUBTOTAL (70 points)</b>			
Video Effectiveness (80 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Places topic in context</b> (X2)	Video does not show clear evidence of where and when the event(s) happened and why.	Video shows where and when the event(s) happened and why they occurred.	Video shows where and when the event(s) happened, why they occurred, and what factors contributed to their development.
<b>Relation to theme</b> (X2)	The theme is not clear, or the project has a loose-fitting, vaguely stated connection.	Video conveys the theme and implies the connection.	Video shows a thorough understanding of the theme and clearly uses the theme as a basis throughout.
<b>Significance of topic</b> (X2)	Video shows little evidence of the significance/importance of the topic.	Video states the topic's significance adequately.	Video clearly states the significance of the topic; conclusions are well demonstrated and supported.
<b>Creativity and originality</b> (X1)	Little original thought or creativity are evident in the design and production of the video, resulting in a regurgitation of events.	Original thought and creative elements are easily expressed and highlighted in the video.	Originality and creativity are at the forefront of the video; video incorporates the thematic elements in an authentic way.

Record scores in the column spaces below.



<b>Video effectiveness</b> (X1)	The video does not meet project goals; an unclear, sloppy message is evident.	The video topic is presented with insights; viewer can see that the video adequately meets the objective.	The video is focused, with a rich variety of supporting material.	
<b>SUBTOTAL (80 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (150 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# CONSTRUCTION CHALLENGE

Your chapter's community project can be showcased here if it is construction related. Entries might include well-placed park benches, repair of playground equipment, etc.

## OVERVIEW

Participants submit a scale model/prototype with a portfolio that documents the use of their leadership and technical skills to fulfill an identified community need related to construction. Semifinalists discuss their projects in a presentation and an interview.

## ELIGIBILITY

Participants are limited to one (1) team per chapter. There is a limit of two to four (2-4) representatives per team for the semifinalist presentation and interview.

## TIME LIMITS

- A. The project must have been in progress or completed during the current school year.
- B. Students who represent their chapter as semifinalists have a maximum of ten (10) minutes to present and discuss their chapter's participation in a project and to answer the evaluators' questions.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants check in their entries at the time and place stated in the conference program. No more than two (2) team members set up a scale model/prototype and portfolio.
- B. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.
- C. A representative from each semifinalist team will report at the time and location stated in the conference program to schedule a presentation/interview time.
- D. Two to four (2-4) representatives from each team meet with the event coordinator and evaluators at the designated time to



make a brief presentation, discuss their chapter's community project, and answer the questions of the evaluators.

- E. Participants pick up their entries from the display area at the time specified in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Chapters document project involvement with the community through the use of a project journal (that provides in detail both student and community involvement), letters, interviews, pictures, newspaper clippings, or other such evidence.
- B. Chapters must become involved in the majority of stages of development of the project, from planning to construction (where appropriate), by experiencing as many facets of the undertaking as possible. The project must show work performed during the current school year. The history of long-term or ongoing projects that began in a previous year or that will continue beyond the current school year may be included with the documentation; however, the scale model/prototype and portfolio must be based on current year activities.
- C. The chapter should address the impact of the construction project on the community. "Community" is defined as within an area near the school.
- D. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11 pages, in this order:
  1. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
  2. Table of contents
  3. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible and comments (see Plan of Work log); pages as needed
  4. Photo timeline of project photos (before, during, and after the project), with dates and team members involved.



5. Letters from community members that verify chapter involvement, pictures of the project, news clippings, and other relevant materials; pages as needed
  6. Research provided on the community need for the project.
  7. Strategies and recommendations of the team that will address the community need; up to three (3) examples.
- E. If the entry (scale model/prototype or portfolio) contains images of people, proof of consent must be provided. Minors require parental consent. (See Photo/Film/Video Consent and Release form that follows.) The forms do not count in the page limits identified in Regulation D.
- F. The materials that make up the scale model/prototype must be student-constructed and assembled. The display may occupy a space no more than 15" deep x 3' wide x 4' high.
- G. A/C electricity may not be used.
- H. The chapter name or other identifying information may appear in the entry (only in newspaper clippings, photographs, etc.); identifying information must not be placed on the scale model/prototype, or in the portfolio for the purpose of revealing the TSA chapter.

### EVALUATION

Participants are evaluated on their involvement in a community project; semifinalists are awarded points based on their presentation and interview. Please refer to the official rating form for more information.





## STEM INTEGRATION

This event has connections to the STEM areas noted below.  
Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Organization: Students organize, plan, and execute the project while keeping accurate records and details. Use leadership activities: *Keep on Rolling* and *Time It*
- Problem solving: Students identify, plan, coordinate, and carry out a project that will benefit the community; they deal with possible issues that may occur. Use leadership activities: *Finding a Way* and *Implementation Ideas*.
- Teamwork: Students work as a team to accomplish a large project to benefit the community. Use leadership activities: *Bozo's Balloons* and *TV Station*

Additional leadership skills promoted in this event:

- Creative thinking
- Decision making
- Evaluation

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Architect
- Community planner
- Construction manager
- General contractor
- Product designer



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
1				
2				
3				
4				
5				
6				

Advisor signature \_\_\_\_\_



## PHOTO/FILM/VIDEO CONSENT AND RELEASE

I hereby give permission for images of my child or myself (as applicable), captured during Technology Student Association (TSA) activities through film, photo or digital camera, to be used solely for the purposes of TSA promotional materials and publications, and I waive any rights of compensation or ownership thereto.

---

Name of minor in images (please print)

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Name of minor's parent/guardian (please print)

---

Name of adult in images (please print)

---

Parent/guardian or adult's signature (as applicable)

---

Date

## CONSTRUCTION CHALLENGE EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Individuals assigned to check in, receive entries, and direct students to the display set-up area, two (2) or more
- D. Individual assigned for security during the set-up time

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Results envelope with coordinator forms
- B. Display tables for entries (needed at set-up time through pick-up time prior to the close of the conference)
- C. Stopwatch to monitor semifinalist presentations and interviews
- D. Tables and chairs for event coordinator and evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in. Secure the entries in the designated area.



- D. Review the time limits, procedures, and regulations with the evaluators. Clear up any questions or misunderstandings.
- E. Evaluators independently review the entries.
- F. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. Evaluators determine semifinalists and discuss and break any ties.
- H. Submit semifinalist results to CRC for posting.
- I. Conduct interviews using the same official rating forms.
- J. Evaluators determine the ten (10) finalists. Evaluators discuss and break any ties that affect the top three (3) placements.
- K. Submit the finalist results and all related forms in the results envelope to the CRC room.
- L. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

# CONSTRUCTION CHALLENGE

2016 & 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Display (40 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Overall aesthetics</b> (X2)	Model/prototype is sloppy and does not represent the project.	Model/prototype has some design flaws, but it represents the project.	Model/prototype has a high quality of craftsmanship and clearly depicts the project.
<b>Identification of community need and community impact</b> (X1)	Identification of the community need and impact lacks clarity; wordy, illogical, unorganized viewpoints are included.	Identification of the community need and impact is generally organized, with mostly logical viewpoints and concisely written information.	Clear and concise identification of the community need and impact is evident, with logical viewpoints related to the need.
<b>Strategies and recommendations</b> (X1)	Two or fewer strategies/ recommendations are presented; they are not well-connected to the community need identification.	Two or more strategies/ recommendations are presented; some are connected to the research collected.	Three or more strategies/ recommendations are presented, all of which are connected to the research that was collected and analyzed.

**SUBTOTAL (40 points)**

## Portfolio (30 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Portfolio contents</b> See Regulation D (X1)	Portfolio is unorganized and/or is missing three components.	Portfolio is generally organized but is missing two components.	Portfolio content and organization are clearly evident; one or no components may be missing.
<b>Project verification</b> (X1)	Little or no student involvement is evident in the project; work is unorganized and/or sloppy.	Community letters, photos, and/or news clippings documenting student involvement in the project are included in the portfolio.	A well-organized and thorough documentation of student involvement, from inception to completion of the project, is included in the portfolio.
<b>Photo timeline</b> (X1)	Photo timeline is sloppy and/or unorganized and hard to read and understand; key dates are missing; the project appears to be an afterthought.	Photo timeline is formatted in a somewhat organized manner and is generally easy to read/interpret; it includes most key dates.	Photo timeline has all key dates listed from inception to completion; a creative and organized timeline is evident.

**SUBTOTAL (30 points)**

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Record scores in the column spaces below.



Semifinalist Presentation/Interview (50 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation/interview; an illogical explanation of the need and solution is presented.	Participants are generally prepared for the presentation/interview; a general and organized explanation of the need and solution are communicated.	Presentation/interview is logical, well organized, and easy to follow; the need and solution are communicated in an organized and concise manner.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.
<b>Delivery</b> (X1)	Team is verbose and/or uncertain in its presentation/interview; participants' posture, gestures, and lack of eye contact diminish the presentation/interview.	Team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact are adequately polished.	Team is well-spoken and distinct; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation/interview.
<b>Team participation</b> (X1)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged from the presentation/interview.	Team members generally are engaged in the presentation/interview, though one member may take on more responsibility than the other(s).	All team members are actively involved in the presentation/interview and responses to questions; there is shared responsibility between team members.
			<b>SUBTOTAL (50 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (120 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# DIGITAL PHOTOGRAPHY

 The technology of photography keeps changing, even as its value endures.

## OVERVIEW

Participants produce a digital album consisting of color or black and white digital photographs that represent or relate to a chosen theme (posted on the TSA website under Competitions/ Themes and Problems) and place the album on a storage device (USB flash drive) for submission. Semifinalists produce a series of digital photographs taken at the conference site that are edited appropriately for the on-site task.

## ELIGIBILITY

Participants are limited to three (3) individuals per state.

## TIME LIMITS

- A. The entry must be completed during the current school year.
- B. Semifinalists are given ½ hour to set up their equipment and to receive the on-site task and procedures.
- C. Semifinalists are given 2½ hours to complete the on-site task and must be available for evaluation after the on-site task is completed.

## ATTIRE


TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Students use their interpretation of the theme to unify the photographs included in the album. The album and a cover page collage must be completed during the current school year. The participant is solely responsible for all aspects of participation, including taking pictures, editing pictures, and completing the album.
- B. Participants check in their entries at the time and place stated in the conference program. The USB flash drive should be submitted in a labeled and sealed envelope.




- C. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.
- D. Semifinalists report with their equipment to the event area at the time and place stated in the conference program. Each participant, with one (1) assistant (an advisor, fellow student, or adult chaperone), is allowed ½ hour to set up and test the equipment.
- E. At the end of the set-up time, the event coordinator and evaluators present the on-site task and related procedure with the semifinalists. Each year the task involves students documenting a current, appropriate aspect of the conference, such as a competitive event, a special focus of the site, a general session, etc. Semifinalists may have different tasks.
- F. Semifinalists are given 2½ hours to complete the task, including taking their pictures and editing or enhancing them.
- G. As each semifinalist finishes the task, s/he informs the evaluators and completes a written questionnaire.
- H. Students must pick up their equipment when the evaluators are finished.

 This event is entirely digital and does not require the submission of a portfolio or printed materials.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Preparing the album
  - 1. All documents must be saved to a USB flash drive and presented in the following order:
    - a. Cover page - must include the event title, the conference city and state, the year, the participant's ID number, and a collage of photographs related to the current theme.
    - b. Description of the theme (a detailed description of how the theme is documented or represented by the photographs) and a title
    - c. Description of each of the four (4) original photos and their edited versions - one (1) candid, one (1) still life, one (1) pose portrait, and one (1) photo of the student's

 Participants may use photos from the cover page collage in the album.

- choice; each original photo and its edited version should be included on the page after the description
- d. Resource page (a list of resources used to complete the album, including camera, software, and hardware, etc.)
- B. Digital photographs
1. Must be taken, edited, and saved digitally
  2. Can be either black and white or color photographs
  3. Should be edited and enhanced using appropriate software
  4. Enhancements and/or editing should be done ethically and in a way that makes a better picture.
- C. Semifinalist task
1. Semifinalists must follow procedures and guidelines as set forth in the introduction to the task.
  2. Semifinalists are not allowed to seek help or guidance from any individual.
  3. The task must be completed within the specified time frame.
  4. Participants are responsible for providing all necessary equipment, including a digital camera, computer system, power strip, software, and a fifty foot (50') extension cord. A printer is not required. The event coordinator supplies tables, chairs, and electricity.
  5. Participants must submit images in a presentation slideshow format with the unedited and edited photographs in each of the six (6) slides.
  6. Presentations should be saved on a USB flash drive.
  7. Semifinalist entries are judged from each semifinalist's computer system, which must be capable of reading the images in slideshow format from a USB flash drive.
  8. Entries become the property of national TSA, Inc. and may or may not be used in future promotional materials and publications.
  9. Semifinalists will be given a brief written questionnaire in which they may be asked to explain their solution to the on-site task.
- D. Recognizable individuals selected and pictured in images must give their written consent before the images can be used for this event. (See Photo/Film/Video Consent and Release form that follows.)

## EVALUATION

Evaluation is based on the effectiveness and quality of the album and how it addresses the current theme. Semifinalists are evaluated on their ability to use digital photography technology, systems, and themes to complete an on-site task. Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students effectively communicate the theme to others. Use leadership activities: *Acting Out!* and *Take Action*
- Creative thinking: Students develop creative and original ideas to meet event requirements. Use leadership activities: *Around the World* and *Fashion Forward*
- Evaluation: Students develop an idea that captures the viewer's attention. Use leadership activities: *Evaluation Methods* and *Finish Line to Start Line*

Additional leadership skills promoted in this event:

- Ethics
- Organization

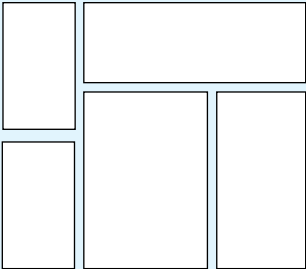
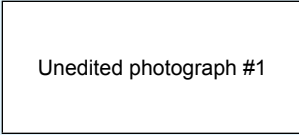



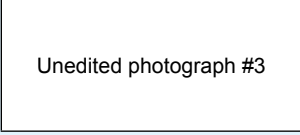
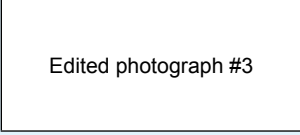
## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Animator
- Photojournalist
- Research and development scientist
- Reporter
- Website designer

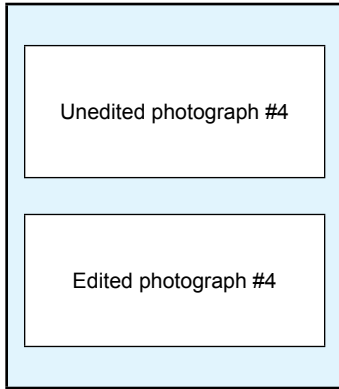
## DIGITAL PHOTOGRAPHY ALBUM LAYOUT

Cover page	Page One	Page Two
<p>Digital Photography</p>  <p>Conference city, state, year, and participants ID#</p> <p>The current theme</p>	<p>List the theme here.</p> <p>Describe in detail the theme being documented by the photographs; include a title.</p> <p>Photographs unrelated to the theme should not be included in this album.</p>	<p>Place here a description of the first original, unedited photograph and the edited version of the photograph that will be on page three.</p> <p>Explain in detail (3-4 paragraphs) how the first photograph was changed from the original to the edited version.</p>
Page Three	Page Four	Page Five
 <p>Unedited photograph #1</p>  <p>Edited photograph #1</p>	<p>Place here a description of the second original, unedited photograph and the edited version of the photograph that will be on page five.</p> <p>Explain in detail (3-4 paragraphs) how the second photograph was changed from the original to the edited version.</p>	 <p>Unedited photograph #2</p>  <p>Edited photograph #2</p>
Page Six	Page Seven	Page Eight
<p>Place here a description of the third original, unedited photograph and the edited version of the photograph that will be on page seven.</p> <p>Explain in detail (3-4 paragraphs) how the third photograph was changed from the original to the edited version.</p>	 <p>Unedited photograph #3</p>  <p>Edited photograph #3</p>	<p>Place here a description of the fourth original, unedited photograph and the edited version of the photograph that will be on page nine.</p> <p>Explain in detail (3-4 paragraphs) how the fourth photograph was changed from the original to the edited version.</p>



## DIGITAL PHOTOGRAPHY ALBUM LAYOUT (continued)

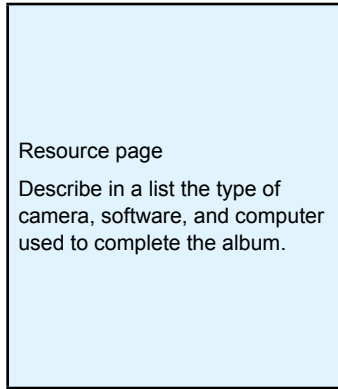
### Page Nine

A light blue rectangular area representing the layout for Page Nine. It contains two white rectangular boxes stacked vertically. The top box is labeled 'Unedited photograph #4' and the bottom box is labeled 'Edited photograph #4'.

Unedited photograph #4

Edited photograph #4

### Page Ten

A light blue rectangular area representing the layout for Page Ten. It contains text describing a resource page.

Resource page  
Describe in a list the type of camera, software, and computer used to complete the album.

## DIGITAL PHOTOGRAPHY EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Results envelope with coordinator forms
- B. Semifinalist materials (coordinator must create these)
  - 1. Evaluation schedule
  - 2. Task and guidelines
  - 3. Interview questions

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in. Secure the entries in the designated area.
- D. Review the time limits, procedures, and regulations with evaluators. Clear up any questions or misunderstandings.
- E. Evaluators independently review the entries.



- F. For participants who violate the rules, the decision either to
  - 1) deduct twenty percent (20%) of the total possible points or
  - 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. Submit semifinalist results to the CRC for posting.
- H. Create the semifinalist task statements and plan the procedure. Semifinalists may be given the same task, or share a combination of tasks, depending on the availability of suitable activities.
- I. Produce and print questions for a written questionnaire (see N below).
- J. Before the on-site task session, check the room set-up. There should be enough seating, table space, and access to electricity for twelve (12) semifinalists.
- K. Students must bring their own computers.
- L. Review procedures and the semifinalist task with evaluators.
- M. Manage the semifinalist session with evaluators, who may observe participants taking pictures.
- N. Once the work session is over, have students complete a written questionnaire, which should include the following questions:
  - 1. Why did you choose to compete in the Digital Photography competition?
  - 2. Which type of camera, software, and computer do you prefer to use for digital photographs?
  - 3. Who taught you about digital photography?
  - 4. What is the most important lesson you have learned about digital photography?
  - 5. What would you change about the Digital Photography competition?
- O. Manage the semifinalist evaluation and the removal of participants' equipment.
- P. Evaluators determine the ten (10) finalists. Evaluators discuss and break any ties that affect the top three (3) placements.
- Q. Submit the finalist results and all related forms in the results envelope to the CRC room.
- R. If necessary, manage security and the removal of materials from the event area.



## PHOTO/FILM/VIDEO CONSENT AND RELEASE

I hereby give permission for images of my child or myself (as applicable), captured during Technology Student Association (TSA) activities through film, photo or digital camera, to be used solely for the purposes of TSA promotional materials and publications, and I waive any rights of compensation or ownership thereto.

---

Name of minor in images (please print)

---

Name of minor's parent/guardian (please print)

---

Name of adult in images (please print)

---

Parent/guardian or adult's signature (as applicable)

---

Date



# DIGITAL PHOTOGRAPHY

**2016 & 2017 OFFICIAL RATING FORM**
**MIDDLE SCHOOL**

## Album (60 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Contents</b> See Regulation A (X1)	Album is unorganized and missing two or more components; the album is not correctly formatted.	Album is organized and formatted, and/or missing only one component.	Album is exceptionally organized and contains all required components.
<b>Theme statement</b> (X1)	Theme communicated is difficult to understand; explanation is illogical; definition and/or explanation of the theme may be unclear.	Theme is communicated, defined, and explained appropriately.	Theme is clear and concise; communication, definition, and explanation of the theme interest the reader.
<b>Candid photos</b> (X1)	Photos do not adhere to basic photography principles (composition, rule of thirds, distraction, framing, balance, contrast, and lighting); photos do not connect with the theme.	Photos adhere to basic photography principles, with only a few exceptions; photos somewhat connect with theme, and creativity is evident.	All photos hold to basic photography principles, and creativity and theme are exemplified in each photograph.
<b>Still life photos</b> (X1)	Photos do not adhere to basic photography principles (composition, rule of thirds, distraction, framing, balance, contrast, and lighting); photos do not connect with theme.	Photos adhere to basic photography principles, with only a few exceptions; photos somewhat connect with theme, and creativity is evident.	All photos hold to basic photography principles, and creativity and theme are exemplified in each photograph.
<b>Posed portraits</b> (X1)	Photos do not adhere to basic photography principles (composition, rule of thirds, distraction, framing, balance, contrast, and lighting); photos do not connect with theme.	Photos adhere to basic photography principles, with only a few exceptions; photos somewhat connect with theme, and creativity is evident.	All photos hold to basic photography principles, and creativity and theme are exemplified in each photograph.
<b>Student's choice photos</b> (X1)	Photos do not adhere to basic photography principles (composition, rule of thirds, distraction, framing, balance, contrast, and lighting); photos do not connect with theme.	Photos adhere to basic photography principles, with only a few exceptions; photos somewhat connect with theme, and creativity is evident.	All photos hold to the basic photography principles, and creativity and theme are exemplified in each photograph.
<b>SUBTOTAL (60 points)</b>			
Photographic Principles and Image Editing (40 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Image enhancements</b> (X2)	Three or fewer image editing principles (size alteration, cropping, in-painting, color change, photo orientation, softening, sharpening, etc.) are usefully incorporated into photographs.	Multiple and correct use of the proper image editing principles are incorporated into most of the photographs.	All photographs are enhanced using proper image editing principles, which aid in making enhanced photographs more visually appealing.

Record scores in the column spaces below.



<b>Editing ability</b> (X2)	Very little difference is noticed between edited and original photographs, and/or no evidence of image editing is observed.	Most edited photographs are easily recognized as being different from the original; proper editing principles are used.	All photographs exhibit the use of proper editing principles and allow for easy distinction between original and edited versions.	
<b>SUBTOTAL (40 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

<b>On-Site Semifinalist Problem (50 points)</b>				
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
<b>Solution</b> (X2)	Three or more attributes of the solution's criteria are missing.	Most attributes of the solution's criteria are evident.	Only one or no attributes of the solution's criteria is/are missing.	
<b>Photos</b> (X1)	Photos do not adhere to basic photography principles (composition, rule of thirds, distraction, framing, balance, contrast, and lighting); photos do not connect with theme.	Photos adhere to basic photography principles, with only a few exceptions; photos somewhat connect with theme, and some creativity is evident.	All photos hold to basic photography principles, and creativity and theme are exemplified in each photograph.	
<b>Image enhancements</b> (X1)	Three or fewer image editing principles (size alteration, cropping, in-painting, color change, photo orientation, softening, sharpening, etc.) are effectively incorporated into photographs.	Multiple and correct use of proper image editing principles are incorporated into most of the photographs.	Multiple and correct use of proper image editing principles are incorporated into all photographs.	
<b>Written questionnaire</b> (X1)	Information communicated is difficult to understand; an illogical explanation is presented.	Information is communicated, and thoughts are mostly organized and/or concise.	Information is communicated in an organized, clear, and concise manner.	
<b>SUBTOTAL (50 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (150 points)**

Comments:

---

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# DRAGSTER

## OVERVIEW

Participants design and produce a CO<sub>2</sub>-powered dragster according to stated specifications, using only specified materials.

## ELIGIBILITY

Participants are limited to two (2) individuals per chapter, one (1) entry per individual.

## TIME LIMITS


- A. Entries must be started and completed during the current school year.
- B. The dragster and drawing are submitted at the time and place stated in the conference program.
- C. The sixteen (16) qualifying car builders will receive a five (5)-minute interview.
- D. Drawings and cars must be picked up at the specified time at the conclusion of the event.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants check in their entries at the time and place stated in the conference program.
- B. Entries are reviewed by evaluators to determine specification adherence and safety on the track.
- C. Safe dragsters race for qualifying time on the same lane of a raceway.
- D. The top sixteen (16) qualifying cars, based on time trials, are evaluated for this event.
- E. Dragsters that do not meet event regulations are disqualified and lower qualifying cars are moved up until sixteen (16) dragsters meeting specifications are determined.

 Read the General Rules and Regulations in the front of this guide for information that applies to all of TSA's competitive events.



- F. The top sixteen (16) car builders will report to the track at the posted time for a five (5)-minute interview.
- G. The top sixteen (16) cars race in a double-elimination format to earn points for the race portion of the event.
- H. Drawing, design, and body finish points are combined with race points to determine the final standings.
- I. Following the race, participants pick up their entries from the display area at the time and place stated in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### **REGULATIONS**

- A. Each entry must be submitted at check-in with a full-size metric drawing of the completed vehicle. The two (2)-view (top and side) working drawing with metric dimensions is made on 11"x 17" drawing paper. The drawing is developed using standard engineering practices and procedures, and may be produced using traditional drafting methods or CAD. The title block includes only the participant's entry number, which is assigned at registration time and is placed on the entry and drawing during check-in.
- B. The official distance between the start line and the finish line on the race track is twenty (20) meters.
- C. **Dragsters that do not meet the following specifications and tolerances are disqualified from the race.**



**Dragster body**

1. One (1)-piece, all-wood construction; any type of lamination will result in disqualification. Two (2) or more like or unlike pieces of wood glued together are not considered one (1)-piece, all-wood construction. No add-ons, such as body strengtheners, fenders, plastic canopy, exhausts, or air foils may be attached to or enclosed within the vehicle. Fiberglass and shrink wrap are considered body strengtheners and cannot be used on the car body for any reason. Decals may be used for decoration only; they may not be used to gain an aerodynamic advantage, i.e., decals cannot cover the exterior axle holes or be used to cover open areas of the body.

**For 2016: Only-rear wheels (visible and accessible on the outside of the body, while maintaining the minimum body width at the axle hole location) may be exposed. The wheels cannot be blocked from being removed from the outside of the body. Front wheel placement is up to the designer.**

**For 2017: FLASHBACK to the 1980s: All wheels must be uncovered by the body or fenders and located outside of the body, while maintaining the minimum body width at the axle hole location.**

	MINIMUM	MAXIMUM
2. Body length .....	200mm	305mm
3. Body height with wheels.....		75mm
4. Body weight (completed car without CO2)		
.....*(2016) - 55g .....		80g
.....*(2017) - 45g .....		70g
..... * specific school year requirement		
5. Body width at axles, front and back .....	35mm	42mm
6. Vehicle total width (including wheels).....		90mm

**Axles/axle holes/wheelbase**

1. Dragsters must have two (2) axles per car, no more.
2. Bottom of axle hole or bearing above bottom of car .... 5mm .....10mm (measured at sides)
3. Axle hole from front or rear of car ..... 9mm .....100mm
4. Wheelbase (axle distance apart at farthest points) 105mm .....270mm
5. Bearings, bushings and lubricants may be used.



**Spacer washers/clips**

- 1. Spacer washers .....10
- 2. Axle clips .....4
- 3. Silicone or any other type of glue/adhesive may not be used in place of wheel clips to hold wheels or axles in place.

**Power plant (CO<sub>2</sub> cartridge hole)**

- 1. The power plant hole must be at the farthest point at the rear of the car and must be drilled parallel to the racing surface to assure proper puncture of the CO<sub>2</sub> cartridge. A minimum of 3mm thickness around the entire power plant hole must be maintained on the dragster for safety. **There should be no paint inside the CO<sub>2</sub> cartridge hole.**
- 2. Hole depth..... 45mm .....55mm
- 3. Safety zone thickness ..... 3mm
- 4. Chamber diameter ..... 19mm .....20mm
- 5. Lowest point of chamber diameter to race surface  
(with wheels) ..... 26mm .....40mm

**Eye screws**

- 1. Dragsters must have no more than two (2) eye screws per car that meet tolerances. Eye screws must not make contact with the racing surface. The track string must pass through both eye screws, which are located on the center line of the bottom of the car. Glue may be used to reinforce the eye screws. It is the responsibility of the car designer/engineer to see that the eye screw holes are tightly closed to prevent the track string from slipping out. As with all adjustments, this must be done prior to event check-in.
- 2. Inside diameter..... 3mm .....5mm
- 3. Distance apart (at farthest points)..... 150mm .....270mm



**Wheels**

**For 2016 only: Rear wheels must be exposed and accessible on the outside of the body.**

**For 2017 only: ALL wheels must be uncovered by the body or fenders and located outside of the body.**

1. A dragster must have exactly four (4) wheels, each of which separately must meet regulations in items in 2 and 3 below. All four (4) wheels must touch the racing surface at the same time. All wheels must roll. Wheels must be made entirely from plastic. Dimensions must be consistent for the full circumference of the wheel.
  2. Wheel diameter ..... 30mm ..... 40mm
  3. Wheel width ..... 2mm ..... 18mm
- D. No repair or maintenance is allowed after the entries have been registered. Any vehicle damaged during the race is evaluated by the event coordinator to determine whether or not the vehicle is allowed to race again. In the event that the vehicle is damaged by conference personnel, the event coordinator rules as to whether the vehicle may be repaired by the student entering the vehicle; this is the only reason a student is allowed to touch his/her vehicle after registration. Undamaged wheels that come off during the event may be replaced as determined by the event coordinator. Damaged wheels may not be replaced.
- E. All CO<sub>2</sub> cartridges for the race are provided by national TSA.

**EVALUATION**

Evaluation is based on points earned through car design and appearance, accuracy and quality of the drawing, the interview, and placement in the double elimination on-site race. Please refer to the official rating form for more information.

## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Critical thinking: Students learn and use necessary skills in order to design an effective dragster. Use leadership activities: *Guess the Famous Leader* and *Rebus Puzzles*
- Evaluation: Students improve the dragster based on testing and time trials. Use leadership activities: *Grading the Advertisement* and *The Great "Evaluate"*
- Problem solving: Students construct a dragster that is fast and meets all requirements. Use leadership activities: *Finding a Way* and *Resolving Conflict*

Additional leadership skills promoted in this event:

- Communication
- Decision making
- Organization

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Aeronautical engineer
- Automotive designer
- Automotive modeler
- Industrial designer
- Industrial engineer
- Mechanical engineer
- Race car engineer



# DRAGSTER

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Event evaluators, two (2) or more
- C. Recorder for double elimination chart, one (1)
- D. Assistants, two (2)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Time trial record sheet
  - 6. Qualifier interview time slot sheet
  - 7. Double elimination bracket chart
  - 8. Results envelope with coordinator forms
- B. CO<sub>2</sub> cartridges
- C. Go/No-Go gauges for all evaluators
- D. Metric scientific scales (triple beam balance or digital)
- E. Mono-filament fishing line (50lb) for track (4 pre-tied, 2 on track, and 2 reserve)
- F. Race track set, including a starting gate and a finish gate with digital timer and winning lane indicator
- G. Padding for the finish gate
- H. One (1) or more test cars
- I. Tables for the display of cars and for evaluation
- J. Table at the starting line for arranging and holding cars prior to the races
- K. Table at the finish gate for the placement of cars after the races and to hold eliminated cars
- L. Table for the official time keeper



- M. When using a computer controlled track, provide the proper computer for the software being used, all necessary connections, and a printer (placed on the official time keeper's table)
- N. A method for displaying the time trial and race brackets

### RESPONSIBILITIES

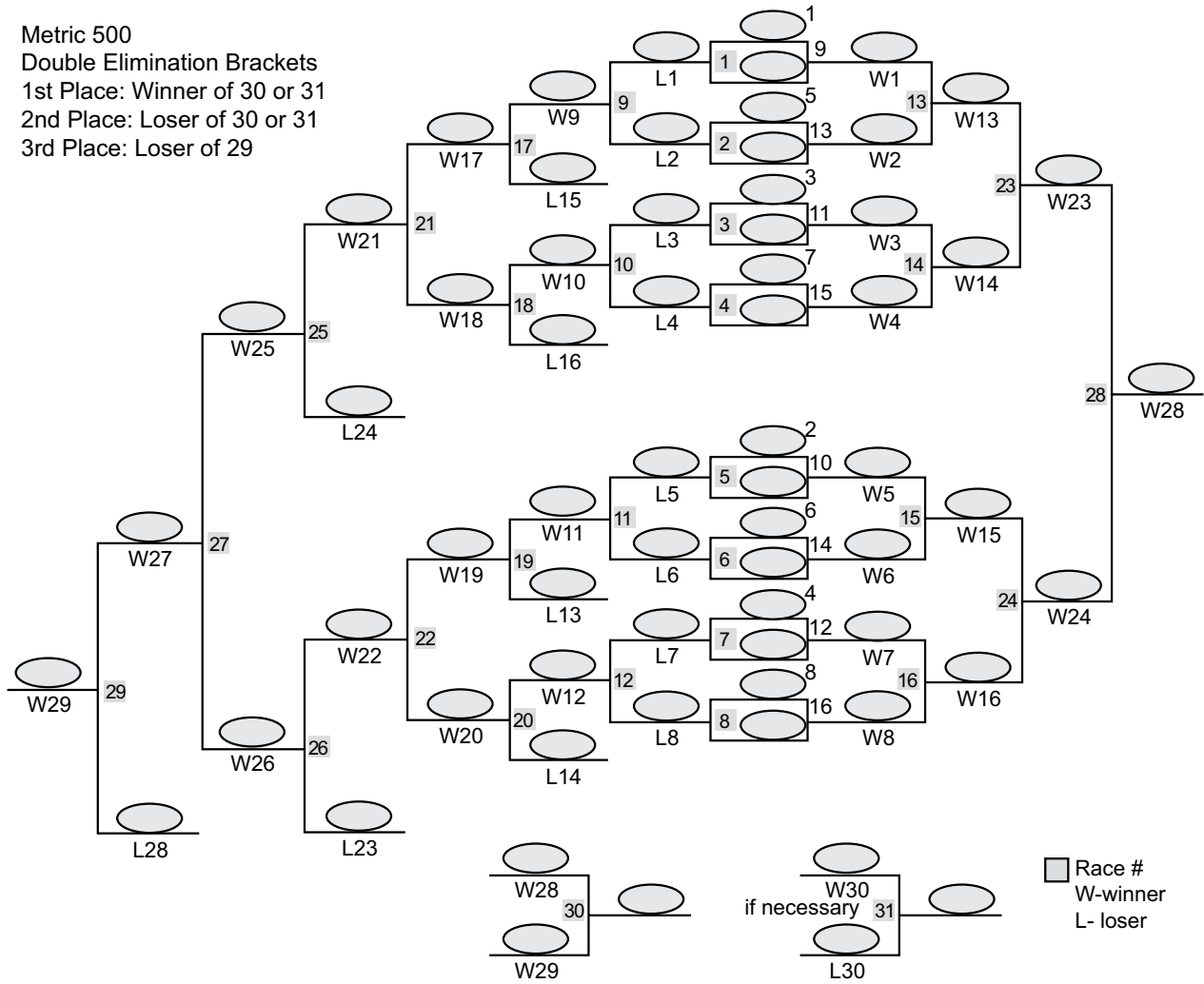
- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in. Secure the entries in the designated area.
- D. Check to see that each entry drawing includes the participant's identification number in the upper right-hand corner of the paper. Position each entry (dragster and drawing) for evaluation and viewing. Secure the entries in the designated area.
- E. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Assist evaluators with evaluation of the design, drawing, and construction categories.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Begin the time trials at the scheduled time. Every race-worthy car should be tested. Students do not have to be present, and public viewing is allowed.

- I. Position an evaluator at the starting gate to ensure that all cars are positioned in the starting gate correctly. Position another evaluator at the finish line. If there is a misfire or if a time is not properly recorded, a rerun may be ordered at the discretion of the event coordinator.
- J. Record preliminary times on a time trial record sheet. Place each car in the double elimination race bracket (see next page for sample) according to the rank of its qualifying time. (Check the TSA website under Competitions/Competition Updates for a sample.)
- K. Evaluators verify that the top sixteen (16) qualifying cars meet Regulation C specifications. Entries that do not meet specifications are removed. Cars that are damaged or broken during the qualifying round are deemed non-raceable and also are removed. Only raceable cars, as determined by the evaluators, are allowed to compete for the semifinalist category. Lower qualifying cars are moved up until there are sixteen (16) legal semifinalists.
- L. Begin the semifinals at the scheduled time. Only the sixteen (16) qualifying cars are raced. Students do not have to be present, and public viewing is allowed.
- M. Evaluators should use qualifying times to break any ties among the sixteen (16) qualifying cars.
- N. Submit the finalist results and all related forms in the results envelope to the CRC room.
- O. If necessary, manage security and the removal of materials from the event area.



# RACE BRACKET FOR 16-CAR DOUBLE ELIMINATION

Metric 500  
 Double Elimination Brackets  
 1st Place: Winner of 30 or 31  
 2nd Place: Loser of 30 or 31  
 3rd Place: Loser of 29





Participant/Team ID# \_\_\_\_\_

# DRAGSTER

**2016 & 2017 OFFICIAL RATING FORM**

**MIDDLE SCHOOL**

## Dragster Construction (50 points)

**Disqualification from race for tolerance violation (note rule number in the box).**

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
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Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)

<b>Dragster body production quality</b> (X1)	Dragster exhibits poor production quality; little or no attention to detail is evident; surface is crude and rough.	Dragster shows evidence of proper production techniques; dragster is adequate but needs some improvement.	Excellent production techniques are displayed in the dragster; obvious attention to detail and quality is evident.
<b>Body paint/finish</b> (X1)	Surface preparation is inadequate; body is unprimed, with poorly applied final finish.	Dragster body is painted and finished; it generally exhibits quality.	Dragster body finish is exemplary; body is smooth, shiny, and exhibits quality.
<b>Vehicle assembly</b> (X1)	Dragster exhibits poor or sloppy assembly of parts (loose wheels, eye screws are not level, and/or they are loose, etc.).	Dragster is well assembled, and it meets adequate standards.	Dragster is properly assembled, with obvious evidence of attention to detail.
<b>Drawing scale and dimensioning</b> (X1)	Drawing is present, but it is not to scale; dimensions are missing, or dimensioning is poorly done.	Drawing is acceptable, true to scale, and it is a close representation of the vehicle; some dimensions are missing.	Drawing is exemplary, exact, and includes all pertinent dimensions.
<b>Drawing completion and quality</b> (X1)	Drawing work is sloppy, missing parts, and lacking quality.	Drawing is complete; quality is average.	Drawing is complete, precise, and of exceptional quality.

**SUBTOTAL (50 points)**

Record scores in the column spaces below.

## Interview (20 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
----------	-----------------------------------	------------------------------------	--------------------------------------

<b>Car builder interview</b> (X2)	The student shows very limited knowledge of (and has difficulty articulating) how the car was produced or decisions made during the production; there are signs of the student not being involved in the dragster production.	The student demonstrates some knowledge of the dragster production and has adequate knowledge of some processes or reasoning behind the vehicle design.	The student shows competence and knowledge related to the design and production of the vehicle; the student is able to articulate "reasoning" behind the decisions made.
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**SUBTOTAL (20 points)**



Race (55 points)							
1st	2nd	3rd	4th	5th & 6th	7th & 8th	9th - 12th	13th – 16th
55 points	50 points	45 points	40 points	35 points	30 points	25 points	20 points
							<b>SUBTOTAL (55 points)</b>


Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

--

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (125 points)**

--

Comments:
I certify these results to be true and accurate to the best of my knowledge.
<u>Evaluator</u> Printed name: _____ Signature: _____



# ELECTRICAL APPLICATIONS

## OVERVIEW

Participants take a written test of basic electrical and electronic theory to qualify as semifinalists. Semifinalists assemble a specific circuit from a schematic diagram using a provided kit and make required electrical measurements. Semifinalists explain their solution during an interview.

## ELIGIBILITY

Participants are limited to two (2) individuals per chapter.

## TIME LIMITS


- A. Participants are allowed one (1) hour to complete the written test.
- B. Semifinalists are allowed one (1) hour to solve the circuit problem. Upon completion of the circuit, or at the end of the time limit, semifinalists are questioned about their solution in an interview.


## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants report to the event area at the time and place stated in the conference program.
- B. Participants complete the test within the time limit.
- C. Tests are scored. A semifinalist list in random order is posted.
- D. Semifinalists report to the event area at the time stated in the conference program.
- E. Semifinalists will build a circuit from the provided schematic diagram and make electronic measurements with their multimeter at the designated positions in the circuit, within the time limit, using the provided kit.
- F. Evaluators interview the semifinalists.

 To participate in this event, participants should bring a standard calculator and a basic knowledge of electrical theory.

 The Electrical Applications written test consists of a variety of questions about electrical and electronic theory. Participants may want to research the type of content to expect on the test.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### **REGULATIONS**

- A. An answer sheet (scan-type) and paper are furnished to each participant at the test site. Participants must provide their own pencils for the written test.
- B. Semifinalists provide their own standard calculator (no scientific calculators) and a battery-operated multimeter. All other equipment necessary to solve the on-site problem is provided by the coordinator.
- C. Semifinalists remain with their circuit solution until the evaluators have completed the interview.

### **EVALUATION**

Evaluation is based on points earned for the test, the accuracy and degree of completion of the circuit problem in the allotted time, and the interview. Please refer to the official rating form for more information.





## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Critical thinking: Students research and study electronics and electrical theory. Use leadership activities: *Guess the Famous Leader* and *Rebus Puzzles*
- Evaluation: Students adapt the solution as the event progresses. Use leadership activities: *Finish Line to Start Line* and *The Great "Evaluate"*
- Problem solving: Students apply knowledge while solving an on-site electrical problem. Use leadership activities: *Finding a Way* and *Resolving Conflict*

Additional leadership skills promoted in this event:

- Creative thinking

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Electrical engineer
- Electrical technician
- Electrician
- Electronic analyst
- Electronic designer
- Research assistant



# ELECTRICAL APPLICATIONS EVENT COORDINATOR INSTRUCTIONS

## PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two (2)

## MATERIALS

- A. Coordinator's packet, containing
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Copies of the written test for each participant
  - 5. On-site semifinalist circuit diagram problem, twelve (12) copies
  - 6. Results envelope with with coordinator forms
- B. Twelve (12) basic electricity kits for the semifinalist problem containing:
  - 1. (Minimum) 1.375" x 3.25" solderless circuit breadboard 10 x 30 pin positions
  - 2. One (1) 9-volt battery with snap-on battery connector
  - 3. One (1) 9-volt battery clip
  - 4. One (1) speaker (wires pre-soldered)
  - 5. Two (2) LEDs
  - 6. Twelve (12) connector wires
  - 7. Pushbutton switch (wires pre-soldered)
  - 8. One (1) photocell
  - 9. One (1) potentiometer (wires pre-soldered)
  - 10. One (1) IN4003 diode
  - 11. One (1) IC555 integrated circuit
  - 12. One (1) 2N3906 transistor
  - 13. One (1) 2N3904 transistor
  - 14. Resistors (minimum of one [1] each, ohms): 10, 10K, 47, 100, 220, 1K, 2.2K, 3.3K, 6.8K, 16K, 33K, 120K, 330, 470K
  - 15. Capacitors (in microfarads): .01, .1, 10, 100, 1000
  - 16. S106B1 SCR
- C. Twelve (12) wire strippers
- D. Twelve (12) schematic copies of the circuit problem



## RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and evaluators should be in the room at this time. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Monitor the one (1)-hour written test.
- F. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. Determine the twelve (12) semifinalists.
- H. Submit semifinalist results to the CRC for posting.
- I. Provide kits and the on-site circuit problem to the semifinalists.
- J. Supervise the one (1)-hour on-site circuit problem.
- K. Evaluators conduct semifinalist interviews in an area away from the other semifinalists.
- L. Evaluators determine the ten (10) finalists. Any ties should be broken on: first, test scores; second, interview points; third, electronic measurement accuracy.
- M. Submit the finalist results and all related forms in the results envelope to the CRC room.
- N. Manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

<b>ELECTRICAL APPLICATIONS</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Written Test Score (50 points)</b>			
			<b>SUBTOTAL (50 points)</b>
<b>Semifinalist Interview (80 points)</b>			
<b>Solution accuracy</b> (X1)	Solution attempt is evident but the solution is not complete, and/or there is no final solution.	Solution is not complete, though some measurements can be taken.	Solution is accurate and complete.
<b>Proper use of components</b> (X1)	Components are not used properly, and/or they are placed in the wrong sequence.	Components are used correctly, however, they may be placed in the improper sequence.	Components are used correctly and they are in the proper sequence and arrangement.
<b>Accuracy of measurements</b> (X1)	Measurements taken and calculated are 0-49% accurate.	Measurements taken and calculated are 50-89% accurate.	Measurements taken and calculated are 90-100% accurate.
<b>Articulation</b> (X1)	The interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the solution.	The interview is somewhat logical, easy-to-follow, and/or there is sufficient information provided that describes the solution.	The interview is clear, concise, and there is ample information provided that describes the solution.
<b>Delivery</b> (X1)	Participant is verbose and/or uncertain in the interview; participant's posture, gestures, and lack of eye contact diminish the interview.	Participant is somewhat well-spoken and clear in the interview; participant's posture, gestures, and eye contact are acceptable in the interview.	Participant is well-spoken and distinct in the interview; participant's posture, gestures, and eye contact result in a polished, natural, and effective interview.
<b>Organization</b> (X1)	Participant seems unorganized and unprepared for the interview; an illogical explanation of the solution is presented.	Participant is generally prepared for the interview; an explanation of the solution is communicated adequately.	The interview is logical and easy to follow; the solution is communicated in an organized and concise manner.
<b>Knowledge</b> (X2)	Participant seems to have little understanding of the necessary concepts; answers to questions may be vague.	Participant exhibits understanding of the concepts involved in the solution.	Participant shows clear evidence of a thorough understanding of the concepts involved in the solution.
			<b>SUBTOTAL (80 points)</b>

Record scores in the column spaces below.



Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (130 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.


Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_



# ENVIRONMENTAL ENGINEERING

 Environmental engineers use the principles of engineering, soil science, biology, and chemistry to develop solutions to environmental problems. They are involved in efforts to improve recycling, waste disposal, public health, and water and air pollution control.

## OVERVIEW

Participants conduct research on the environmental engineering topic posted on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems, document their research, and develop a multimedia presentation on the topic. Semifinalists create a presentation and will be interviewed.

## ELIGIBILITY

- A. Participants are limited to one (1) team per chapter.
- B. Two (2) or three (3) representatives per team may be involved in the semifinalist presentation/interview.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. Semifinalists are limited to ten (10) minutes for their presentation.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Team members research the current year's environmental engineering topic using resources such as studies, interviews, websites, magazines, professional journals, books, etc.
- B. Teams prepare their documentation and multimedia presentation according to the regulations.
- C. Teams check in their entries at the time and place stated in the conference program.
- D. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.



- E. Two (2) or three (3) representatives from each semifinalist team report for their presentation and interview at the time and place stated in the conference program.
- F. Semifinalists have up to ten (10) minutes for their presentation.
- G. No more than two (2) team members pick up the team's entry from the display area at the time and place stated in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. All work must be completed during the current school year.
- B. Students should become familiar with the fundamental concepts and principles of environmental engineering problems and technologies. Research related to the posted topic should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.
- C. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  1. Title page with event title, conference city and state, year, and the team/chapter ID number; one (1) page
  2. Table of contents
  3. Definition and explanation of the topic; (one) 1 page
  4. An overview of possible problems and solutions related to the topic; maximum three (3) pages
  5. Support materials such as logs; graphs, sketches, drawings, illustrations, photographs, etc; maximum four (4) pages
  6. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments (See Plan of Work log); pages as needed
  7. A list of references and credible resources; a minimum of three (3) different types of resources must be used; examples of resources include, but are not limited to,

studies, interviews, professional journals, websites, magazines, books, etc.; pages as needed

- D. Each team must be prepared to send two to three (2-3) representatives to a semifinalist portion of the event in which the representatives give a brief multimedia presentation that is followed by questions from the evaluators. The presentation should explain the team's research about the topic and solution and is not to exceed ten (10) minutes.
- E. Semifinalist team representatives **MUST** bring a laptop computer for their multimedia presentation. Projection equipment will not be permitted. A power source will not be provided, so student laptops must be charged.
- F. Students are encouraged to use multimedia software to organize and prepare their semifinalist presentation.

### **EVALUATION**

Evaluation is based on the documentation and the presentation/interview (semifinalists only). Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below.  
Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Creative thinking: Students will investigate and analyze an environmental topic. Use leadership activities: *Around the World* and *Open Minded*
- Ethics: Students will develop a solution to a posted topic. Use leadership activities: *Decision Mountain* and *The Lion and the Mouse*
- Evaluation: Students communicate within a group and to an audience. Use leadership activities: *Assumptions* and *Evaluation Methods*

Additional leadership skills promoted in this event:

- Self-esteem
- Teamwork
- Organization
- Ethics
- Creative thinking
- Evaluation

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Environmental technician
- Civil engineer
- Lab analyst
- Utilities manager
- Plant manager



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
1				
2				
3				
4				
5				
6				
Advisor signature _____				



# ENVIRONMENTAL ENGINEERING EVENT COORDINATOR INSTRUCTIONS

## PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Evaluators for semifinalist presentations, two (2) or more

## MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Pens for evaluators
  - 5. Stick-on labels for identifying entries
  - 6. Results envelope with coordinator forms
- B. Chairs, one (1) per participant
- C. Stopwatch for timing semifinalist presentations

## RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.
- D. Each entry must include the participant's identification number in the upper right-hand corner of the entry. Position entries for

- evaluation and viewing. Secure the entries in the designated area.
- E. Meet with evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
  - F. Evaluators independently review each entry to determine twelve (12) semifinalists.
  - G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
  - H. Submit semifinalist results to the CRC for posting.
  - I. Inspect the area in which the semifinalist presentations/ interviews are to take place. Prepare seating with adequate laptop space for the participants.
  - J. Meet with semifinalist evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
  - K. Conduct semifinalist presentations/interviews.
  - L. Evaluators determine the ten (10) finalists. Evaluators discuss and break any ties.
  - M. Submit the finalist results and all related forms in the results envelope to the CRC room.
  - N. Manage security and the removal of materials from the area.



Participant/Team ID# \_\_\_\_\_

# ENVIRONMENTAL ENGINEERING

2016 &amp; 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Entry (60 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation C (X1)	Portfolio is unorganized and/or missing three or more components.	Portfolio has most components, and it is somewhat organized.	One or no components are missing in the portfolio, and content and organization are clear.
<b>Definition and explanation of topic</b> (X1)	Definition and explanation of topic are unclear.	Topic is defined and explained appropriately.	Clear and concise definition and explanation of the topic are evident.
<b>Overview of problems and solutions</b> (X1)	Overview is unclear.	Overview is presented adequately.	Overview is clear, concise, thorough, and interests the reader.
<b>Research base</b> (X1)	Research lacks evidence of adequate resources, and/or very few credible sources are referenced.	Research has been conducted appropriately, with some credible sources included.	Research indicates evidence of a comprehensive assortment of materials that includes credible sources.
<b>Support materials</b> (X1)	Support materials do not help clarify the documentation or are of little significance to the topic.	Support materials are appropriate and help supplement documentation by providing clarity to the topic.	Support materials are of excellent quality; if not original, they are cited; support materials clarify abstract concepts.
<b>Quality, effectiveness, and mechanics</b> (X1)	Portfolio appears to have been thrown together; distracting errors in punctuation, grammar, and spelling are evident in the documentation.	Portfolio is generally organized; punctuation, grammar, and spelling are generally correct, with few errors.	Work is of exceptional quality and well organized; punctuation, grammar, and spelling are correct, with no errors.
			<b>SUBTOTAL (60 points)</b>

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

## Semifinalist Presentation/Interview (80 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation/interview; illogical explanation of problem and solution is presented.	Participants are generally prepared for the presentation/interview; explanation of problem and solution is communicated and generally organized.	The presentation/interview is logical, well organized, and easy to follow; the problem and solution are communicated in an organized and concise manner.



Semifinalist Presentation/Interview (80 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Multimedia presentation flow and layout</b> (X1)	Some structure is evident in the presentation, but it appears cluttered and busy, and/or it has large gaps of white space, and/or an unpleasing background.	Presentation flows fairly smoothly from one slide to another; layout of each slide incorporates appropriate text sizes and/or backgrounds and graphics.	Presentation is visually pleasing and contributes to the overall message, with appropriate use of headings, graphics, and backgrounds.
<b>Multimedia presentation components</b> (X1)	Some of the graphics, sounds, and/or animations in the presentation seem unrelated to the topic and do not enhance the overall concepts.	Graphics, sound, and/or animations in the presentation visually depict materials and increase audience understanding.	Graphics, sound, and/or animation in the presentation assist in presenting an overall theme and enhancing understanding.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation/interview; participants' posture, gestures, and lack of eye contact diminish the presentation/interview.	The team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact are acceptable in the presentation/interview.	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation/interview.
<b>Team participation</b> (X1)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged from the presentation/interview.	Team members generally are engaged in the presentation/interview, though one member may take on more responsibility than the other(s).	All team members are actively and equally involved in the presentation/interview.
<b>Articulation</b> (X1)	The presentation/interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation/interview is somewhat logical, generally easy to follow, and/or there is sufficient information provided describing the project.	The presentation/interview is clear, concise, and there is ample information provided describing the project.
			<b>SUBTOTAL (80 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (140 points)**

Comments:

---

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# ESSAYS ON TECHNOLOGY

## OVERVIEW

Participants will conduct research on specified subtopics of a broader technological area. The topic and subtopics will be posted on the TSA website under Competitions/Themes and Problems. Using the knowledge and resources gained through their research, participants will write a comprehensive essay on the one (1) subtopic that is designated on site.

## ELIGIBILITY

Participants are limited to three (3) individuals per state.

## TIME LIMITS


The allotted time for each phase (preliminary and semifinalist) of the event is one (1) hour.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. In preparation for the event, participants research the topic and related subtopics, creating a bulleted outline on 3" x 5" note cards using the format displayed on page 167. Participants will be permitted one (1) note card for each subtopic, which they are required to bring to the competition. The bulleted outlines must be handwritten on one side of the 3" x 5" note cards (one [1] for each subtopic), and the sources and references will be handwritten on the other side of the note card. Participants are not permitted to enter the competition area with computer-generated notes, notes that are not handwritten, or notes not contained on 3" x 5" note cards.
- B. Participants report to the event area at the time and place stated in the conference program.

 In this event, thorough preparation is the key to success!



- C. Each participant will be provided with lined paper. Participants are responsible for bringing a blue or black ink pen to the event site. The pen may be “erasable.” Participants may also bring correcting fluid or correction tape to the site.
- D. One (1) of the subtopics is randomly drawn, and it is this subtopic for which the participants prepare a detailed outline using the format displayed on page 167.
- E. Timing begins after the subtopic is announced.
- F. After one (1) hour the participants stop writing. Each participant turns in a detailed outline not to exceed two (2) pages, a one (1)-page reference list using MLA format, and the relevant note card.
- G. The detailed outlines and note cards are reviewed by evaluators. Neither students nor advisors are present at this time.
- H. Evaluators will determine twelve (12) semifinalists, who will write an essay on the subtopic as submitted on the detailed outline.
- I. Semifinalists will be given one (1) hour to write an essay on the subtopic. After one (1) hour, the participants stop writing. Each participant turns in an essay not to exceed five (5) pages.
- J. Evaluators review entries. Neither students nor advisors are present at this time. Ten (10) finalists are determined and ranked by the evaluators.
- K. Ten (10) finalists are announced at the awards ceremony.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**





## REGULATIONS

### Preliminary Round

- A. Each participant is required to bring one (1) 3" x 5" note card for each subtopic. All research material brought into the event area must be handwritten on the note cards. Each participant may also bring a dictionary and/or a thesaurus to the event. The dictionary and thesaurus must be in print format, not electronic format.
- B. Note cards are to contain a bulleted outline of the subtopic (one [1] card per subtopic) on one (1) side, with sources and references on the other side of the card.
- C. Note cards are not to contain introductory or concluding paragraphs, nor are details to be written in sentence form. The outline on the note card may contain a thesis statement.
- D. The bulleted outline for note cards is required to follow the format on page 167.
- E. Only participants are allowed in the event area. Should a participant finish before the allotted time expires, the participant is allowed to leave quietly but may not reenter the event room.
- F. Participants are responsible for bringing a blue or black ink pen to the event site. The pen may be "erasable." The participant may also bring correcting fluid or correction tape to the site.
- G. Each outline page submitted must have the participant entry number only (i.e. no other identifying information) written in the upper right-hand corner of each page.
- H. The length of the detailed outline is limited to two (2) handwritten pages, one (1) side of the paper only, single-spaced.
- I. With the outline, participants must turn in a one (1) page bibliography (written on one [1] side of the paper only, using proper MLA bibliography format), and the relevant note card.
- J. The relevant note card is to have the participant entry number written in the upper right-hand corner.
- K. The detailed outline for the preliminary round is required to include details for an introductory paragraph, a body (of the essay), and a concluding paragraph; all details are to be in sentence form.

- L. The detailed outline is required to follow the format displayed on page 167.
- M. Twelve (12) semifinalists will be determined; semifinalists will write an essay on the subtopic.

### **Semifinalist Round**

- A. Each participant will receive his/her outline, bibliography, and note card submitted from the preliminary round.
- B. Each participant is allowed to bring a dictionary and/or thesaurus to the event. The dictionary and thesaurus must be in print format, not electronic format.
- C. Participants are responsible for bringing a blue or black ink pen to the event site. The pen may be “erasable.” The participants may also bring correcting fluid or correction tape to the site.
- D. Each essay must have the participant’s entry number only written in the upper right-hand corner of each page submitted.
- E. The length of the essay is limited to five (5) handwritten pages, one (1) side of the paper only, and double-spaced. The list of references (bibliography) is not included in the five (5) pages.
- F. With the essay, participants must turn in a one (1)-page bibliography (written on one [1] side of the paper only, using proper MLA bibliography format), the outline from the preliminary round, and the relevant note card.
- G. All essays, outlines, and note cards become the property of national TSA.

### **EVALUATION**

Entries are evaluated according to the quality of the outline and essay. Please refer to the official rating form for more information.



## OUTLINE FORMAT FOR NOTE CARDS

### Title of Essay

#### I. Introduction

Thesis statement (may be written in sentence form)

#### II. Body

##### A. Point A

1. Supporting detail
2. Supporting detail

##### B. Point B

1. Supporting detail
2. Supporting detail

##### C. Point C

1. Supporting detail
2. Supporting detail

#### III. Conclusion

## DETAILED OUTLINE FORMAT PRELIMINARY ROUND

### Title of Essay

#### I. Introductory paragraph

#### II. Body

##### A.

1.
  - a.
  - b.

2.
  - a.
  - b.

##### B.

1.
  - a.
  - b.

2.
  - a.
  - b.

##### C.

1.
  - a.
  - b.

2.
  - a.
  - b.

#### III. Concluding paragraph

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication — Students communicate through written language. Suggested leadership activities: *Communication Breakdown and Mirror Mirror*
- Critical thinking — Students conduct research to write a well-developed essay. Suggested leadership activities: *Fact or Fiction and Rebus Puzzles*
- Self-esteem — Students gain confidence in understanding a topic by conducting thorough research. Suggested leadership activities: *Name Game and Personal Inventory*

Additional leadership skills promoted in this event:

- Decision making
- Evaluation

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Economist
- Engineer
- Research technician
- Scientist
- Technical writer



# ESSAYS ON TECHNOLOGY

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Semifinalist evaluators, two (2) or more
- D. Timekeeper, one (1)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stopwatch
  - 5. Results envelope with coordinator forms
- B. Securable room (preferable) during time of the event
- C. Lined paper, five (5) sheets per participant in the preliminary round; ten (10) sheets per each twelve (12) semifinalists.
- D. Subtopics, one (1), which is chosen on site as the essay topic
- E. Paper clips and staplers for securing note cards, outlines, and essays
- F. Tables and chairs for event coordinator, evaluators, and participants

### RESPONSIBILITIES

#### Preliminary Round

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.

- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- E. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants should be in the room at this time. Participants not present may be disqualified. In order to compete, participants must be on the entry list or must have approval of the CRC. An individual who is not on the entry list is permitted to participate, but the coordinator **MUST** confirm the individual's eligibility. If it is found that the individual is not registered for the event, the individual is disqualified. Late entries are considered on a case-by-case basis and only when the lateness is caused by circumstances beyond the participant's control.
- F. Distribute five (5) sheets of ruled notebook paper to each participant. Provide additional paper as needed.
- G. Instruct participants to identify their outline with only their entry number written in the upper right-hand corner of each page submitted. No other identifying information may be included.
- H. Remind participants to single-space their outline and submit no more than two (2) pages for evaluation, plus a single page for references, and the note card used for research (each with their entry number in the upper right hand corner).
- I. Randomly select one (1) of the subtopics. This subtopic becomes the subject for all the entries.
- J. Instruct participants who finish before time is called that they may submit their work and leave quietly.
- K. Five (5) minutes before the hour is up, make an announcement that the participants have five (5) minutes to complete their outlines. Exactly one (1) hour after beginning, call time and collect the outlines, reference pages, note cards, and unused paper.
- L. Supervise and assist the evaluators during the evaluation of the outlines and note cards. Each entry must be read independently by two (2) evaluators. Evaluators keep working until each entry has been assessed twice.



- M. The two (2) scores for each entry are averaged and the top twelve (12) entries are determined. These twelve (12) entries are to be posted as semifinalists.

### Semifinalist Round

- A. Distribute participant's outlines and note cards from the preliminary round as participants check in to the semifinalist round.
- B. Distribute ten (10) sheets of ruled notebook paper to each participant. Provide additional paper as needed.
- C. Instruct participants to identify their essay with only their entry number written in the upper right-hand corner of each page of the essay submitted. No other identifying information may be included.
- D. Remind participants to double space their written work and submit no more than five (5) essay pages, plus a single page for references (with their entry number in the upper right hand corner). Each participant is required to turn in the outline and the note card used for the preliminary round.
- E. Instruct participants who finish before time is called that they may submit their work and leave quietly.
- F. Five (5) minutes before the hour is up, make an announcement that the participants have five (5) minutes to complete their essays. Exactly one (1) hour after beginning, call time and collect the essays, reference pages, outlines, note cards, and unused paper.
- G. Supervise and assist the evaluators during the reading of the essays. Each entry must be read and assessed independently by two (2) evaluators. Evaluators keep working until each entry has been assessed twice. Evaluators discuss and break any ties, and determine the ten (10) finalists.
- H. Submit the finalist results and all related forms in the results envelope to the CRC room.
- I. If necessary, manage security and the removal of materials from the area.



Participant/Team ID# \_\_\_\_\_

# ESSAYS ON TECHNOLOGY

2016 & 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Preliminary Round - Detailed Outline (80 Points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Format</b> (X1)	Outline only minimally follows the required format.	Outline generally follows the format, with most items from the format included.	Outline clearly follows the format; elements are in the proper sequence, and all items are included.
<b>Thesis</b> (X1)	Thesis is not a complete thought and/or is inappropriate for the essay; essay title and thesis do not correlate with one another; thesis lacks creativity.	Thesis is evident, and the idea behind the thesis is generally clear, concise, and/or creative; essay title correlates with the thesis.	Thesis is well structured, concise, and creative; essay title correlates well with thesis.
<b>Introduction</b> (X1)	Introduction lacks detail; thesis does not help to establish the writer's position.	Introduction creates some interest; thesis clearly states the writer's position.	Introduction is well developed; thesis clearly states a significant and compelling position.
<b>Body (of essay)</b> (X1)	Outline of paragraphs lacks main points to support the thesis, and/or there is a poor development of ideas.	Outline of paragraphs includes main points that are related to the thesis; examples have adequate supporting details.	Outline of paragraphs provides well-developed main points directly related to the thesis; supporting examples are concrete and detailed.
<b>Conclusion</b> (X1)	Conclusion is recognizable, but it does not effectively summarize the topic.	Conclusion effectively summarizes the points of the topic.	Conclusion clearly wraps up the points of the topic and goes beyond restating the thesis.
<b>Organization</b> (X1)	No discernible organization is apparent.	There is a logical progression of ideas in the outline; some structure is evident.	The outline conveys a logical progression of ideas, with a clear structure that enhances the thesis.
<b>Mechanics</b> (X1)	Outline contains distracting errors in punctuation, grammar, and spelling; handwriting is messy and/or illegible.	Punctuation, spelling, and grammar are generally correct, with few errors; handwriting is adequate and/or mostly legible.	Punctuation, spelling, and grammar are correct, with no errors; handwriting is easy to read.
<b>Bibliography</b> (X1)	References are not used effectively and/or do not pertain to the topic; limited quality sources are used; bibliography is not in the proper MLA format.	Most sources used are credible and of good quality; most references help to support the essay topic; bibliography is in the proper MLA format but has some errors.	Outline includes multiple and varied sources, all of which are credible, appropriate, and support the topic; bibliography is in proper MLA format, with no errors.
			<b>SUBTOTAL (80 points)</b>

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_





Semifinalist Round - Essay (100 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Thesis</b> (X1)	Thesis is not a complete thought and/or is inappropriate for the essay; essay title and thesis do not correlate with one another; thesis lacks creativity.	Thesis is evident, but the idea behind the thesis may not be clear or concise, and/or it may be lacking in creativity; essay title somewhat correlates with the thesis.	Thesis is well structured, concise, appropriate, and creative; essay title correlates well with thesis.
<b>Introductory paragraph</b> (X1)	Introduction provides background but may lack detail; thesis does not help to establish the writer's position.	Introduction creates interest; thesis clearly states the position.	Introduction is well developed, it engages the reader, and it creates interest; the thesis clearly states a significant and compelling position.
<b>Body paragraphs</b> (X2)	Paragraphs lack main points to support the thesis, and/or there is a poor development of ideas.	Paragraphs include main points that are related to the thesis; supporting details are adequate.	Paragraphs provide well-developed main points directly related to the thesis; supporting examples are concrete and detailed.
<b>Concluding paragraph</b> (X1)	Conclusion is recognizable, but it does not effectively summarize the topic.	Conclusion effectively summarizes the topic.	Conclusion wraps up the points of the essay and goes beyond restating the thesis.
<b>Organization</b> (X1)	No discernible organization is apparent; transitions are not present.	There is a logical progression of ideas in the essay; transitions are present throughout the essay.	The essay conveys a logical progression of ideas, with a clear structure that enhances the thesis; transitions are mature and graceful.
<b>Style</b> (X1)	The style is confusing and hard to follow; it contains fragments and/or run-on sentences; word choice is simple, ordinary, and/or repetitive.	The style is generally clear, but sentences may lack variety; word choice is appropriate.	The style is smooth, skillful and coherent; sentences are strong and expressive, with varied structure; word choice is appropriate and mature.
<b>Mechanics</b> (X1)	Essay contains distracting errors in punctuation, grammar, and spelling; handwriting is messy and/or illegible.	Punctuation, spelling, and grammar are generally correct, with few errors; handwriting is generally legible.	Punctuation, spelling, and grammar are correct, with no errors; handwriting is easy to read.
<b>Research base</b> (X1)	Essay lacks an adequate research base, and/or very few credible sources are referenced.	Research is conducted appropriately, with generally credible sources.	Essay conveys a comprehensive research base that includes clearly credible sources.
<b>Bibliography</b> (X1)	References are not used effectively and/or do not pertain to the topic; limited quality sources are used; bibliography is not in the proper MLA format.	Most sources used are credible and of good quality; most references help to support the essay topic; bibliography is in the proper MLA format, with only minor errors.	Essay incorporates multiple and varied sources, all of which are credible, appropriate, and support the topic; bibliography is in proper MLA format, with no errors.
			<b>SUBTOTAL (100 points)</b>



Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (180 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.


Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_

## OVERVIEW

Participants study the principles of flight and design in order to fabricate a glider that stays in flight for the greatest elapsed time. The glider must be designed to be launched from a catapult that is provided on site. The design process is documented in a portfolio that is submitted for evaluation.

 This popular event requires test phase pictures, flight logs, and a drawing.

## ELIGIBILITY

Participants are limited to two (2) members per chapter, one (1) entry each.

## SAFETY

Participants are required to provide and wear safety-approved eyewear during all phases of this event. Prescription eyewear will need to have side shields to be considered safety eyewear. Should a participant remove his/her eyewear during the event, s/he will be reminded once to replace it. If there is a second infraction, the participant will be disqualified and asked to leave the competition. TSA will not supply safety glasses.

Students must be instructed by their teachers on the proper use of cyanoacrylate (CA) glue.

## TIME LIMITS

- A. Participants have ninety (90) minutes to construct a glider.
- B. Participants are given a maximum of thirty (30) minutes for trimming (test flights) of their glider.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants report to the event area at the time and place stated in the conference program with their metric technical drawing, portfolios, tools, and supplies.



- B. Participants use their metric technical drawing to fabricate a glider. The technical drawing may be hand drawn using mechanical drawing instruments, or created using CAD.
- C. Participants may use templates, jigs, and fixtures for constructing the glider.
- D. Portfolios are evaluated.
- E. Participants have four (4) opportunities to fly their gliders for official times. The combined flight time of the best three (3) of the four (4) flights is used to determine the ten (10) finalists.
- F. Launch procedures
  1. Participants are called by their group timer to the designated launch area.
  2. The timers give each participant a turn to fly his/her gliders. Participants must do all four (4) flights consecutively during their turn.
  3. The glider is hooked to the rubber loop of the catapult provided by TSA, and the participant pulls the glider's shark tooth point back to the wooden stop in front of the 350mm stop block on the catapult. The altitude and angle of the catapult (with the glider on it) are determined by participants as the glider is launched.
  4. The participant releases the glider after getting the OK from the official timer.
  5. Flight time begins when the glider is released and ends when the glider hits the floor or ground, or when it comes to rest on an obstruction.
  6. One repair will be allowed after the individual time trials have begun. The repair must be made in three (3) minutes or less. No additional trimming will be allowed after the repair.
  7. Each participant has the times of four (4) trial flights recorded by the timer.
  8. Ties are broken by determining the longest single flight time.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### REGULATIONS

- A. Students are required to provide and wear safety eyewear for this event.



Safety glasses are a requirement for this event. Students without safety glasses are not allowed to participate.

- B. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
1. Title page with event title, conference city and state, the year, and the participant's ID number; one (1) page
  2. Full-size metric technical drawing with dimensions of the glider to be built; 11" x 17" paper may be folded to fit in the sheet protector.
  3. Pictures of two (2) test gliders will be included in the portfolio (participants are to submit only one (1) picture of each test glider, for a total of two (2) pictures).
  4. Flight log for each pictured test glider (see Flight Log sample)
  5. A graphic flow chart with picture and design principles used in building and adjusting gliders used for successful flights.
- C. Participants are not allowed to construct a glider without a completed technical drawing in their documentation portfolio.
- D. Technical drawing must:
1. be created using CAD, or hand-drawn with traditional mechanical drawing instruments
  2. NOT be a freehand sketch
  3. show all parts that make up the glider
  4. show metric dimensions
  5. be drawn to full scale
  6. be drawn on a single sheet of paper no larger than 11" x 17"

### Flight Log sample

Glider #1 or Glider #2 (circle one)			Dates:	
Flight #	Time aloft	Flight pattern	Trim adjustment	Advisor sign-off
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				

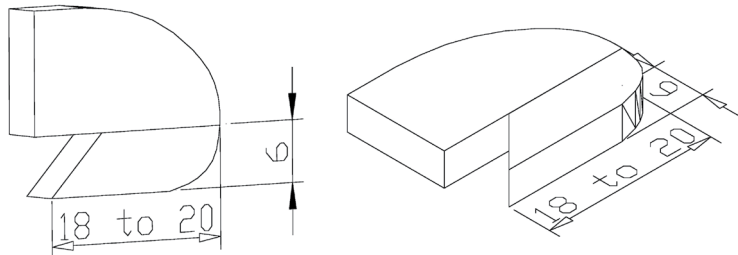
Tools must fit inside the tool box, which must measure no more than twenty (20) inches (508 mm) length x ten (10) inches (254mm) width x ten (10) inches (254 mm) height. Participants should bring the tools needed and leave the rest behind. Transporting and checking in will be made simpler with a smaller and lighter tool box.

This event requires the use of cyanoacrylate glue (best know as Super/Krazy glue) instead of aliphatic resin glue. Participants should practice with this material before the conference!

- E. Participants are required to provide their own tool box (with identification [school name, address, and advisor cell phone number]), which is not to exceed twenty (20) inches (508 mm) length x ten (10) inches (254 mm) width x ten (10) inches (254 mm) height. The box must contain all items needed to fabricate the solution. Participants are not permitted to share toolboxes. The following is a suggested list:
1. Cutting devices; NONE may be electric
  2. Adhesives
    - a. aerosol and electric applicators are not allowed
    - b. a bottle of Uncure or Debonder is recommended
    - c. a single two (2)-ounce bottle of accelerant (pump or drip) is permitted
  3. Temporary fastening devices
    - a. straight pins
    - b. clamps
    - c. tape
  4. A cutting surface that prevents table-top marring (required)
  5. Rulers, straightedges, and/or measuring scales
  6. Abrasives sheets, sponges, boards
  7. Marking devices (pens, pencils, etc.) and sharpener
  8. Sheet of wax paper, as large as is needed for the competition (required)
  9. Safety glasses, as required
- F. Materials (**SUPPLIED BY THE PARTICIPANT**) (Participants may have only one [1] of each wooden part. Extra wooden parts will not be allowed, therefore wood should be chosen carefully.)
1. Balsa and/or basswood plus ballast material
    - a. fuselage blank, 3mm ( $\frac{1}{8}$ " ) thick x 13mm ( $\frac{1}{2}$ " ) wide x 300mm ( $11\frac{7}{8}$ " ) long
    - b. wing blank, 1.5mm ( $\frac{1}{16}$ " ) thick x 77mm (3" ) wide x 300mm ( $11\frac{7}{8}$ " ) long
    - c. stabilizer and fin blank, .75mm ( $\frac{1}{32}$ " ) thick x 51mm (2" ) wide x 150mm ( $5\frac{7}{8}$ " ) long
    - d. wooden shark's tooth hook, 3mm ( $\frac{1}{8}$ " ) thick x 6.5mm ( $\frac{1}{4}$ " ) wide x 20mm ( $\frac{3}{4}$ " ) long, glued to the bottom of the fuselage; a shark's tooth cut into the fuselage will also be permitted.

G. Tolerances are as follows:

1. Fuselage: 298mm to 300mm long
2. Shark's tooth hook: 18mm to 20mm long x 6mm wide



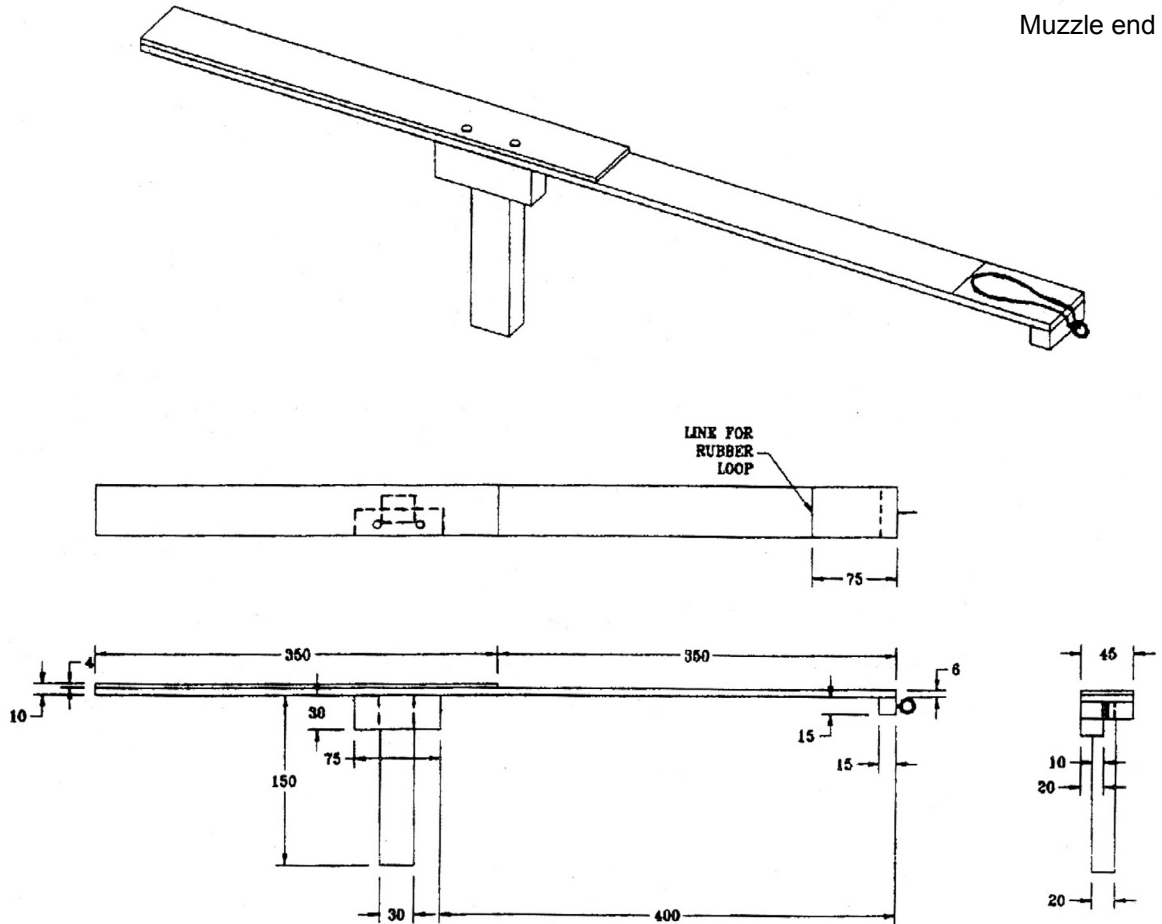
Participants must provide and bring their own tool box and building materials to the event site.

H. Catapult specifications (to be used for trim and experimentation at home, school, and during preparation prior to time trial flights):

1. Catapults for timed flights at the national event site are supplied by TSA. Participants who prefer, may use their own catapults during trim flights. During time trial flights, ONLY catapults provided by TSA may be used.
  2. Catapults are made from hardwood or plywood.
  3. Catapult wooden stick dimensions: laminate a piece of wood (10mm thick x 45mm wide x 700mm long) to a second piece of wood (6mm thick x 45mm wide x 350mm long), aligning the pieces at the handle end and gluing them face-to-face (see drawing).
  4. The handle is 20mm thick x 30mm wide x 150mm long and is attached by screws to a 15mm thick x 30mm wide x 75mm long block using a middle-lap joint. The 75mm long block then is screwed to the laminated main catapult stick beginning at 400mm from the muzzle end.
  5. The rubber loop is a #19 rubber band  $3\frac{1}{2}$ " x  $\frac{1}{16}$ " threaded through the screw eye of the launcher. Rubber bands are available in bulk from office suppliers such as Office Max, Office Depot, and Staples.
  6. The screw eye is attached to the center of the 15mm thick x 15mm wide x 45mm long wooden block connected to the underside of the muzzle end of the catapult.
- I. Templates, jigs, and fixtures that MAY be used in constructing gliders (these are to help facilitate fast and accurate construction):
1. Templates, jigs, and fixtures must be developed and built by students.
  2. Storage container—All student-made items must fit in a box not exceeding 254mm high x 254mm wide x 508mm long.

3. Sanding blocks—These may have two (2) grits affixed to the top and bottom; grits are chosen by the student.
4. Traction plate with sandpaper (150mm x 300mm maximum) attached to a thin piece of rigid material, i.e., plywood, foam core board, press board, cardboard, plastic, etc.
5. Dihedral fixture—This is an all-wood apparatus that assists in sanding the critical dihedral joints and secures the model as the glue dries to ensure a precise prototype.

### CATAPULT DRAWING



### EVALUATION

Evaluation is based on points earned for the quality of the documentation portfolio and the accumulated flying time of three (3) trials. Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below.  
Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Decision making: Students decide the most effective fly glider design. Use leadership activities: *Banking on It* and *The Store*
- Evaluation: Students understand tradeoffs, keep a flight log, and evaluate the design. Use leadership activities: *Finish Line to Start Line* and *Grading the Advertisement*
- Problem solving: Students repair and trim the glider. Use leadership activities: *Finding a Way* and *Resolving Conflict*

Additional leadership skills promoted in this event:

- Communication
- Creative thinking
- Critical thinking

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Aeronautical engineer
- Aircraft systems engineer
- Physics instructor

# FLIGHT

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two (2) or more
- D. Timekeepers, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator/assistant
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stopwatches, two (2) or more
  - 5. Results envelope with coordinator forms
- B. Other supplies
  - 1. Measuring scales
  - 2. First aid kit with strip bandages and debonder
  - 3. Catapults, five (5)
  - 4. #19 rubber bands
  - 5. Metric rulers

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.

- D. For participants who violate the rules, the decision either to
  - 1) deduct twenty percent (20%) of the total points earned or
  - 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- E. Check in participants at the time stated in the conference program.
- F. Check each documentation portfolio for the sketch; check each toolbox for allowed items (including safety glasses, cutting board, and wax paper) and for appropriate size.
- G. Distribute the list of entrants assigned to each designated evaluator/timer.
- H. After the gliders have been constructed, secure the holding area so that the gliders and documentation portfolios remain safe until the scheduled time for trimming.
- I. Designate times for test flying/trimming and communicate the thirty (30)-minute segment scheduled for each group of participants.
- J. Designate times for groups to make four (4) official flights for time.
- K. Timed flight procedure
  - 1. Each flight time is recorded to the nearest one hundredth (.01) of a second.
  - 2. After the fourth flight, the top three (3) flight times are added together, then multiplied by three (3) to obtain the total flight score; each glider is placed with its documentation portfolio.
  - 3. Three (3) groups may fly simultaneously in the assigned area for the event, with consideration for the safety of gliders and participants.
- L. Documentation portfolios are judged.
- M. Evaluators determine the ten (10) finalists. Through the discussion process, the evaluators break any ties that affect the top three (3) placements.
- N. Submit the finalist results and all related forms in the results envelope to the CRC room.
- O. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

FLIGHT			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Safety glasses must be worn for all phases of this competition. Should a participant remove his/her eyewear during the event, s/he will be reminded once to replace the eyewear. If there is a second infraction, the participant will be disqualified.	Safety glasses warning		Safety glasses disqualification
Documentation (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> (X1)	Portfolio is unorganized and/or missing three or more components.	Portfolio may be missing up to two components; it is mostly organized.	All components are included in the portfolio, and content and organization are clearly evident.
<b>Full scale technical drawing</b> (X1)	Technical drawing is missing two or more components; parts of the glider are not shown; non-metric dimensioning is used; technical drawing is not drawn to full scale and/or is on paper larger than 11"x17", and/or it is sloppy.	Technical drawing may be missing one component; the technical drawing is largely correct and neatly completed.	All components are included in the technical drawing and the drawing is correctly and neatly completed.
<b>Technical drawing/built glider correlation</b> (X1)	Glider built for the competition does not match the technical drawing in dimensions or appearance; glider is not designed/built properly for the event.	Glider is similar to the technical drawing within a tolerance of 5mm; glider is designed correctly to fly in the competition.	Glider is within a tolerance of 2mm of the technical drawing; glider is constructed exactly as the technical drawing illustrates.
<b>Test glider pictures</b> (X1)	One test glider photo is missing, and or pictures are not clearly visible, and/or they lack definition/detail of each glider.	Pictures of both test gliders are included; each picture is clearly visible, but pictures provide only adequate definition and/or detail.	Both test glider pictures include significant details and annotations about each glider; clearly visible pictures are defined.
<b>Flight logs</b> (X2)	One flight log is missing, and/or the logs are incomplete, and/or advisor signature is not included.	Both logs are included and they are generally complete.	Both logs are included and are complete, with a thorough understanding of a flight log's purpose as a flight aid.
			<b>SUBTOTAL (60 points)</b>

Record scores in the column spaces below.



Flights (recorded to the nearest one hundredth [.01] of a second)		
Duration of flight #1		Seconds
Duration of flight #2		Seconds
Duration of flight #3		Seconds
Duration of flight #4		Seconds
		The flight duration times of the three (3) longest flights are added, then multiplied by three (3) to obtain the subtotal flight score.
		<b>SUBTOTAL Flight Score</b>

Rules violations (a deduction of 20% of the total points earned) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# FORENSIC TECHNOLOGY

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## OVERVIEW

Participants take a written test of basic forensic science theory to qualify as semifinalists. Semifinalists demonstrate their ability to use forensic technology and skills to collect from and analyze a mock crime scene.

## ELIGIBILITY

Entries are limited to one (1) team of two (2) individuals per chapter.

## TIME LIMITS

- A. Participants are allowed one (1) hour to complete the written test.
- B. Semifinalists are allowed fifteen (15) minutes to gather evidence from the mock crime scene. Time commences when all participants are in the crime scene room and concludes after fifteen (15) minutes. An additional fifteen (15) minutes is allowed for teams to write their analysis. Time begins when a team enters the analysis room and concludes at the end of fifteen (15) minutes.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Team members report for the written test at the time and place stated in the conference program.
- B. A written forensic science test is administered to all team members at the same time.
- C. Twelve (12) teams with the highest averaged scores are selected as semifinalists for the on-site problem. A list of semifinalists in random order is posted.
- D. Semifinalist teams report to sign up for a time slot for the on-site problem at the time and place stated in the conference program.



- E. Each team will be given a copy of the on-site problem and allowed fifteen (15) minutes to review the crime scene to collect items, data, and/or other information necessary to solve the problem. At the end of the fifteen (15)-minute period, teams will be taken to another area and given fifteen (15) minutes to complete the written analysis (see Mock Crime Scene Analysis form).


**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Team members take the written test individually. These same two team members will compete in the semifinalist round, should the team qualify.
- B. No reference may be made concerning the name of the team, the team members, or their school. Team members are to write their team identification number in the top right corner of the written analysis.
- C. Each written analysis must be the result of the team's own effort. No reference materials may be used during this event.
- D. No observers are allowed in the event or preparation rooms during the event.
- E. Teams are required to bring their own pencils (for the written test and the semifinalist round) and kit containing the following forensic tools:

### Required forensic tools

1. roll of string
2. safety glasses (2 pairs)
3. tape measure (10 m)
4. lift backing cards (with scale)
5. tweezers
6. scissors
7. crime scene template
8. flashlight
9. pen or fine point marker (for labeling)
10. pencils

 Participants must provide—and bring to the test site—two (2) pencils (sharpened standard #2/HB grade with an eraser, or #2 mechanical with an eraser) for any competition that involves a written test.



Optional tools:

1. Clipboard(s)
  2. Blank sheets of paper (for note taking)
- F. In order to provide a written report/analysis for the onsite problem students must be able to complete (at a minimum) the following:
- Collection of fingerprints
  - Collection of trace evidence
  - Creation of a scale drawing of the crime scene
  - Blood spatter pattern analysis

### **EVALUATION**

Evaluation is based on a team's written test score and performance on the on-site problem (semifinalists only). Please refer to the official rating form for more information.





## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Critical thinking: Students demonstrate knowledge of forensic science. Use leadership activities: *Guess The Famous Leader* and *Fact or Fiction*
- Problem solving: Students analyze evidence from a crime scene. Use leadership activities: *Breaking It Down* and *Finding A Way*
- Teamwork: Students work together to gather evidence from a crime scene. Use leadership activities: *Jump Rope* and *Match Face*

Additional leadership skills promoted in this event:

- Communication
- Decision making

## TSAAND CAREERS

This competition has connections to one or more of the career areas featured in the TSAAND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Crime scene investigator
- Forensic anthropologist
- Forensic pathologist
- Forensic engineering scientist



# FORENSIC TECHNOLOGY

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Evaluators for semifinalist presentations, two (2) or more
- D. Timekeepers for recording start/stop times, one (1) per event room
- E. Monitors, one (1) per event room

### MATERIALS

- A. Coordinator's packet containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. Stopwatches for timekeepers, one (1) per room
- C. Blank Mock Crime Scene Analysis forms
- D. Tables and chairs in the analysis room
- E. Copy of the semifinalist problem, (1) one per team and (1) per judge
- F. Required evidence for the mock crime scene (based on the semifinalist problem)

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and



regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.

- D. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and evaluators should be in the room at this time. In order to compete, participants must be on the list or must have approval of the CRC.
- E. Monitor the one (1)-hour written test.
- F. Determine the twelve (12) semifinalists. Submit semifinalist results to the CRC for posting.
- G. Set up the mock crime scene in the designated room one (1) hour prior to the semifinalist sign-up time.
- H. Facilitate semifinalist sign-up times at the designated location. This may be the same room used for teams to write their analysis. Sign-ups should not take place in the same room that is prepared for the crime scene.
- I. When each team enters the crime scene room, pass out the problem. Time begins when the problem is handed to each team.
- J. Allow fifteen (15) minutes for each team to review the crime scene in order to collect items, data, and/or other information necessary for preparing an analysis. At the end of the fifteen (15)-minute period, escort each team to the room designated for writing the analysis. Provide fifteen (15) minutes for each team to complete the written crime scene analysis.
- K. Collect all materials, including any notes, prior to dismissing the participants.
- L. Evaluators determine the ten (10) finalists. Any ties should be broken by using the highest average team score on the written test.
- M. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- N. Submit the finalist results and all related forms in the results envelope to the CRC room.
- O. Manage security and removal of all materials from the crime scene area.



Participant/Team ID# \_\_\_\_\_

# FORENSIC TECHNOLOGY

2016 &amp; 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Written Test Score (50 points)</b>			
<b>SUBTOTAL (50 points)</b>			
<b>Analysis of Crime Scene (70 points)</b>			
<b>Primary survey/ walkthrough</b> (X1)	No initial survey is conducted; no verbal or written attempt is made to document/record the crime scene; furniture or other items are touched or moved.	A partial attempt at an initial survey is made; there is some evidence of a verbal assessment of the scene, and a few notes are taken; minor disruption is made to the crime scene.	A thorough survey of the scene is conducted to prioritize evidence collection; verbal assessment of the scene is made and notes are taken; no furniture or items are moved.
<b>Processing the scene</b> (X1)	Little to no investigation of the scene is evident; no sketches or diagrams are created; proper procedure is not followed for evidence collection, and/or there are obvious signs of contamination.	A mostly thorough investigation of the scene is conducted and some sketches or diagrams are created; proper procedure is followed for most of the evidence collection, and there are limited signs of contamination.	A thorough investigation of the scene is conducted and sketches or diagrams are created; proper procedure is followed for evidence collection, and there are no obvious signs of contamination.
<b>Evidence collection</b> (X1)	Three or more pieces of evidence are missing, and/or some of the collected items are not those specified.	Most pieces of evidence from the team's materials list are included and are correct.	All pieces of evidence in the team's materials list are included and are correct.
<b>Technique</b> (X2)	No indication of proper technique is used in collecting the evidence.	Some indication of proper technique is used in collecting the evidence.	Proper technique is used in collecting most or all of the evidence.
<b>Crime scene analysis</b> (X2)	Written analysis is weak and/or contains personal theories or conclusions; analysis does not clearly provide a detailed summary of the scene, processing, and evidence collection.	Written analysis is somewhat complete and contains limited personal theories or conclusions; analysis provides a somewhat detailed summary of the scene, processing, and evidence collection.	Written analysis is strong and does not contain personal theories or conclusions; analysis clearly provides a detailed summary of the scene, processing, and evidence collection.
<b>SUBTOTAL (70 points)</b>			

Record scores in the column spaces below.



Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (120 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_



# GEOSPATIAL TECHNOLOGY

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## OVERVIEW

Participants are encouraged to explore and gain an understanding of how geospatial data and related technology are used to prepare a profile of a geographic area of interest. In response to a design brief provided by TSA, participants develop a portfolio containing maps, data, and appropriate documentation. Semifinalists create a presentation for an on-site problem.

The design brief for this competition will be posted on the TSA website under Competitions/Themes and Problems.

## ELIGIBILITY

Participants are limited to one (1) team of two to five (2-5) members per chapter.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. Semifinalists will have a thirty (30)-minute set-up time , and two (2) hours to complete the on-site problem.
- C. Semifinalists participate in an interview.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants check in their entries at the time and place stated in the conference program.
- B. Entries are reviewed by evaluators.
- C. Twelve (12) semifinalist teams will be posted.
- D. Semifinalist teams report to the event area at the time and place stated in the conference program for the semifinalist portion of the event.

- E. Semifinalist teams are allowed thirty (30) minutes for set up. They then will be provided with the on-site problem and are allowed two (2) hours to complete their entry. Semifinalists must compile a data library prior to the conference and submit it on a USB flash drive with the entry. No internet will be provided for the on-site problem.
- F. A PowerPoint presentation of the solution is saved and turned in on a USB flash drive at the end of the two (2) hour time frame.
- G. All winning entries, digital and hard copy, become the property of national TSA.
- H. Participants pick up their entries from the display area at the time and place stated in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### REGULATIONS

- A. Semifinalist participants supply their own computer work station with a USB drive, power strip/surge protector, an extension cord, and software. A laptop computer is recommended.
- B. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  - 1. Title page with the event title, the conference city and state, the year, and the team ID number; one (1) page
  - 2. Table of contents
  - 3. Explanation of the team's solution to the design brief problem; two (2) pages
  - 4. Maps, data, and documents noted below; pages as needed. (The same material must also be presented in an orderly fashion on a USB flash drive that is inserted in a sleeve in the portfolio; any software used must be identified.)
    - a. Maps, printed in JPEG or PDF
    - b. Project journal, including
      - i. Description of activities and timeline of work
      - ii. Description of location factors for the project



- iii. Data dictionary (in an Excel spreadsheet or any type of table, see example below)
- iv. Analysis documents (an explanation of the maps, their relationship to the solution, and the methods used to create them)

File name	Description	Source (URL)	Metadata
roads_rt.shp	Roads for County X	http://someplace.gov	Yes or No

**Note:** Data types may include but are not limited to:

1. Location maps in relation to the area in question in the problem
  2. Elevations, as needed
  3. Watershed identification
  4. Demographics (of any nature) required for the problem
  5. Location factors that may impact the problem
  6. Any unusual local geographic attributes, e.g. karsts, caves, lakes, or streams
  7. Topography
- C. All work for the on-site problem is developed, saved as a slide presentation (Ex. PowerPoint) on a USB flash drive, and submitted using only the team's ID#. Teams that finish before the time limit must leave their computer(s) in place. If teams wish to leave the room, they may do so only with the permission of the event coordinator.
- D. Teams will be interviewed by evaluators for approximately five (5) minutes. Team members will remove their equipment only when interviews are completed.
- E. All entries become the property of national TSA and will not be returned after judging.



## **EVALUATION**

Evaluation is based on the interpretation of the pre-conference design brief; the execution of a thorough, relevant, and understandable solution/presentation; the submission of requested materials; the solution for the on-site problem, and the on-site interview (semifinalists only). Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM standards noted below. Please refer to the STEM integration section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## PRIMARY LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Creative thinking: Students visualize an issue to develop a solution to a problem. Use leadership activities: *Around the World* and *Fashion Forward*
- Problem solving: Students identify and acquire data needed to develop solutions. Use leadership activities: *Implementation Ideas* and *Including Everyone*
- Evaluation: Students review and critique work throughout the development of a project. Use leadership activities: *Assumptions* and *Grading the Advertisement*

Additional leadership skills promoted in this event:

- Decision making
- Evaluation
- Organization
- Teamwork

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Programming and software developer
- Logistics planning manager
- Transportation systems technician
- Infrastructure planning manager

# GEOSPATIAL TECHNOLOGY EVENT COORDINATOR INSTRUCTIONS

## PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Semifinalists evaluators, two (2) or more

## MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. Computer capable of reading a USB flash drive, and a monitor
- C. Extension cords, two (2), 25' minimum length
- D. Power bar with surge protection, two (2)
- E. Tables and chairs for event coordinator and evaluators

## RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.



- D. Each entry must include the participant's identification number in the upper right-hand corner of the entry (portfolio and USB flash drive). Secure the entries in the designated area.
- E. One (1) hour before the on-site event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Evaluators independently assess the portfolios and USB flash drive entries.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total points earned or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Evaluators determine twelve (12) semifinalists. Submit semifinalist results to the CRC for posting.
- I. Evaluators independently assess the semifinalist entries and conduct interviews.
- J. Evaluators determine the ten (10) finalists and discuss and break any ties.
- K. Submit the finalist results and all related forms in the results envelope to the CRC room.



Participant/Team ID# \_\_\_\_\_

# GEOSPATIAL TECHNOLOGY

2016 & 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Documentation (70 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation B (X1)	Portfolio is unorganized and/or missing three or more components.	Portfolio has most components and is generally organized.	One or no components are missing in the portfolio, and content and organization are clearly evident.
<b>Explanation of design brief solution</b> (X1)	Explanation of solution is unclear.	Solution is explained appropriately.	A clear and concise explanation of the solution is evident.
<b>Maps</b> (X1)	Maps provided are not appropriate, and/or they are missing a number of parts.	Maps have most needed parts; information is adequate.	Maps provided contain all or nearly all needed parts, with information that is clear and appropriate for the solution.
<b>Project journal and descriptions</b> (X1)	Little or no documentation of the project has been included, and/or it is disorganized.	Partially complete documentation of the project is included.	The project documentation is organized, orderly, and largely or entirely complete.
<b>Data dictionary</b> (X1)	Data dictionary is present in a table/spreadsheet format, however, two required forms of information (File name, Description, Source URL, Metadata) are missing.	Information is organized in a table/spreadsheet format, but one required form of information is missing.	All required forms of information are present in a table/spreadsheet format.
<b>Analysis documents</b> (X1)	Few documents are provided that explain the maps and their relationship to the design brief solution.	Most documents show the correlation between the maps and design brief solution.	Documents are provided for all maps, with a precise explanation of the relationship of the maps to the design brief solution.
<b>Flash drive structure</b> (X1)	The flash drive does not contain storage of information in an organized fashion (such as in category folders).	Folder structure to categorize maps, data, and documents is evident on the flash drive; information is adequately organized.	A fully organized folder system is evident on the flash drive, which allows for easy access and, therefore, understanding of the design brief solution.
			<b>SUBTOTAL (70 points)</b>

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_



Semifinalist Problem (30 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Innovation and originality</b> (X1)	The solution to the problem lacks original and innovative use of data.	Some original or innovative data is used to solve the on-site problem.	The solution demonstrates an original and innovative use of data.
<b>Problem solution</b> (X1)	The solution fails to show a correlation between the problem and the information gathered.	An adequate solution is presented, indicating correlation between the problem and the data gathered.	The solution indicates complete understanding of the correlation between the problem and the data gathered.
<b>Use of data</b> (X1)	Little or no use of data is evident; only pictures of existing maps are used.	Some data is used; new maps are presented and somewhat show a solution.	The use of data is obvious and complete; new map(s), in appropriate format, provide a clear solution to the problem.
<b>SUBTOTAL (30 points)</b>			
Semifinalist Interview (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the interview; illogical explanation of problem and solution is presented.	Participants are generally prepared for the interview; explanation of problem and solution are generally communicated.	Interview is logical and easy to follow; the problem and solution are communicated in a concise manner.
<b>Articulation</b> (X1)	Interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	Interview is somewhat logical, easy-to-follow, and/or there is sufficient information provided describing the project.	Interview is clear, concise, and there is ample information provided describing the project.
<b>Team participation</b> (X1)	Majority of the delivery is made by one member of the team; partner(s) may be disengaged from the presentation.	Team members generally are engaged in the process, though one member may take on more responsibility than the others.	All team members are actively involved in the interview and responses to questions; there is shared responsibility among the team members.
<b>Knowledge</b> (X2)	Team members exhibit little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit a general understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its interview; participants' posture, gestures, and lack of eye contact diminish the interview.	The team is somewhat well-spoken and clear in its interview; participants' posture, gestures, and eye contact are acceptable in the interview.	The team is well-spoken and distinct in its interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective interview.
<b>SUBTOTAL (60 points)</b>			



Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (160 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_





# INVENTIONS AND INNOVATIONS

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## OVERVIEW

Teams investigate and determine the need for an invention or innovation of a device, system, or process and then brainstorm ideas for a possible solution. Team entries must include documentation of the team's work; a display; and a model/prototype.

Semifinalists make an oral presentation to a panel of evaluators (who act as venture capital investors) to persuade the panel to invest in their invention/innovation. Evaluators interview the participants.

## ELIGIBILITY

Participants are limited to one (1) team per chapter (a minimum of three [3] individuals), one (1) entry per team.

## TIME LIMITS

All work must be completed during the current school year.

Semifinalists will be allowed two (2) minutes for set up, a five (5)-minute oral presentation time, two (2) minutes for a question and answer session, and one (1) minute for the removal of presentation items.


## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

### Pre-conference

- A. Teams identify a need that has the potential for the invention/innovation of a device, system, or process.
- B. Team members research issues and gather information about the identified need. They should review the publication, *Standards for Technological Literacy* (and topics in this

 In this event, participants have complete freedom to develop an idea for an invention/innovation.

document regarding design and invention), so that relevant information can be included in the display.

- C. Teams brainstorm ideas for possible inventions/innovations relative to the identified need, choose a final idea, and work on the design and details.
- D. To feature the invention/innovation, teams develop documentation of their work, a display, and a model/prototype.
- E. Teams design and construct the model/prototype and any visual aid(s) to enhance the display. The model/prototype can be scaled and, therefore more of a conceptual model—versus a working model—of a device, system, or process.
- F. Teams prepare an oral presentation that will further explain the invention/innovation to a panel of judges acting as venture capitalists on site at the conference.

### Conference

- A. Participants check in their entries at the time and place stated in the conference program. No more than two (2) team members may check in the entry. The entry requirements at check-in are the documentation and the promotional display.
- B. Entries are reviewed by judges. Neither students nor advisors are present at this time.
- C. A list of twelve (12) semifinalists will be posted at the time and place stated in the conference program.
- D. Semifinalists will sign up for an oral presentation.
- E. All entry materials must be picked up by no more than two (2) team members at the time and place stated in the conference program.
- F. The ten (10) finalists will be announced at the awards assembly.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. The invention/innovation entry (of a device, system, or process) must be the result of an identified need.
- B. Documentation
1. Documentation materials (comprising “a portfolio”) are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
    - a. Title page with the event title, conference city and state, the year, and the team/chapter ID# number; one (1) page
    - b. Need and invention/innovation description; two (2) pages
    - c. Description of brainstorming process; one (1) page
    - d. Photos of the model/prototype, and drawings, or illustrations of the invention/innovation; maximum two (2) pages
    - e. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments; up to to three (3) pages
- C. Display
1. The size of the display (the portfolio and the model/prototype) for the invention/innovation may not exceed 15" deep x 3' wide x 4' high.
  2. The display must be self-standing on a table top (small easels are permitted).
  3. The display must promote the invention/innovation and include:
    - a. a logo
    - b. an original product name
    - c. the intended use of the invention/innovation
  4. A/C electricity may not be used.
  5. Dry cell or photo-voltaic cells may be used for power, if desired. Any power source used must fit within the maximum display area.
  6. If operating instructions are necessary, they must be clearly displayed.
  7. Once the display set-up time frame has closed, participants may not re-enter the event area. No viruses, live plants, or animals may be used as a part of the display. No harmful or illegal substances may be displayed. Violation of this regulation will result in disqualification.

The invention/innovation model/prototype may be conceptual in nature; a working model/prototype is not required.

**D. Model/Prototype**

1. The model/prototype may be a scaled version of the invention/innovation idea. A working model/prototype is not required. See Procedure E. It is the invention/innovation idea which will be evaluated, however, the idea should be realistic and have the potential to be workable.
2. The following options may be used to provide direct current electrical power for the model/prototype when it is demonstrated during the semifinalist presentation. No other electrical source may be used.
  - a) up to 4 “C” or “D” batteries, OR
  - b) up to 8 “AA” or “AAA” batteries

**E. Semifinalist presentation (oral)**

1. Time limits
  - a. Two (2) minutes for set-up
  - b. Five (5) minutes for the presentation
  - c. Two (2) minutes for a question/answer session
  - d. One (1) minute for removal of presentation items
2. The presentation is limited to three (3) team members. Each member should be an active participant in the presentation.
3. An audience may be in attendance.
4. The use of visual aid material is encouraged; however, no electronic or electrically run equipment may be used. The exception is the team’s model/prototype, should it require electricity; restrictions apply, as described in regulation D.2.
5. The goal of the team is to convince the judges that the invention/innovation is needed and has real-world potential. Judges act as venture capitalists who are considering inventions/innovations for investment purposes.

**EVALUATION**

Evaluation is based on the effectiveness of the the documentation, the display, and the model/prototype. The semifinalist presentation is evaluated on the effectiveness of the participants to convince the judges that the invention/innovation is needed and workable, and that it has the potential for a return on an investment. Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below.  
Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Mathematics, Engineering

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students express/present their concept to convince judges to invest in their invention/innovation. Use leadership activities: *Chefs in the Kitchen* and *Take Action*
- Evaluation: Students research and analyze data in order to develop a realistic idea, improve the idea, and test its ability to solve a need. Use leadership activities: *Evaluation Methods* and *Finish Line to Start Line*
- Problem solving: Students identify a need and find a creative solution. Use leadership activities: *Breaking It Down* and *Implementation Ideas*

Additional leadership skills promoted in this event:

- Creative thinking
- Critical thinking
- Decision making
- Entrepreneur
- Teamwork

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Engineer
- Multimedia designer
- Product designer
- Small business owner



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
1				
2				
3				
4				
5				
6				

Advisor signature \_\_\_\_\_



# INVENTIONS AND INNOVATIONS

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one copy for the coordinator and each evaluator/assistant
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Marking pens for evaluators
  - 6. Results envelope with coordinator forms
- B. Display tables for entries
- C. Table and chairs for team presentations, as needed
- D. Stopwatch
- E. Table and chairs for event coordinator and evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.



- D. Each entry must include the team's identification number in the upper right-hand corner of the entry (portfolio and display).
- E. Meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Evaluators independently evaluate the entries.
- G. Evaluators determine the twelve (12) semifinalists.
- H. Prepare a list of the twelve (12) semifinalists and submit it to the CRC for posting.
- I. In the designated area, post a time sign-up list for semifinalist presentations and any instructions for the semifinalist participants.
- J. Manage the pick-up of non-semifinalist entries.
- K. Prepare a list of standard interview questions (five to ten [5-10]) to be asked of all participants.
- L. One (1) hour before the semifinalist presentations are scheduled to begin, meet with evaluators/assistants to review time limits, procedures, standard questions for the semifinalist presentations, and regulations. Check the area or room in which the presentations will take place for appropriate set up. Notify the event manager of any potential problems.
- M. Check in semifinalists at the time stated in the conference program. Confirm with the teams their order of presentation and the procedure.
- N. Assist evaluators in completing the evaluation process.
- O. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- P. Evaluators determine the ten (10) finalists, and break any ties for the top three (3) entries, as necessary.
- Q. Submit the finalist results and all related forms in the results envelope to the CRC room.
- R. Manage security for viewing and the removal of materials from the event area.





Participant/Team ID# \_\_\_\_\_

# INVENTIONS AND INNOVATIONS

**2016 & 2017 OFFICIAL RATING FORM**

**MIDDLE SCHOOL**

## Static Entry (70 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulations (X1)	Portfolio is missing several components, and/or it is unorganized; it is messy and lacking quality.	Most portfolio sections are included, generally organized, and exhibit some quality.	All sections are included; there is clear evidence of quality and organization.
<b>Need and description</b> (X2)	Description of need for invention/innovation is provided, but it is unclear and unconvincing; there is not enough detail; invention/innovation is not sensible, practical, or rational in nature.	Description of need for invention/innovation is generally convincing, with some detail; invention/innovation is realistic and generally meets the need as defined.	Description of need for invention/innovation is fully explained, defined, and detailed precisely; invention/innovation accurately and convincingly meets the need as defined.
<b>Model/prototype photographs /drawings</b> (X1)	Only one or two photographs/sketches of the model/prototype are displayed, with little or no evidence that a model/prototype was well-developed or utilized.	Adequate photographs/sketches of the model/prototype are included and are generally representative of the concept.	High quality photographs/sketches of the model/prototype are provided and documented completely.
<b>Display</b> (X2)	Display is not complete; the information is irrelevant to the invention/innovation and the display is lacking in aesthetic quality.	Display includes most components; the idea featured is adequately described.	Display is complete; information presented promotes the invention/innovation exceptionally well and the quality is aesthetically pleasing.
<b>Brainstorming process</b> (X1)	Description of brainstorming process includes little or no details.	Description of brainstorming process is provided, with sufficient detail about the process.	There is clear evidence that brainstorming served as a key component of the process.
			<b>SUBTOTAL (70 points)</b>

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_



Semifinalist Presentation/Interview (80 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation/interview; illogical explanation of the need and solution is presented.	Participants are generally prepared for the presentation/interview; explanation of the need and solution are communicated and generally organized.	The presentation/interview is logical, well organized, and easy to follow; the need and solution are communicated in a concise manner.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the concepts in their project.
<b>Articulation</b> (X1)	The presentation/interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation/interview is somewhat logical, easy-to-follow, and/or there is sufficient information provided describing the project.	The presentation/interview is clear, concise, and there is ample information provided describing the project.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its interview; participants' posture, gestures, and lack of eye contact diminish the presentation/interview.	The team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact are acceptable.	The team is well-spoken and distinct in its presentation/interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation/interview.
<b>Creativity of presentation; use of audio/visual skills</b> (X2)	Presentation lacks imagination, originality, and detail; there is limited use of audio/visual materials.	Presentation is generally effective, innovative, and convincing; use of audio/video materials provides information about the invention/innovation.	Presentation is inspiring, inventive, resourceful, and completely convincing; use of audio/visual materials is exceptional in providing information about the invention/innovation.
<b>Team participation</b> (X1)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged from the presentation.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	Team members are actively involved in the presentation and responses to interview questions; there is shared responsibility among the team members.
			<b>SUBTOTAL (80 points)</b>

Time Deductions
A five-(5) point deduction will be incurred for any time infraction.

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.
Indicate the rule violated: _____

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)	<b>TOTAL (150 points)</b>
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Comments:
I certify these results to be true and accurate to the best of my knowledge.
<u>Evaluator</u>
Printed name: _____ Signature: _____



# JUNIOR SOLAR SPRINT

## OVERVIEW

Junior Solar Sprint (JSS), an Army Educational Outreach Program (AEOP), provides a hands-on opportunity for students to apply science, technology, engineering, and mathematics (STEM) concepts, creativity, teamwork, and problem-solving skills as they design, construct, and race a solar-powered car.

## ELIGIBILITY

Participants are limited to one (1) team per chapter, one (1) entry per team. JSS teams must consist of two to four (2-4) students. Students may be part of a registered Technology Student Association chapter and compete, or they may be a group that competes at an approved Army host site.

## TIME LIMITS


Entries (including the model car) must be started and completed during the current school year. Syllabi for two (2) weeks, four (4) weeks, and eight (8) weeks are available in the [Educational Resources](#) link found on the JSS website at [www.jrsolarsprint.org](http://www.jrsolarsprint.org)


## ATTIRE


TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. At the event, participants check in their entries for specification approval at the required time and place.
- B. Entries will be evaluated in four (4) areas: 1) display, 2) portfolio, 3) artisanship and engineering of the model, and 4) model's racing performance.
- C. Evaluation of the racing performance will consist of two (2) components: 1) time trials, and 2) semifinalist racing of the top sixteen (16) time trial winners.
- D. All models meeting safety and performance criteria will be given up to three (3) time trials. The fastest time of these time trials will determine the sixteen (16) top semifinalist cars to

 Junior Solar Sprint (JSS) is an Army Educational Outreach Program (AEOP). Information about AEOP opportunities can be found at [www.usaeop.com](http://www.usaeop.com).

 If a car is deemed unsafe, it will not be allowed to run in the time trials or the semifinalist races. If the model is safe, but does not meet the required specifications, it will be allowed to run in the time trials but not the semifinalist races.

 An array of support materials, such as correlations to STEM standards, a glossary of terms, course outlines, and lesson plans can be found at [www.jrsolarsprint.org](http://www.jrsolarsprint.org)

be raced. Cars that are disqualified for any reason will not be permitted to participate in the semifinalist races.

- E. The top sixteen (16) cars compete in a single or double elimination racing process. The process will be determined by the event coordinator.
- F. The four (4) evaluated areas will be used to determine final standings (see criteria for assessment and racing performance on the official rating form).

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

### Documentation


- A. Documentation materials (comprising a "portfolio") are required and should be placed and secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  - 1. Title page with the event title, conference city and state, the year, and the team/chapter ID number; one (1) page
  - 2. Table of contents; pages as needed
  - 3. Project Log (available on JSS website) that indicates preparation for the competition, as noted by date, task, time involved, obstacles/issues encountered, modifications made, team member responsible, and any comments; pages as needed
  - 4. Design drawings: drawings must show the model with a minimum of two (2) views; the drawings must be developed using standard engineering practices and procedures (including measurements/dimensions); the drawings may be produced using traditional drafting methods or CAD; rough sketches should be included; pages as needed.
  - 5. Design details of the model, including model size, wheel size, gear ratio, specifications of the motor and solar collector used, etc; one (1) page
  - 6. Components list; one (1) page
  - 7. Design process description, including pre-testing notes of various configurations of the model and revision notes

about the model design throughout the process; pages as needed

8. Sections of the portfolio may be organized by dividers.
- B. The model car must meet the following specifications:

### **Model Car**

1. The model must accurately reflect the design process outlined in the online resources.
2. A decorated shoebox must be used as a display stand during judging of the model car. The portfolio must be placed with the model car. The display (model, shoebox, portfolio) must fit in an area 15" deep x 3' wide x 4' high.
3. The materials used to construct the model car must cost less than \$50. Original receipts for all materials purchased must be put in an envelope and placed in the portfolio. If using recycled materials, documentation must show how these items were obtained. Recycled materials are not included in the \$50 maximum. The total cost of construction materials must be clearly written on the outside of the envelope. Model cars that exceed this construction cost limit will be disqualified from the competition.
4. The Ray Catcher Sprint Kit sold by PITSCO is the solar panel/motor kit that is recommended, but not required, to be used in the competition. Solar panels cannot be shaved, drilled, or delaminated. Only the motor supplied in the kit can be used. Motors cannot be re-wound or disassembled. If an evaluation group convened by the event coordinator determines that the solar panel and/or motor have been modified, the car and team will be disqualified from the competition.
5. One (1) solar panel (limited to a maximum output of 3.2 W), and one (1) motor (limited to a maximum 3.0 VDC) are allowed per car. Reflectors, supports, and power leads can be added to these components as needed, but they must fit within the required dimensions cited in section B.6. Energy-enhancing devices, such as mirrors, must be firmly attached to the vehicle. The remainder of the vehicle can be innovative in design and materials.
6. The vehicle must be structurally sound without the solar panel attached. The solar panel cannot be used as the chassis, or body of the car. The axles and wheels cannot be directly attached to the solar panel. The model car must, with the solar panel attached, not exceed the following dimensions: 30 cm (11¾ inches) wide by 60 cm (23⅝ inches) long by 30 cm (11¾ inches) high (as measured from the surface the car is resting upon to the highest point of

 The Junior Solar Sprint kit is sold by PITSCO:

<http://www.pitsco.com/>

[Ray\\_Catcher\\_Sprint\\_Kit](#)

- the car with all its components attached); this includes when the car is positioned during the time trials and races.
7. The team is encouraged to decorate the body of the car, but a clearly visible 3 cm square space must be available on the car to attach an assigned car number for the race.
  8. If it is determined that the vehicles will be raced using solar power, the sun's light is the only energy source that can be used to power the vehicle. Batteries, capacitors, flywheels, or any other energy storage devices are prohibited.
  9. If the sun's energy is judged insufficient by the event coordinator, a battery pack and two (2) AA 1.5 V batteries will be furnished for each team. Only the provided batteries are permitted to power the model, therefore, the model's motor power leads must be readily accessible for easy attachment to a battery pack.
- C. A student-designed attachment device, such as an eyelet or screw eye must be attached to the car to accommodate the easy attachment and removal of a guide wire for steering. A guide wire, such as fishing line, will be no more than 1.5 cm from the surface of the track. It will go through the attachment device (such as an eyelet) attached to the car and serve as a steering mechanism to keep the car in its lane, without disconnecting the guide wire. Both ends of the guide wire will be fixed to the track. This is the only allowable method of steering the car. No radio control is permitted in the car. Lane changing or lane crossing will result in a Did Not Finish (DNF) standing. A car whose race is impacted by an out of control vehicle will be allowed an opportunity to run the race again. A car that lacks steering control and interferes with other cars in other lanes will not be allowed to race again.

### **Time Trials and Semifinalist Racing**

- A. The race lane must be 60 cm wide and 20 m long. The track will be a hard flat surface, such as a tennis court or a smooth surfaced running track.
- B. The time trial/race specifications are as follows:
  1. Tables will be set up for teams to make adjustments and minor repairs to cars just prior to each time trial and the semifinalist heats. Teams that are "next up" to be timed or raced are given priority to use the tables. Teams must supply their own tools.
  2. Time trials and semifinalist races will not be delayed to permit adjustments or repairs to cars. No adjustments or repairs are permitted once a time trial or race begins.



3. At race time, each car will be placed behind the starting line with all of its wheels in contact with the ground and covered by an opaque sheet covering that does not touch the solar panel. The opaque sheet will be removed at the start of the race, allowing the vehicle to collect solar power and start driving.
4. No more than two (2) team members will be allowed in the start area.
5. Releasing a car before the official start, or pushing a car during its release will result in a Did Not Finish (DNF) for that race.
6. All cars will be started when the official signal is given. Each car will have up to three (3) time trials, unless otherwise determined by the event coordinator. The fastest time of the time trials will determine the sixteen (16) cars to be raced. If, for any reason, a car is not able to participate in the time trials, or race at its scheduled time, it may be disqualified.
7. The judges will note the official time for each time trial. At the time designated, if a car does not start the time trial, OR if during the time trial it does not finish, it will be noted as a Did Not Finish (DNF).
8. At least one (1), but no more than two (2) members must wait at the finish line to catch the vehicle for each timed trial. Team members are responsible for finding someone to catch their vehicle if another team member is unavailable.
9. No one, including team members and spectators, may accompany or touch the vehicle on the track during a timed trial or semifinalist race. Vehicles stalled on the track can be retrieved after the end of the trial or race has been declared by the lead judge. A violation of this rule will result in disqualification of the offending team.
10. After each timed trial or race, the vehicle and team member must remain at the finish line until the time is recorded for the vehicle.
11. Challenges must be made before the next timed trial or race begins. Any challenges must come from team members who are actively competing, not the coach/advisor, parent, or coordinator. All challenges need to be directed to the lead judge. The decisions of the judges are final.
12. Only competing students and race officials may be in the race area. All other spectators, including coaches/advisors, parents, coordinators, and non-competing students, must remain in the designated spectator area throughout the duration of races. Teams will be disqualified if a spectator, including a coach/advisor or parent, interferes with a race. This includes a coach/advisor or parent helping team members get their car on/off the guide wire.



13. Judges may inspect cars at any time before, during, and after timed trials or semifinalist races.
14. Any additional rules, regulations, or guidelines established by the event coordinator must be followed.

### **EVALUATION**

Entries are evaluated on creativity and innovation, the display, documentation portfolio, the artisanship and engineering of the model solar car, and the model's racing performance. Please refer to the official rating form for more information.





## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Team members communicate with each other to develop an entry. Use leadership activities: *Chefs in the Kitchen* and *Take Action*
- Creative thinking: Team members will develop a unique solar-powered car. Use leadership activities: *Be Prepared!* and *Open Minded*
- Evaluation: Students evaluate and change design elements of a solar-powered car. Use leadership activities: *Finish Line to Start Line* and *The Great "Evaluate"*

Additional leadership skills promoted in this event:

- Decision making
- Teamwork

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Energy efficiency technician
- Mechanical engineer
- Solar engineer
- Solar panel installer
- Solar sales consultant



# JUNIOR SOLAR SPRINT COMPETITION PROJECT LOG

Date	Task	Time involved	Team member responsible	Obstacles encountered	Modifications made	Comments
1						
3						
5						
7						

Advisor Signature: \_\_\_\_\_



# JUNIOR SOLAR SPRINT COORDINATOR INSTRUCTIONS

## PERSONNEL

- C. Event coordinator
- D. Evaluators, two (2) or more
- E. Assistants, two (2) or more

## MATERIALS

- A. Coordinator's packet containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. Stick-on labels for identifying entries
  - 4. Race bracket form
  - 5. Results envelope with coordinator forms
- B. Battery pack with clips soldered on and batteries (AA 1.5 V) (in the event that the sun provides insufficient energy), one (1) per entry plus spares on site
- C. Monofilament fishing line for the track, four (4) pre-tied, two (2) on track, two (2) reserved per sixteen (16) participants
- D. Race track set, including a starting gate and finish gate with digital timer
- E. Spare stopwatches with back-ups
- F. Padding for the finish gate
- G. Tables for the display and evaluation of entries (cars and portfolios)
- H. Table and chairs at the starting line for arranging and holding cars prior to the time trials
- I. Table at the finish gate for the placement of cars after time trials
- J. Ranking board for a display of time trials
- K. Tables and chairs for event coordinator, evaluators, and official assistants



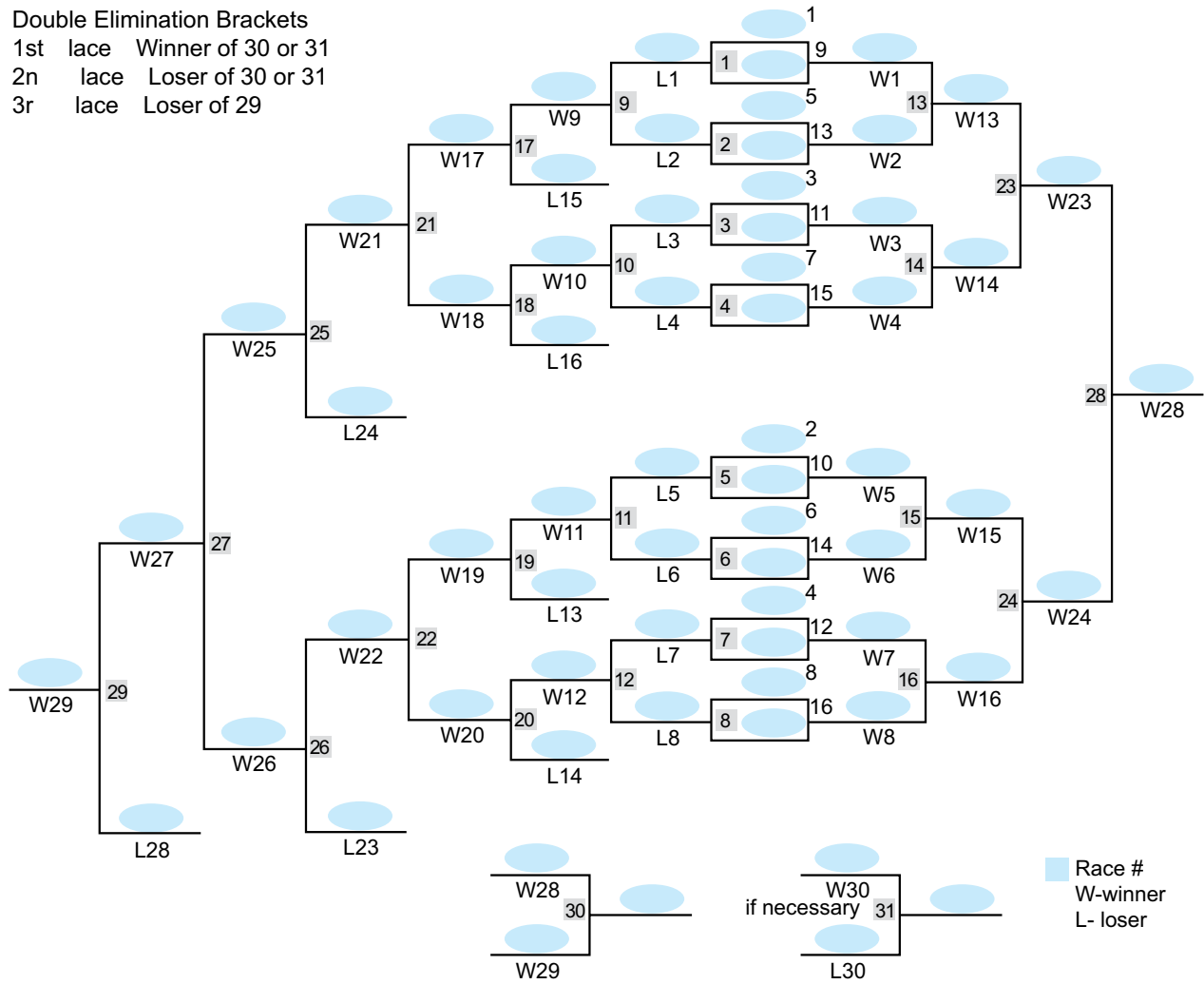
## RESPONSIBILITIES

- A. Upon arrival at the event, inspect the area(s) in which the event will be held for appropriate set-up, including location for displays and evaluation of portfolios, racing site, chairs, tables, outlets, etc., and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators have been scheduled.
- B. Check in the entries at the designated time.
- C. Secure the entries in the designated area.
- D. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants/timers to review time limits, procedures, and regulations.
- E. Position the Junior Solar Sprint portfolios and models for viewing by the evaluators, and assist them as necessary during judging.
- F. Set up the race track prior to the time trials. Make necessary adjustments.
- G. Permit all vehicles (that can be safely operated) to participate in time trials. Note: Vehicles that are disqualified will NOT be permitted to participate in the semifinalist races.
- H. Evaluators determine the ten (10) finalists.
- I. Submit the finalist results and all related forms in the results envelope to the CRC room.
- J. At the designated time, return models and portfolios to student participants.



# RACE BRACKET FOR 16-CAR DOUBLE ELIMINATION

Double Elimination Brackets  
 1st race Winner of 30 or 31  
 2nd race Loser of 30 or 31  
 3rd race Loser of 29







Participant/Team ID# \_\_\_\_\_

# JUNIOR SOLAR SPRINT

2016 &amp; 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Display and Model (40 points)

The model is safe to participate in the time trials and, if deemed appropriate, the semifinalist races. \_\_\_Yes \_\_\_No  
 The model meets all required specifications. \_\_\_Yes \_\_\_No

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1–4), adequate (5–8 points), or exemplary (9–10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion=7 points.)			
<b>Display</b> (X1)	The quality of the display is extremely poor and/or exceeds size requirements.	The display is adequately created and meets the size specifications.	The display is exemplary, includes eye-catching details, and meets the size specifications.
<b>Model design</b> (X1)	The design of the solar model is poor and shows little effort.	The design of the solar model is adequate but not of exceptional quality.	The design of the solar model exhibits exceptional quality.
<b>Model creativity/ originality</b> (X1)	The solar model car design lacks creativity and originality; little effort is apparent.	The solar model car design demonstrates an adequate level of creativity and originality.	The solar model car design shows exceptional creativity and originality.
<b>Model construction</b> (X1)	The solar model car lacks quality of construction.	The solar model car demonstrates adequate quality of construction.	The solar model car demonstrates exceptional quality of construction.
<b>SUBTOTAL (40 points)</b>			

Record scores in the column spaces below.

## Documentation (50 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Portfolio components</b> See Regulation A (X1)	A number of portfolio components are missing.	Most of the portfolio components are included, but the portfolio lacks overall quality.	The portfolio includes all required components; it is neat and properly organized; effort and quality are evident.
<b>Project Log</b> (X1)	The Project Log is lacking significant portions; it is messy and demonstrates lack of effort.	The Project Log is acceptable, with most information included.	The Project Log is complete and accurate; the presentation is neat and orderly; a great deal of effort is evident.
<b>Design drawings</b> (X1)	Some drawings are missing and/or drawings are of poor quality.	Drawings are acceptable; all required views are shown.	Drawings are accurate and complete; all required views are present; rough sketches are included.
<b>Design details/ components list</b> (X1)	Several details of the model, such as model size, wheel size, and gear ratio are missing and/or are poor; the components list is very limited.	Most details of the model, such as model size, wheel size, and gear ratio are included; most components are included.	All details of the model, such as model size, wheel size, and gear ratio are present; all components are included.



<b>Design process description</b> (X1)	The design process description lacks detail and is poorly documented.	Most of the design process description is present.	All parts of the design process description are present.	
<b>SUBTOTAL (50 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

**Time Trials**  
For time trials record, please see page 226.

<b>Race (55 points)</b>							
1st	2nd	3rd	4th	5th & 6th	7th & 8th	9th - 12th	13th – 16th
55 points	50 points	45 points	40 points	35 points	30 points	25 points	15 points
<b>SUBTOTAL (55 points)</b>							

Rules violations (a deduction of 20% of the total possible points for the above section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (145 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_





# LEADERSHIP STRATEGIES

## OVERVIEW

Participants demonstrate leadership and team skills by preparing a presentation based on a selected challenge that officers of a TSA chapter might encounter.

## ELIGIBILITY

Entries are limited to one (1) team of three (3) individuals per chapter.

## TIME LIMITS


- A. Presentations must be between three (3) minutes and five (5) minutes. Teams will be penalized – one (1) point per ten (10) seconds for speaking over five (5) minutes or under three (3) minutes.
- B. Time commences when the first team member begins talking and concludes at the end of the presentation.

## ATTIRE


TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Team members report to the event area at the time and place stated in the conference program to sign up for a presentation time.
- B. At the team's assigned time, one (1) team member draws three (3) cards – each containing one (1) topic – from a box and selects one (1) topic from the three (3) on which to make the team presentation. The cards with the unused topics are returned to the box.
- C. After selecting a topic, the first team enters a preparation room separate from the presentation room and is given fifteen (15) minutes to prepare the team presentation.
- D. The event coordinator introduces each team by registration number only in the order of the sign-up time.

 What problems does a TSA chapter face? Participants may already have valuable leadership skills to become winners in this event.

- E. The timekeeper visually notifies the team of the time remaining for the presentation by using six (6) separate cards. Each of the 5" x 7" notecards has a "time remaining in minutes" number on it (4, 3, 2, 1, ½, and 0), and each is shown to the team in descending order by the timekeeper during the presentation.
- F. After speaking, the team returns the topic card to the evaluators so that it can be returned to the topics box.
- G. Evaluators independently rate each presentation according to the criteria on the official rating form.
- H. A semifinalist list in random order is posted.
- I. Semifinalists report to the event area at the time and place stated in the conference program to sign up for a presentation time.
- J. Semifinalist preparation and the presentation follow the same guidelines as above, using a different set of topics.

 Participants are encouraged to rely on an outline format in presenting their plans, using short sentences and bullet points as appropriate.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### REGULATIONS

- A. No reference may be made concerning the name of the team, the team members, or their school.
- B. Each presentation must be the result of the team's own effort. No reference materials or devices may be brought to the preparation room.
- C. Any notes for the presentation must be written during the fifteen (15)-minute preparation period. Each team will be provided a maximum of three (3) 3" x 5" blank notecards.
- D. Although teams are permitted to use notes when speaking, it should be noted that deductions in scoring might be made for this practice if it detracts from the effectiveness of the presentation.
- E. No observers are allowed in the event or preparation rooms during heats, though they may be present during the semifinals. No talking or gesturing is permitted. Observers are NOT allowed to enter or leave during a presentation.



THERE IS NO APPLAUSE UNTIL A PRESENTATION HAS CONCLUDED.

- F. Teams are penalized one (1) point per ten (10) seconds for speaking over five (5) minutes or under three (3) minutes.
- G. Topics that might be encountered by teams in this event may include but are not limited to:
  - 1. A newly created school ruling does not allow for school related travel out of state. How will your chapter approach a solution to this problem?
  - 2. A mandated curriculum severely limits opportunities for students to select and schedule elective courses such as technology education. What can be done to resolve this issue?
  - 3. Plans to upgrade athletic facilities within the school district severely limit previously approved plans to fund technology education with needed maintenance and equipment expenditures. What will you do in an attempt to resolve this dilemma?
  - 4. A school policy that pertains to fundraising activity now requires such funds to become part of a general pool to be distributed at the discretion of the school administrator regardless of who or how they were raised. What will be your plan of action to reverse this decision?
  - 5. Conflict exists within the local chapter related to members who are not engaged within their committee assignments. If the problems are not resolved, the health of the chapter will deteriorate. How do you plan to solve this problem?
  - 6. It is assumed that our school's technology and engineering program will be strengthened through the support of local businesses and industries. Currently, there is little participation of these groups. How might we change this?
- H. Each member of a team must participate in the presentation.

## EVALUATION

Evaluation is based on the team's effective use of problem-solving and cooperative skills to create and deliver a presentation that addresses a selected topic. Please see the official rating form for more information.



### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students communicate a solution to the judges. Use leadership activities: *Communication Breakdown* and *Take Action*
- Problem solving: Students solve a problem within a time limit. Use leadership activities: *Finding A Way* and *Including Everyone*
- Teamwork: Students work as a team to brainstorm and combine ideas. Use leadership activities: *Bozo's Balloons* and *Jump Rope*

Additional leadership skills promoted in this event:

- Creative thinking
- Critical thinking
- Decision making
- Evaluation

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

Careers will vary based on the student's area of interest.



# LEADERSHIP STRATEGIES

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators for the first round of presentations, two (2) or more
- C. Evaluators for semifinalist presentations, two (2) or more
- D. Timekeepers for recording presentation start/stop times, one (1) per event room
- E. Monitors, one (1) per event room

### MATERIALS

- A. Coordinator's packet containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. Speaker's stand/podium
- C. Stopwatches for timekeepers, one (1) per heat and two (2) per preparation room
- D. Six (6) 5" x 7" notecards for "time remaining in minutes" numbers (see Procedure E)
- E. 3" x 5" blank notecards, for participants to use to outline their presentation
- F. 3" x 5" topic cards – a minimum of five (5) different topics from which to select
- G. Tables and chairs in the preparation room
- H. Chairs for the audience, for semifinals only
- I. Table and chairs for event coordinator, evaluators, and the timekeeper

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the

- event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
  - C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
  - D. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
  - E. Manage the smooth flow of participants according to these procedures:
    - 1. After selecting a topic from the three (3) randomly drawn topics, the first team enters a preparation room separate from the presentation delivery room and is given fifteen (15) minutes to prepare a presentation
    - 2. Seven (7) minutes after the first team enters the preparation room, the second team enters the preparation room, goes to a different section of the room, and begins its presentation preparation, again with fifteen (15) minutes allowed for preparation; and so on for all the teams
    - 3. Each team in turn is allowed to enter the presentation room at seven (7)-minute intervals, thus enabling a constant flow of participants to speak before the evaluators in a timely fashion. (This allows for one [1] minute to enter the presentation room and announce the entry number, up to five [5] minutes for the presentation, and one [1] minute to exit the room.)
    - 4. The event coordinator introduces each team by registration number only in the order of the sign-up time.
  - F. When teams have finished, evaluators determine the semifinalists, consulting the timekeeper's record. The timekeepers notify evaluators of any time under three (3) minutes or over five (5) minutes, for which deductions should be made.
  - G. Evaluators determine the twelve (12) semifinalists (if heats are used), and discuss and break any ties.
  - H. If heats are used, submit semifinalist results to CRC for posting. Repeat the process above to determine the finalists.



- I. Submit the finalist results and all related forms in the results envelope to the CRC room.
- J. If necessary, manage security and the removal of materials from the area.



Participant/Team ID# \_\_\_\_\_

# LEADERSHIP STRATEGIES

2016 & 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Presentation (80 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Communication of problem</b> (X1)	It is difficult to understand the problem being communicated.	The problem is communicated in a somewhat organized and/or concise manner.	Communication of the problem is presented in an organized, clear, and concise manner.
<b>Communication of solution</b> (X1)	It is difficult to understand the solution being communicated.	The solution is communicated in a somewhat organized and/or concise manner.	Communication of the solution is presented in an organized, clear, and concise manner.
<b>Impact</b> (X2)	The presentation is unconvincing, uninteresting, and/or lacks compelling and attention-holding ideas.	The presentation is somewhat convincing, with generally interesting ideas.	The presentation is fully convincing, with compelling and attention-holding ideas.
<b>Team participation</b> (X2)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged from the presentation.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	All team members are equally and actively involved in the presentation.
<b>Team presence</b> (X1)	The team's appearance is unprofessional, sloppy, and inappropriate.	The team's appearance is adequate, appropriate, and professional.	The team's appearance is appropriate, professional, and polished.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation; participants' posture, gestures, and lack of eye contact diminish the presentation.	The team is somewhat well-spoken and distinct in its presentation; participants' posture, gestures, and eye contact are acceptable in the presentation.	The team is well-spoken and distinct in its presentation; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation.
<b>SUBTOTAL (80 points)</b>			

Record scores in the column spaces below.

One (1) point per ten (10)-second interval is to be deducted for speaking under the three (3) minutes or over the five (5) minutes allotted for the presentation. Presentation time commences when the first presenter begins speaking

**PRESENTATION DELIVERY TIME**

**TOTAL TIME DEDUCTION POINTS**

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (80 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_





# MASS PRODUCTION

## OVERVIEW

Participants manufacture a marketable product related to the current year's theme, noted on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems. The team submits a documentation portfolio of the activities and the product—three (3) identical—made during the manufacturing process.

## ELIGIBILITY

Participants are limited to one (1) team of a minimum of two (2) students per chapter. Two (2) members of a team must be present at a semifinalist presentation/interview.

## TIME LIMITS


The entry must be completed during the current school year.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. During the school year, participants should follow these steps in preparing their entry:
  1. Research designs for products related to the current year's theme.
  2. Create working drawings.
  3. Develop a prototype.
  4. Devise a production plan flow chart(s).
  5. Develop a personnel plan with assigned responsibilities.
  6. Tool up for production.
  7. Conduct a trial run and evaluate process effectiveness and efficiency.
  8. Manufacture several products using line production techniques.
  9. Document the team project with a photo timeline.
- B. Participants check in their entries at the time and place stated in the conference program. No more than two (2) team members may turn in the portfolio and products.

 This event demands creativity and resourcefulness using common manufacturing practices.



- C. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.
- D. Representatives from each semifinalist team report to the event room at the time and place stated in the conference program.
- E. Semifinalist teams make a presentation to the evaluators to explain the manufacturing process used in the production of the product; the presentation is followed by an interview. The presentation may be up to five (5) minutes in length, and the interview will be no more than five (5) minutes in length. Audio/visual materials may be used in the presentation.
- F. Ten (10) finalists are announced at the awards ceremony.
- G. No more than two (2) students pick up their team's entry from the display area at the time and place stated in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Documentation
  - 1. The documentation must be turned in with the product (three identical) at check-in.
  - 2. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
    - a. Title page with the event title, the product name, the conference city and state, the year, and the team/ chapter ID number; one (1) page
    - b. Table of contents
    - c. Description of the product: a written description of the product, instructions for its use, the overall advantages and usefulness of the product, its audience, and related safety considerations; one (1) page
    - d. Design efforts: sketches, pictures, magazine clippings, and other graphic design elements used in the



- development of the final design; three (3) pages maximum
- e. Drawings:
    - i. An orthographic drawing in three (3) views with dimensions to aid production; one (1) page
    - ii. An assembly drawing or a pictorial drawing with labels; one (1) page
  - f. Materials list: a list of materials (including sizes and market value) used to fabricate the product; each item or sub-assembly should be identified as student produced, standard stock item, or purchased sub-assembly; one (1) page
  - g. Tool and machine list: a list of any hand, power, and stationary tools and/or machines used to fabricate the product; one (1) page
  - h. Production plan: a production outline or flow chart; up to two (2) pages
  - i. Photographic verification: photographic or digital images that verify the mass production of the product; maximum two (2) pages
3. All documentation must be contained in the portfolio. Tabs or dividers may be used between sections of the portfolio and are not counted as pages. Sheet protectors may be used.
- B. Product (all three identical copies)
1. Craftsmanship
    - a. The product must display good craftsmanship.
    - b. The product must maintain tolerances as indicated by the working drawings.
  2. Appropriate materials—the product must use the materials in a manner that adds value to the product.
  3. Efficiency of design—The product must address the identified consumer need, and use the materials effectively.
  4. Aesthetics—The product must be pleasing to view.
  5. Ergonomics—The product must be easy to use.
  6. Appropriate solution—The product must function in a manner that solves the identified problem.
  7. Creativity—The product must display an original solution to the identified consumer need.
  8. ONLY the documentation contained within the portfolio and the three (3) samples of the product may be submitted for judging.
  9. Documentation and the product must fit in a cube that measures 24" deep x 24" wide x 24" high. Should the product(s) exceed any dimension, the result will be a twenty percent (20%) deduction of the total possible points.



## **EVALUATION**

Evaluation is based on the documentation, the product, and the presentation/interview (semifinalists only). Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Creative thinking: Students generate original product ideas based on research. Use leadership activities: *Be Prepared!* and *Fashion Forward*
- Organization: Students develop flow charts and other documentation required for a presentation. Use leadership activities: *Organizing the Stress Away* and *Time It*
- Teamwork: Students work as a team to create a product with accompanying documentation. Use leadership activities: *Find Someone Who...* and *TV Station*

Additional leadership skills promoted in this event:

- Communication
- Evaluation
- Problem solving

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Electromechanical engineer
- Mechanical drafter
- Production planner
- Standards engineer

## MASS PRODUCTION EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Marking pens for evaluators
  - 5. Stick-on labels for identifying entries
  - 6. Results envelope with coordinator forms
- B. Tape measure to determine the size of the product
- C. Display tables for entries
- D. Chairs for event coordinator and evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.
- D. Each entry must include the participant's identification number in the upper right-hand corner of the entry. Position documentation and products for viewing by evaluators.



- E. Meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. Evaluators independently assess the entries.
- H. Submit semifinalist results to the CRC for posting.
- I. Evaluators independently assess the semifinalist entries.
- J. Evaluators determine the ten (10) finalists and discuss and break any ties.
- K. Submit the finalist results and all related forms in the results envelope to the CRC room.
- L. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

<b>MASS PRODUCTION</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Static Entry (110 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation A (X1)	Portfolio is missing several components and/or is unorganized; it is messy and lacking quality.	Most components are included; portfolio is generally organized and displays some quality.	All components are included; effort and quality of work are evident.
<b>Description of product</b> Instructions for use (X1)	Description of the product and instructions for its use are unclear.	Description of the product and instructions for its use are defined and explained.	Description of the product and instructions for its use are defined and explained precisely.
<b>Design efforts</b> (X1)	Most design effort components are missing, and/or they are unorganized; they are messy and lack quality.	Some design effort components are included; they are generally organized and display overall quality.	Design effort components are included; effort and high quality of work are evident.
<b>Working drawings</b> (X1)	Working drawings are sloppy and disorganized; they do not demonstrate labeling and dimensioning.	Working drawings are of sufficient quality, and most are labeled and dimensioned.	Working drawings are of excellent quality and are correctly labeled and dimensioned.
<b>Materials list</b> <b>Tools and machines list</b> (X1)	Lists are missing several components, and/or they are unorganized.	Most components are included; the lists are generally organized and complete.	All components are included and organized in the lists.
<b>Production plan</b> (X1)	Plan is missing several components, and/or it is unorganized.	Components of the plan are mostly included, and the plan is generally organized.	All components are included and well-organized in the plan.
<b>Photographic verification</b> (X1)	Photographic verification is not complete, and/or images are missing.	Photographic verification is complete, and the quality of images is adequate.	Photographic verification is clear and supports all aspects of the process.
<b>Product</b> (X2)	Product is not built to detailed standards; it is poorly constructed and finished; it lacks creativity and imagination.	Product is somewhat built to detailed standards; the design is satisfactory and works, and creativity or uniqueness are somewhat apparent.	Product is built to detailed standards, and it is of a quality that could be purchased by a consumer; the design is unique and demonstrates creativity.
<b>Product functionality</b> (X1)	Little specific functionality per the original specification is demonstrated.	The product meets some of the functionality per the original specification.	The end product exhibits functionality as per the original specifications.
<b>Tolerance of examples</b> (X1)	Materials are not joined cleanly and are not consistent with working drawings.	Materials are somewhat joined cleanly and are fairly consistent with working drawings.	Materials are joined cleanly and are consistent with working drawings.
			<b>SUBTOTAL (110 points)</b>

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points for the above section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_





Semifinalist Presentation/Interview (70 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> Use of audio/visual materials (X1)	Participants seem unorganized and unprepared for the presentation/interview; illogical explanation of the product is presented; team exhibits difficulty with the use of audio/visual materials.	Participants are generally prepared for the presentation/interview; explanation of product is communicated and generally organized; audio/visual materials are used somewhat effectively.	The presentation/interview is logical, well organized, and easy to follow; explanation of the product is communicated in an organized and concise manner; the use of audio/visual materials is effective, organized, and logical.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; the presentation, does not clearly define the product; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project; the presentation is for the most part, logical and/or clear.	Participants show clear evidence of a thorough understanding of the project; the presentation is concise and logical.
<b>Articulation</b> (X1)	The presentation/interview lacks clarity, and/or there is insufficient information provided describing the project.	The presentation/interview is somewhat logical, easy-to-follow, and/or there is sufficient information describing the project.	The presentation/interview is clear, concise, and there is ample information describing the project.
<b>Integration of theme</b> (X2)	The current theme is not demonstrated in the product and/or the product is not realistic/functional.	The current theme is adequately demonstrated in the product, and the product is generally realistic and functional.	The current theme is exceptionally well demonstrated in the product, and the product is extremely realistic and functional.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation/interview; participants' posture, gestures, and lack of eye contact diminish the presentation/interview.	The team is somewhat well-spoken and clear in its presentation/interview; participants' posture, gestures, and eye contact are acceptable in the presentation/interview.	The team is well-spoken and distinct in its presentation/interview; the participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation/interview.
			<b>SUBTOTAL (70 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (180 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_

## OVERVIEW

Participants conduct research on a contemporary medical technology issue of their choosing, document their research and solution, and create a display. The entry may include student research or a re-creation or simulation of research performed by the scientific community. If appropriate, a model or prototype depicting an aspect of the issue may be included in the display. Semifinalists give a presentation.

 A team may choose to explore any medical technology topic of interest to its members.

## ELIGIBILITY

Participants are limited to three (3) teams per state, two (2) or more participants per team.

The semifinalist presentation should include two to three (2-3) members of a team.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. Semifinalists will be allowed up to ten (10) minutes for a presentation.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.


## PROCEDURE

- A. Team members choose a contemporary medical technology issue they would like to research. Resources may include but are not limited to books, interviews, websites, magazines, professional journals, etc. Participants should use reliable, credible sources.
- B. Team members prepare their documentation and display according to the regulations below.
- C. Participants check in their entries at the time and place stated in the conference program. No more than two (2) team

members set up the display. The team entry number must be placed in the upper right hand corner of the display and on the portfolio.


- D. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.
- E. Two to three (2-3) representatives from each semifinalist team report to the event area at the time scheduled for the team's presentation.
- F. Semifinalist team representatives make their presentation and may be asked questions by evaluators; the time allowed for the presentation is up to ten (10) minutes.
- G. No more than two (2) team members pick up their entry from the display area at the time and place stated in the conference program.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

 A team's documentation must not include the name of the chapter or state.

## REGULATIONS

- A. All work must be completed during the current school year.
- B. Team members must understand the fundamental concepts and principles of the contemporary medical technology issue they select. Research should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.
- C. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  - 1. Title page with the event title, conference city and state, the year, and the team/chapter ID number; one (1) page
  - 2. Table of contents
  - 3. Definition and explanation of the issue and solution; two (2) pages
  - 4. An explanation of the impacts of the issue, such as relevance to environmental, economic, social, and/or ethical considerations; maximum three (3) pages

 Pay special attention to General Rules N and O for this event. You must cite information/graphics from outside sources, as well as gain permission to use copyrighted material.

5. Supporting information such as logs, graphs, sketches, drawings, illustrations, photographs, etc.; maximum four (4) pages
  6. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments (See Plan of Work log); pages as needed
  7. A list of references and credible resources; a minimum of three (3) different types of resources must be used; examples may include but are not limited to books, interviews, websites, magazines, and professional journals; pages as needed
- D. Display:
1. The size of the display may not exceed 15" deep x 3' wide x 4' high.
  2. The display should incorporate the use of design principles.
  3. Appropriate graphic representations may be used in the display.
  4. Models or prototypes, if included, must be contained within the allotted display space; A/C electricity may not be used; any power source used must fit within the maximum display area; if operating instructions are necessary (including electronics), they must be clearly displayed.
  5. Dry cell or photo-voltaic cells may be used for power, if desired.
  6. Information used in the display should represent the medical issue being presented.
  7. Once the display set-up time frame has closed, no one may re-enter the event area.
  8. **No viruses, live plants, or animals may be used as a part of the display. No harmful or illegal substances may be displayed. Violation of this regulation will result in disqualification.**
- E. Each team should be prepared to send two to three (2-3) representatives to a semifinalist presentation, which will last no longer than ten (10) minutes.

## EVALUATION

Evaluation is based on the documentation, the display, and the presentation (semifinalists only). Please refer to the official rating form for more information.

## STEM INTEGRATION

This event has connections to the STEM areas noted below.  
Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Critical thinking: Students present an entry related to a medical issue. Use leadership activities: *Guess the Famous Leader* and *Saving the Environment*
- Decision making: Students decide on a medical issue to research. Use leadership activities: *Learn from the Best* and *To Be or Not to Be*
- Ethics: Students consider ethical challenges and restrictions throughout their research. Use leadership activities: *Decision Mountain* and *The Technology Ethics E-Newsletter*

Additional leadership skills promoted in this event:

- Communication
- Organization
- Teamwork

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Dietitian
- Doctor
- Medical technologist
- Nurse
- Pharmacist
- Prosthetics practitioner
- Speech therapist



## MEDICAL TECHNOLOGY EVENT COORDINATOR'S INSTRUCTIONS

### PERSONNEL

- A. Event coordinator, one (1)
- B. Evaluators, two (2) or more
- C. Assistants for check in, two (2)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Results envelope with coordinator forms
- B. Measuring tape for evaluators
- C. Display tables for entries
- D. Table and chairs for event coordinator and evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, tables, chairs, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting that is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.
- D. Each entry must include the participant's identification number in the upper right-hand corner of the entry. Position displays for viewing.

- E. Meet with evaluators to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- F. Evaluators individually evaluate the entries.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Evaluators determine the twelve (12) semifinalists.
- I. Submit semifinalist results to the CRC for posting.
- J. Meet with evaluators to review time limits, procedures, and regulations for the semifinalist portion of the event.
- K. Conduct semifinalist presentations. Should evaluators ask questions, they should be the same questions for each team for the purpose of comparing one team to another.
- L. Evaluators determine the ranking of the ten (10) finalists. Evaluators discuss and break any ties.
- M. Submit the finalist results and all related forms in the results envelope to the CRC room.
- N. If necessary, manage security and the removal of materials from the event area.



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
1				
2				
3				
4				
5				
6				
Advisor signature _____				





Participant/Team ID# \_\_\_\_\_

MEDICAL TECHNOLOGY			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Documentation (70 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation C (X1)	Portfolio is unorganized and/or is missing three or more components.	Portfolio contains most components and is adequately organized.	Portfolio has one or no components missing, and content and organization are clearly evident.
<b>Definition and explanation of the issue and solution</b> (X2)	Unclear definition and explanation of the issue are evident; it is difficult to understand the solution being communicated; an illogical explanation is presented.	Issue is defined and explained adequately; an explanation of the solution is adequately communicated.	There is evidence of a clear and concise definition and explanation of the issue; explanation is presented and communicated in an organized, clear, and concise manner.
<b>Research, references, and resources</b> (X1)	Documentation lacks an adequate research base, and/or very few credible sources are referenced.	Research is conducted appropriately, with adequate credible sources.	Comprehensive research base that includes credible sources is evident.
<b>Explanation of impacts</b> (X2)	Explanation is missing a discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation addresses some of the issues relevant to environmental, economic, social, and/or ethical considerations.	Explanation includes a full discussion of the issue's relevance to environmental, economic, social, and/or ethical considerations.
<b>Supporting information</b> (X1)	Support information does not help to clarify documentation, and/or it is of little significance to the issue.	Support information is appropriate and helps supplement the documentation by providing clarity to the issue.	Support information is highly effective and of excellent quality.
<b>SUBTOTAL (70 points)</b>			
Display (40 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Communication of issue</b> (X1)	It is difficult to understand the issue being communicated; an illogical explanation presented.	The issue is communicated and thoughts are organized somewhat concisely.	The issue is communicated in an organized, clear, and concise manner.
<b>Communication of solution</b> (X1)	It is difficult to understand the solution being communicated; an illogical explanation is presented.	The solution is communicated and thoughts are organized somewhat concisely.	The solution is communicated in an organized, clear, and concise manner.
<b>Creativity</b> (X1)	The display lacks creativity; no, or very few, design principles are integrated in the display.	Some elements of creativity exist in the display, and essential design principles are generally evident.	The display exudes creativity; essential design principles and elements are well integrated.
<b>Aesthetics and artisanship</b> (X1)	Work is unorganized and sloppy; display seems to be an afterthought or thrown together.	Display shows an organized presentation of the issue.	Display is exemplary in logically communicating important data.
<b>SUBTOTAL (40 points)</b>			

Record scores in the column spaces below.



Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Semifinalist Presentation (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation; illogical explanation of the project is presented.	Participants are generally prepared for the presentation; explanation of the project is communicated and generally organized.	The presentation is logical, well organized, and easy to follow; the project explanation is communicated in a concise manner.
<b>Articulation</b> (X1)	The presentation is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation is somewhat logical, easy-to-follow, and/or there is sufficient information describing the project.	The presentation is clear, concise, and there is ample information provided describing the project.
<b>Knowledge</b> (X2)	Participants seem to have very little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project; they answer questions adequately.	Participants present clear evidence of a thorough understanding of their project; they answer questions well and confidently.
<b>Team participation</b> (X1)	The majority of of the presentation is made by one member of the team; partner(s) may be disengaged from the presentation.	Team members generally are engaged in the presentation, though one member may take on more responsibility than the other(s).	Team members are actively involved in the presentation and responses to questions; there is shared responsibility among team members.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation; participants' posture, gestures, and lack of eye contact diminish the presentation.	The team is somewhat well-spoken and clear in its presentation; participants' posture, gestures, and eye contact are acceptable in the presentation.	The team is well-spoken and distinct in its presentation; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation.
			<b>SUBTOTAL (60 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (170 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_



# MICROCONTROLLER DESIGN

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## OVERVIEW

Teams develop a working digital device (product) with real-world applications. Through a multimedia presentation, product demonstration, and documentation, the team demonstrates in detail its knowledge of microcontroller programming, simple circuitry, and product design and marketing. The project should have educational and/or social value and conform to the theme for the year. The theme will be posted on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems. Teams demonstrate and promote their work in a timed presentation.

## ELIGIBILITY

Participants are limited to one (1) team of three to five (3-5) members per chapter. Up to three (3) team members may participate in the presentation.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. Teams will be allowed five (5) minutes to set up for their presentation, five (5) minutes for the actual presentation, and three (3) minutes for removal of any items used in the presentation.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Teams submit their documentation portfolio at the time and place stated in the conference program. At this same time, teams sign up for a presentation time.
- B. Portfolios are reviewed by evaluators in advance of the presentations.
- C. Teams report to the designated event area at the specified time in the conference program. Teams must bring with them

the device (product) and multimedia presentation. Products are judged during the presentation.

- D. No more than three (3) team members are allowed to participate in the presentation in which they will explain their research, the value of their product, and its marketability; they also will demonstrate their product's functionality. Evaluators may ask questions after the presentation is finished.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" by 11" pages, in this order:
  1. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
  2. Table of contents; pages as needed
  3. Description of the team's project, including an explanation of the educational and/or social value of the project; pages as needed for each requirement.
  4. Research into the problem; three (3) pages maximum.
  5. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member(s) responsible, and comments (See Plan of Work log); one (1) page
  6. Circuit diagrams
  7. Source code
  8. Product marketing plan
  9. Print out of multimedia presentation
  10. Materials list
  11. Team's evaluation of its work
  12. List of references used for the project



- B. Product
1. The device (product) must include a programmed microcontroller that controls the device functionality.
  2. Aesthetics—the product must be well-designed and show good craftsmanship.
  3. Functionality—the product must operate as intended; remote control technology may be used to operate the device.
  4. AC/ power and/or a dry cell batter may be used.
- C. Presentation—Teams are given five (5) minutes to set up their device and multimedia presentation; five (5) minutes to explain the problem their device solves, demonstrate the functionality of the device, and describe their marketing plan. Judges may ask questions after the presentation.
- D. Teams will be allowed three (3) minutes for the removal of any items used in the presentation. All portfolios and presentations become the property of TSA, Inc., and will not be returned after the event.

## EVALUATION

Evaluation is based on the quality of work and overall benefit showcased in the participant portfolio; on their multimedia presentation; and on their ability to promote their device (product), both to expand end-user usage and attract future developers. Please see the official rating form for more information.

## PROJECT IDEAS AND MICROCONTROLLER TRAINING:

<http://www.avr-tutorials.com/>

[http://www.pictutorials.com/what\\_is\\_microcontroller.htm](http://www.pictutorials.com/what_is_microcontroller.htm)

<https://www.newbiehack.com/MicrocontrollerTutorial.aspx>

<http://people.ece.cornell.edu/land/courses/ece4760/FinalProjects/>

<http://www.circuitstoday.com/8051-projects-and-circuits>

### STEM INTEGRATION

This event aligns with the STEM educational standards noted below. Please refer to the STEM Integration section of this guide for more information.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication — Students communicate with team members and other project developers, debuggers, and documenters. Suggested leadership activities: *Chefs In The Kitchen* and *Communication Breakdown*
- Critical thinking — Students analyze and evaluate a problem in order to arrive at an acceptable solution. Suggested leadership activities: *Rebus Puzzles* and *Thinking Like Tarzan*
- Problem solving — Students design a solution to a problem. Suggested leadership activities: *Breaking It Down* and *Finding A Way*

Additional leadership skills promoted in this event:

- Self-esteem
- Teamwork
- Organization
- Decision making
- Ethics
- Creative thinking
- Evaluation

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use The 16 Career Clusters chart and the TSA Competitions and Career Clusters grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Manufacturing
- Software engineer
- Technical writer



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
<b>1</b>				
<b>2</b>				
<b>3</b>				
<b>4</b>				
<b>5</b>				
<b>6</b>				

Advisor signature \_\_\_\_\_

## MICROCONTROLLER DESIGN EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and for each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. Chairs, one (1) per participant
- C. Stopwatch for timing presentations

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with your evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in.
- E. Each entry must include the participant's identification number in the upper right-hand corner of the entry.





- F. Assign students a five (5)-minute time frame for their presentation at check-in.
- G. Evaluators independently review each entry.
- H. For participants who violate the rules, the decision either to 1) deduct 20% of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- I. Inspect the area in which the presentations are to be held. There must be seating for at least five (5) people at a table with space for a computer and a display.
- J. Conduct presentations. Evaluators may ask questions after the presentation.
- K. Evaluators determine ten (10) finalists. Evaluators discuss and break any ties.
- L. Complete and submit the finalist results and all related forms in the results envelope to the CRC room.
- M. Manage security and the removal of materials from the area.



Participant/Team ID# \_\_\_\_\_

<b>MICROCONTROLLER DESIGN</b>			
<b>2016 &amp; 2017 OFFICIAL RATING FORM</b>			<b>MIDDLE SCHOOL</b>
<b>Documentation (20 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio components</b> See Regulation A (X1)	Portfolio is unorganized, missing three or more of the required components (such as circuit diagrams, source code, and marketing plan, etc.), and/or components are of poor quality.	Portfolio is somewhat organized, contains most components, and is of adequate quality.	Portfolio is organized and includes all required components.
<b>Research</b> (X1)	Research is inadequate, and/or very few credible sources are referenced.	Research is adequate, and mostly credible sources are included.	The research is comprehensive, and credible resources are included.
<b>SUBTOTAL (20 points)</b>			
<b>Product (90 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Design principles</b> (X1)	Product demonstrates little to no use of design principles.	Product demonstrates adequate use of design principles	Product demonstrates exceptional use of design principles
<b>Complexity</b> (X2)	Product is not complex, or not very complex; it includes little or no code, and/or circuit design and control technology complexity.	The product exhibits some degree of complexity; it includes code, circuit design, and control technology complexity.	The product is complex and highly functional; it includes code, circuit design, and control technology complexity.
<b>Creativity</b> (X1)	The product lacks creativity; very little original thought in developing the project is evident.	Some elements of creativity are expressed; the product is somewhat original.	The work exudes creativity; the product is highly original.
<b>Technical skill</b> (X2)	Little technical skill is exhibited in the code and circuit design.	A beyond-basic degree of technical skill is exhibited in the code and circuit design.	A level of mastery of coding and circuit design is exhibited.
<b>Effectiveness</b> (X1)	Product does not appropriately provide a solution to the problem.	Product loosely provides a solution to the problem.	The solution to the problem is clear in the product.
<b>Educational and/or social value</b> (x1)	Product does not have any, or has very little, educational and/or social value.	The product has adequate educational and/or social value.	The product has extreme social and educational value.
<b>Marketability</b> (x1)	Product is not marketable or not very marketable, and/or there is no plan, or only a minimal plan, for marketing of the product.	The product is somewhat marketable as defined; there is a plan for marketing the product, but it is incomplete.	The market for the product is well thought out; the product itself is very marketable.
<b>SUBTOTAL (90 points)</b>			

Record scores in the column spaces below.



Presentation (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	The team seems unprepared and unorganized for the presentation.	The team is prepared but somewhat disorganized in its presentation to judges.	The team's presentation is logically organized and effectively presented.
<b>Knowledge</b> (X1)	Team members seem to have very little understanding of the concepts in their project; they provide vague answers to questions.	Team members have a general understanding of the concepts in their project and answer questions adequately.	There is clear evidence that all team members have a thorough understanding of the concepts presented in their project; they answer questions well and confidently.
<b>Articulation</b> (X1)	The team's presentation is not logical or articulate.	The team's presentation is logical, though some points are confusing.	The team provides a concise, logical, and clear explanation of the product.
<b>Team participation</b> (X1)	Only one team member communicates with judges; there is no participation from other team members.	Team members participate equally, but only one member seems to fully understand the concepts.	All team members seem to fully understand the concepts and share an equal role in the presentation.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation; participants' posture, gestures, and lack of eye contact diminish the presentation.	The team is somewhat well-spoken and clear in its presentation; participants' posture, gestures, and eye contact are acceptable in the presentation.	The team is well-spoken and distinct in its presentation; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation.
<b>Product demonstration</b> (x1)	Team members are unable to successfully demonstrate their product, and/or the product does not work, or barely works, as intended.	Team members are able to partially demonstrate the functionality of their product; the product somewhat works as intended.	Team members are successful and effective in their product demonstration; the product works exactly as intended.
			<b>SUBTOTAL (60 points)</b>

Rules violations (a deduction of 20% of the total possible points for the sections above) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Time violation (a deduction of five points total will be incurred for exceeding the five-minute presentation time limit). Record the deduction.

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (170 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# PREPARED SPEECH

Chapter members may already have given a few speeches about TSA. Participants should put that experience to work while focusing on the conference theme.

Participants are asked not to reveal their school, chapter name, or city, but the appearance of a state name on an official TSA badge is acceptable.

## OVERVIEW

Participant delivers a speech that reflects the theme of the current national TSA conference. See the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems for the current conference theme.

## ELIGIBILITY

Participants are limited to one (1) individual per chapter.

## TIME LIMITS

- A. Each speech should be no less than three (3) minutes and no more than five (5) minutes. A one (1)-point deduction will be incurred for each ten (10)-second interval under or over the allotted time for speaking.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants report to the event area at the time and place stated in the conference program to receive an assigned speaking time.
- B. The event coordinator introduces each participant by ID number only and in the order of scheduled times. TSA will provide a podium in the event room.
- C. No observers are allowed in the event room during heats. Observers are allowed to sit in the audience during the semifinals. No audio or visual recording devices (including cell phones, digital cameras, etc.) by any observer are permitted. No talking or gesturing is permitted. Observers may not enter or leave during a speech. There should be no applause until a speech has concluded.
- D. A semifinalist list in random order is posted.




- E. Semifinalists report to the event area at the time and place stated in the conference program.
- F. Semifinalist speeches follow the same guidelines as above.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Each speech must be the result of the participant's own efforts.
- B. The topic for the Prepared Speech event is the published theme of the current year's conference. Information about technology and TSA is appropriate as long as it relates to the published theme.
- C. Participants are not permitted to use any type of props, computers, display boards, etc. Costumes are not permitted. Participants may use note cards during the speech.
- D. Participants are not allowed to hear the speech of any other participant.
- E. Participant scores are penalized one (1) point per ten (10)-second interval for speaking over or under the allotted time. Time commences when the speech begins.

 No presentation devices are allowed. This includes any type of props, computers, display boards, etc. Costumes are not permitted.

## EVALUATION

Evaluation is based upon the quality, content, and effectiveness of the speech, as well as the speaker's stage presence. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students develop proper communication skills for smooth and effective delivery. Use leadership activities: *Acting Out!* and *Take Action*
- Creative thinking: Students use a given theme or topic to develop a creative position and unique method of delivery. Use leadership activities: *Be Prepared!* and *Open Minded*
- Organization: Students organize a speech to allow judges to better understand their message. Use leadership activities: *Organizing the Stress Away* and *Story Creation*

Additional leadership skills promoted in this event:

- Evaluation
- Self-esteem

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Entertainment/television broadcaster
- Lawyer
- Politician
- Speech writer
- Teacher/trainer



## PREPARED SPEECH EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Timekeeper, one (1)
- D. Coordinator assistant (to serve as an escort from the holding area to the heat rooms), one (1)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. One (1) stopwatch for each event room
  - 5. Results envelope with coordinator forms
- B. Podium
- C. Chairs for audience
- D. Tables and chairs for two (2) or more evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and evaluators should



be in the room at this time. In order to compete, participants must be on the entry list or must have approval of the CRC.

- E. Inform participants of their heat assignment, order of speaking, and procedure.
- F. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. The event coordinator takes the first participant to the event room. The event coordinator or assistant introduces the participant by entry number only. No name tags or clothing identifying the hometown, school, or chapter of the participant are allowed. A state name on a TSA patch is acceptable.
- H. Approximately every eight to ten (8-10) minutes, the event coordinator or the coordinator assistant will escort another participant to the event room.
- I. Evaluators determine the twelve (12) semifinalists and submit semifinalist results to the CRC for posting.
- J. Using the same official rating form for semifinalists, evaluators assess the semifinalist speeches and determine the ten (10) finalists. Through discussion, evaluators break any ties that affect the top three (3) placements.
- K. Submit the finalist results and all related forms in the results envelope to the CRC room.
- L. If necessary, manage security and the removal of materials from the event area.





Participant/Team ID# \_\_\_\_\_

<b>PREPARED SPEECH</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Content (30 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points.)			
<b>Introduction</b> (X1)	Introduction is weak, with little effort made to highlight the theme and/or to generate interest and enthusiasm for the topic.	Effort is evident; introduction creates a moderate level of interest.	Introduction is effective, stimulating, and inspires observers to want "more."
<b>Body</b> (X1)	Body of speech is poorly organized; content does not properly cover or represent the concepts being presented.	Body of speech is adequately presented and is somewhat interesting.	Body of speech is clearly and effectively presented in an exceptionally interesting manner; the speech is memorable.
<b>Conclusion</b> (X1)	Conclusion fails to summarize or clearly clarify the information presented in the speech.	Conclusion generally summarizes the content and theme of the speech.	The conclusion is effective, interesting, and memorable; it fully brings finality to the speech.
<b>SUBTOTAL (30 points)</b>			
Stage Presence (30 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Appearance</b> (X1)	Participant's appearance is unprofessional, sloppy, and/or inappropriate.	Participant's appearance is adequate and appropriate.	Participant's appearance is clearly exceptional, appropriate, and professional.
<b>Confidence</b> (X1)	Participant appears nervous during speech; poor posture, poor eye contact, and lack of confidence are evident; participant reads speech from note cards.	Participant is generally poised, displays eye contact, and is confident, with little sign of nervousness; participant's use of note cards to deliver the speech somewhat detracts from the overall speech.	Participant "commands" the room, and is exceptionally poised, confident, and positive; participant does not use note cards for the speech, or note cards do not detract from the overall speech.
<b>Articulation</b> (X1)	Participant conveys an inconsistent use of proper grammar, word pronunciation, acceptable pitch, and tone.	Participant generally uses proper grammar and pronunciation, and varies the tone and pitch in the delivery.	Smooth and effective articulation, proper grammar, correct pronunciation, and varied tone and pitch are used throughout the speech.
<b>SUBTOTAL (30 points)</b>			

Record scores in the column spaces below.



Organization (30 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Effective and quality presentation</b> (X1)	Speech is poorly prepared, not interesting, and not representative of the stated theme.	Speech is adequate in most areas but exceptional in none of them.	Speech is exceptional and memorable; the observer can easily understand and relate to the speech.
<b>Knowledge of material</b> (X1)	Minimal factual support is evident in the speech; the content of the speech does not relate to the theme; the participant does not convey understanding of the theme.	Factual support is provided in the speech, but the support does not always relate to the theme or match the content of the speech.	Factual support is provided in the speech; it has a strong relationship to the theme and enhances the content of the speech.
<b>Organization</b> (X1)	The speech is difficult to follow or understand.	The speech is adequately organized and delivered.	The speech is clearly organized and easy to follow; the delivery is exceptional.
			<b>SUBTOTAL (30 points)</b>

Time Deductions			
One (1) point per ten (10)-second interval is deducted for speaking under three (3) minutes or over five (5) minutes. Time commences when the competitor begins speaking.			
Total time for speech			Time deduction

Rules violations (a deduction of 20% of the total possible points in the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (90 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# PROBLEM SOLVING

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## OVERVIEW

Participants use their skills in problem solving to develop a finite solution to a stated problem provided on site. Participants work as a team to provide the best solution, which is measured objectively.

## ELIGIBILITY

Participants are limited to one (1) team of two (2) members per chapter.

## TIME LIMITS

The allotted time for the design and construction of the solution is two (2) hours.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants report to the event area at the time and place stated in the conference program.
- B. The problem, the evaluation criteria, and the materials are distributed.
- C. Participants are required to provide their own tool box (with identification [school name, address, and advisor cell phone number]), which is not to exceed twenty (20) inches (508 mm) length x ten (10) inches (254 mm) width x ten (10) inches (254 mm) height. The box must contain all items needed to fabricate the solution. The following is a suggested list:
  1. Cutting devices; NONE may be electric
  2. Adhesives
    - a. aerosol and electric applicators are not allowed
    - b. a bottle of Uncure or Debonder is recommended
  3. Temporary fastening devices
    - a. straight pins
    - b. clamps
    - c. tape



4. A cutting surface that prevents table-top marring (required)
  5. Rulers, straightedges, and/or measuring scales
  6. Abrasives sheets, sponges, boards
  7. Marking devices (pens, pencils, etc.) and sharpener
  8. Sheet of wax paper, as large as is needed for the competition (required)
  9. Pliers, wrenches, nut drivers, as needed
  10. Safety glasses and side shields, as required
- D. Participants are required to provide and wear safety-approved eyewear for this event. Prescription eyewear will need to have side shields to be considered safety eyewear. Should a team member remove his/her eyewear, he/she will be reminded once to replace it. If there is a second infraction, the team will be asked to leave the competition. Sunglasses are not suitable eyewear.
- E. Students also are required to bring the following items:
1. one (1) roll  $\frac{3}{4}$ " masking tape
  2. twelve (12) 3" x 5" index cards
  3. twelve (12) Popsicle sticks or tongue depressors
  4. six (6) 8½" x 11" sheets of printer paper (20 pound bond)
  5. three (3) feet of string
  6. six (6) drinking straws
  7. ten (10) #1 paper clips
- F. Teams are allowed two (2) hours to design and construct a solution.
- G. Each solution is tested as soon as possible after the construction phase is completed. (Some problems may require teams to be present for testing).
- H. Ten (10) finalists are announced at the awards ceremony.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. All work must be completed in the event area during the time specified for the event.
- B. Specific materials related to the on-site problem will be provided by TSA. Only the materials issued to each team by



the event coordinator, or the items that students are required to bring, may be used in the development of the solution.

- C. Participants without a tool box will not be allowed to compete. Sharing tools between teams is not permitted.

### **EVALUATION**

Each team's solution is evaluated objectively. A finite measure, such as elapsed time, horizontal or vertical distance, and/or strength, is used to determine the best solution. Solution designs will be used to break ties. Only as a last resort does the event coordinator use subjective measurement, such as originality, to evaluate solutions. Please refer to the official rating form for more information.



### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Creative thinking: Students create original designs or apply original interpretations for a common solution. Use leadership activities: *Around the World* and *Open Minded*
- Critical thinking: Students use critical thinking skills to choose the most effective solution. Use leadership activities: *Rebus Puzzles* and *Thinking Like Tarzan*
- Problem solving: Students solve an on-site problem using miscellaneous materials. Use leadership activities: *Finding a Way* and *Including Everyone*

Additional leadership skills promoted in this event:

- Evaluation
- Organization
- Teamwork

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Computer network specialist
- Detective
- Mechanical engineer
- Nurse
- Project manager



# PROBLEM SOLVING

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Timekeeper/monitors

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Copies of the tool template, as needed
  - 6. Stopwatch for timekeeper
  - 7. Results envelope with coordinator forms
- B. A well-written, technologically appropriate problem that can be objectively measured; one (1) for each team
- C. Adequate conditions (inside or outside), on-site problem materials, monitoring, and testing devices for the designated problem
- D. Tables and chairs for participants
- E. Tables and chairs for event coordinator and evaluators

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.



- D. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- E. Distribute materials as appropriate, prior to the event.
- F. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and evaluators should be in the room at this time. In order to compete, participants must be on the entry list or must have approval of the CRC.
- G. Each team will display its tools using the tool template (paper template) provided, as necessary. Only tools displayed will be permitted.
- H. Tool boxes must be removed from a team's work table prior to when participants begin the design and construction of the solution.
- I. Once teams are seated (checked against the entry list) and general announcements have been made, the event problem will be distributed, reviewed, and time will be started.
- J. Evaluators and monitors observe the entire construction phase, with evaluators measuring solutions as soon as appropriate.
- K. Evaluators will collect the solution design when the team's solution is submitted for testing. Evaluators will use the designs to break any ties in order to determine the ten (10) finalists.
- L. Submit the finalist results and all related forms in the results envelope to the CRC room.
- M. If necessary, manage security and the removal of materials from the event area.





Participant/Team ID# \_\_\_\_\_

<b>PROBLEM SOLVING</b>				
<b>2016 &amp; 2017 OFFICIAL RATING FORM</b>			<b>MIDDLE SCHOOL</b>	
<b>Static Entry (30 points)</b>				
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)				
<b>Materials</b> <small>See Procedure E (X1)</small>	Three or more items are missing from the materials, and/or some of the items are not those specified.	Most items on the materials list are present and correct.	All of the specified items are included in the team's materials and are correct.	
<b>Solution to problem</b> <small>(X2)</small>	The solution developed is unable to fully meet the defined problem.	The solution is somewhat developed in an attempt to address the problem.	The solution developed fully and clearly meets or solves the identified problem.	
			<b>SUBTOTAL (30 points)</b>	
<b>Testing of Solutions (50 points)</b>				
<b>Evaluation</b> <small>[A finite unit of measure, such as elapsed time, linear distance, and/or strength, etc. is used to determine ranking for this event.]</small>				
1st - 50 points	2nd - 45 points	3rd - 40 points	4th - 35 points	5th - 30 points
6th - 25 points	7th - 20 points	8th - 15 points	9th - 10 points	10th - 5 points
			<b>SUBTOTAL (50 points)</b>	

Record scores in the column spaces below.

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (80 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# PROMOTIONAL MARKETING

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## OVERVIEW

Participants design a three-part TSA Marketing Toolkit that must include a national conference promotional poster, a state delegation fact sheet, and a chapter t-shirt design; the toolkit must be submitted in digital PDF format. Semifinalists are asked to work creatively under constraints to design a solution to a problem given on site, using their own computer/laptop work station.

## ELIGIBILITY

Participants are limited to one (1) individual per chapter, one (1) entry per individual.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. Semifinalists will be given fifteen (15) minutes to set up before the event and one (1) hour to complete the on-site problem.
- C. Semifinalists will be given fifteen (15) minutes to remove their computers after the judging process is completed.

## ATTIRE


TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants create a three-part TSA Marketing Toolkit, submitted in digital PDF format, containing a national conference promotional poster, a state delegation fact sheet, and a chapter t-shirt design. The toolkit must be submitted on a USB flash drive at event check-in time.
- B. Participants check in their entries at the time and place stated in the conference program.
- C. Entries are reviewed by evaluators. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.



- D. Semifinalists report with a computer, a power strip/surge protector, and an extension cord to the event area at the time and place stated in the conference program.
- E. Semifinalists complete the on-site layout and design problem within the one (1)-hour time limit.
- F. Entries are judged from the participant's computer screen. No print-out will be generated from the participant's computer.
- G. Participants pick up their entries from the designated area at the time and place stated in the conference program.

 Semifinalists must provide a computer and power strip/surge protector, and an extension cord for the on-site portion of this competition.


**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Participants design a national TSA conference promotional poster to include:
  1. The current year's national TSA conference theme
  2. City and state of the current year's national TSA conference
  3. Dates of the current year's national TSA conference
  4. National TSA logo

Poster is to be 20" x 28" in size, portrait or landscape orientation with full color
- B. Participants design a state delegation fact sheet to include:
  1. Mission
  2. Purpose (What is TSA?)
  3. Membership overview
  4. Participant's state TSA logo
  5. National TSA logo
  6. General overview of competitive events program
  7. How TSA aligns with STEM
  8. National and/or state TSA recognitions or affiliations
  9. State membership demographics (can be fictional)

Fact sheet is to be 8.5" x 11" in size, in full color; maximum two (2) pages
- C. Participants design a chapter t-shirt to include:
  1. Front and back design
    - a. Left chest: maximum 3.5" wide x 3" high, in full color

 The materials created for this event are practical tools that can be used by a chapter.

- b. Full back: maximum 12" wide by 11" high, in full color
  2. Chapter name
  3. National TSA logo
  4. A unique design and slogan representing and/or promoting the chapter's TSA program
- D. Additional information about design work needs to be typed and saved as a separate PDF file, and submitted with design PDF files. Include the following:
1. Note all ideas, fonts, and images that are completely original.
  2. Cite all ideas, fonts, and images from sources other than the designer, and/or that are copyrighted (most fonts and images found on the web are copyrighted material unless purchased or offered as free-domain). If copyrighted material is used, written permission must be included.
  3. Include the type of software program(s) used for design and layout.
- E. The TSA logo can be used only in accordance with trademark policies that appear on the national TSA website. (<http://tsaweb.org/Trademark-Policies>).
- F. If the entry contains images of people, proof of consent must be included as a separate PDF file and submitted with other required files. Images of minors require parental consent. (**See Photo/Film/Video Consent and Release form that follows.**)
- G. Participants must submit the poster, the state delegation fact sheet, the t-shirt design, as well as additional information (as required by Regulation D) and all applicable consent forms (as required by Regulation F) in PDF format on a USB flash drive at the event check-in time.
- H. Semifinalist participants are required to bring a computer with power strip/surge protector and software, and an extension cord. A laptop computer is recommended. No printer is needed.
- I. Clip art may be used for the on-site problem, but the use of a template must be avoided. The on-site work must be an original creation. Students are responsible for providing their own graphic library. Internet access will be permitted, but it will not be provided by TSA. TSA cannot guarantee the availability of cellular and/or Wi-Fi signals in the competition room.
- J. Participants may leave the room only with permission from the event coordinator.



## EVALUATION

Evaluation is based on the quality of the layout and design, the content, and the effectiveness and originality of the products. Semifinalist evaluation is based on the same criteria. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students transmit ideas through writing, graphics, signs, and symbols. Use leadership activities: *Mirror Mirror* and *Take Action*
- Creative thinking: Students create original and unique designs. Use leadership activities: *Around the World* and *Fashion Forward*
- Organization: Students create organized and professional layouts. Use leadership activities: *Keep on Rolling* and *Story Creation*

Additional leadership skills promoted in this event:

- Ethics

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Ad copy writer
- Telecommunications manager
- Internal communications manager
- Volunteer manager
- Public affairs specialist

# PROMOTIONAL MARKETING

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. On-site problem for semifinalists, twelve (12) copies
  - 6. Results envelope with coordinator forms
- B. Tables, one (1) per participant
- C. Chairs, one (1) per participant

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Check in the entries at the time stated in the conference program. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control. Requirements for attire do NOT apply during check-in. Secure the entries in the designated area.
- D. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.



- E. Evaluators independently review the entries.
- F. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- G. Evaluators determine the twelve (12) semifinalists. Evaluators discuss and break any ties.
- H. Submit semifinalist results to the CRC for posting.
- I. Provide the on-site problem to the semifinalists.
- J. Supervise the one (1) hour on-site layout and design problem.
- K. Supervise the evaluation process of the on-site problem.
- L. Evaluators determine the top ten (10) finalists. Evaluators discuss and break any ties that affect the top three (3) placements.
- M. After the evaluation, supervise the removal of computers by the participants.
- N. Submit the finalist results and all related forms in the results envelope to the CRC room.





## PHOTO/FILM/VIDEO CONSENT AND RELEASE

I hereby give permission for images of my child or myself (as applicable), captured during Technology Student Association (TSA) activities through film, photo or digital camera, to be used solely for the purposes of TSA promotional materials and publications, and I waive any rights of compensation or ownership thereto.

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Name of minor in images (please print)

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Name of minor's parent/guardian (please print)

---

Name of adult in images (please print)

---

Parent/guardian or adult's signature (as applicable)

---

Date



Participant/Team ID# \_\_\_\_\_

PROMOTIONAL MARKETING			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Promotional Poster (50 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Layout and design</b> (X1)	Layout/design does not resemble a promotional poster and/or it is missing essential design elements.	Most elements of design are followed; few mistakes are made in the layout.	Poster encompasses all standardized layout practices, and creativity is at the forefront of the design.
<b>Content</b> (X1)	Poster is missing three or more of the following elements; conference theme, conference city/state, conference dates, TSA logo.	Poster includes most elements listed in the minimal criteria.	All elements are included in the poster.
<b>Effectiveness</b> (X1)	Poster does not convey intended message appropriately, and/or it contains unrelated text/graphics.	Poster conveys overall intended message, and it contains adequate text/graphics.	Poster message is easily understood and interpreted, with exceptional use of related graphics and text.
<b>Incorporation of graphic design principles</b> (X2)	Design principles (alignment, consistency, contrast, unity, white space) are not incorporated adequately into the poster, and/or they are considered as an afterthought.	Poster exhibits incorporation of most design principles (alignment, consistency, contrast, unity, white space), and the overall layout is aesthetically pleasing.	Poster is aesthetically pleasing, and all design principles are well incorporated into the design and layout.
			<b>SUBTOTAL (50 points)</b>
State Delegation Fact Sheet (50 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Layout and design</b> (X1)	Poor use of formatting to develop the design and layout of the fact sheet is evident.	Adequate use of formatting to develop the design and layout of the fact sheet is evident.	Excellent use of formatting to develop the design and layout of the fact sheet is evident.
<b>Audience</b> (X1)	Audience is not considered in the development of the fact sheet; inadequate language is used.	Tone and language are of average quality for the audience.	The fact sheet is written specifically for an audience, with professional tone and language.
<b>Sentence structure</b> (X1)	Simple sentence structure is used throughout the fact sheet, and there are multiple grammatical errors.	Writing is generally engaging with varied sentence structure, and/or only a few grammatical errors are evident.	Fact sheet is well-written, with varied, flowing sentence structure; little to no grammatical errors are evident.
<b>Content</b> See Regulation B (X1)	Fact sheet is missing three or more of the required elements.	Fact sheet is missing one or two of the required elements.	All elements are included in the fact sheet.

Record scores in the column spaces below.



<b>Effectiveness</b> (X1)	Fact sheet does not convey intended message appropriately, and/or it contains unrelated text/graphics.	Fact sheet conveys overall intended message, but it contains some inadequate and/or unrelated text/graphics.	Fact sheet message is easily understood and interpreted, with exceptional use of related graphics and text.	
<b>SUBTOTAL (50 points)</b>				

<b>Chapter T-Shirt (50 points)</b>				
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
<b>First impression</b> (X1)	The design is sloppy, and/or it is difficult to see; there is poor choice of colors; the artwork is not suited for a t-shirt, and/or it leaves an unfavorable impression.	The design has good points, but some details may distract from the overall quality.	The design is eye catching; attention to detail is obvious.	
<b>Dominance</b> (X1)	Eyes are drawn away from what should have been the focal point by some other component of the graphic.	An attempt is made to use a graphic component that will draw attention to the design's main idea, but the result is confusing.	The design's main components draw eyes to the appropriate location and/or focal point of the graphic.	
<b>Use of fonts/words in design</b> (X1)	Fonts/words are not readable; location or size are not appropriate for the design.	Fonts/words are mostly appropriate, but there is room for improvement; fewer fonts/words could have been used in the design.	Fonts/words, their size, and their location are clearly appropriate for the design.	
<b>Incorporation of graphic design principles</b> (X2)	Design principles (alignment, consistency, contrast, unity, white space), are not incorporated adequately into the graphic, and/or they are considered as an afterthought.	Graphic incorporates most design principles (alignment, consistency, contrast, unity, white space), and the overall layout is aesthetically pleasing.	Graphic is aesthetically pleasing, and all design principles are well incorporated into the design and layout.	
<b>SUBTOTAL (50 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

<b>Semifinalist Problem (50 points)</b>				
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points	
<b>Layout and design</b> (X1)	Layout/design does not incorporate or consider three or more of the following design principles: alignment, consistency, contrast, unity, white space.	Layout/design includes most design principles; overall layout is aesthetically pleasing.	Aesthetically pleasing design is evident, and all design principles are incorporated into the design and layout.	
<b>Solution to project</b> (X2)	Project is missing three or more attributes of the solution's criteria.	Most attributes of the solution's criteria are included.	All attributes of the solution's criteria are included.	
<b>Effectiveness</b> (X1)	Project does not convey intended message appropriately, and/or it contains unrelated text/graphics.	Project delivers the overall intended message, and it contains basic graphics.	Project message is easily understood and interpreted, with exceptional use of related graphics and text.	



<b>Originality</b> (X1)	Project does not incorporate or consider four or more of the following principles of creativity: freshness, idea cultivation, realness, bravery, momentum, visual signaling.	Project incorporates most creativity principles, and it results in an adequate/average presentation.	Project is a truly unique presentation; it includes most of the applicable principles of creativity.	
<b>SUBTOTAL (50 points)</b>				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (200 points)**

Comments:

---

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



## OVERVIEW

Participants use computer graphics tools and design processes (i.e., animation) to communicate, inform, analyze and/or illustrate a topic, idea, subject, or concept that focuses on one (1) or more of the following areas: science, technology, engineering, and/or mathematics; sound may accompany graphic images. A documentation portfolio and a USB flash drive with the STEM animation comprise the entry. Semifinalists make a presentation.

## ELIGIBILITY

Participants are limited to three (3) teams per state, one (1) entry per team.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. The animation is not to exceed three (3) minutes in length. There will be a three (3)-point deduction for each fifteen (15) seconds, or fraction thereof, over the three (3)-minute length.
- C. The animation time length is calculated from the start of the first image or sound to the end of the last image or sound.
- D. Semifinalists are given ten (10) minutes to present their animation to the judges.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE


- A. Participants check in their entries at the time and place stated in the conference program.
- B. Evaluators review the entries. Neither students nor advisors are present at this time. A semifinalist list in random order is posted.



Scientific animation has come a long way in recent years, and with this event TSA members can demonstrate their skills in using sophisticated, advanced technology to illustrate ideas of their choice.

- C. No more than two (2) representatives from each semifinalist team may report to the event area for the presentation at the time and place stated in the conference program.
- D. Each semifinalist team explains its portfolio to the evaluators, discussing the purpose, value, research and design, and development process of its work.
- E. Each animation must advance automatically once it has been opened and started by evaluators.
- F. Animations must be turned in on a USB flash drive, in either MPEG or Quick Time file formats. No high-definition CD, DVD, or Blu-ray disc formats will be allowed.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

 Read the General Rules and Regulations in the front of this guide for information that applies to all of TSA's competitive events.

## REGULATIONS

- A. A documentation portfolio and a USB flash drive with the animation must be turned in at the time and place stated in the conference program.
- B. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
  - 1. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
  - 2. Table of contents; pages as needed
  - 3. Purpose of animation; one (1) page
  - 4. Hand-sketched storyboard that documents the flow and progression of the animation, with written notes; special effects, audio cues, dialogue, transitions, and scene duration should be incorporated into the storyboard; pages as needed
  - 5. Written description of what the animation illustrates or demonstrates; one (1) page
  - 6. List of references that includes sources for materials, copyrighted and otherwise; pages as needed; the term "Fair Use" and similar terms are not acceptable citations when creating the list of references.



7. Permission letters for copyrighted material; pages as needed
  8. List of software and hardware used in the development of the animation; one (1) page
  9. Plan of Work log that indicates preparation for the event, as noted by date, task, time involved, team member responsible, and comments (See Plan of Work Log); pages as needed
- C. The animation should visualize a scientific or technical concept. An example of this could be a biological cell dividing, or a series of related static images, such as graphics and charts used in the study of scientific phenomena. No posters or models will be accepted. All work must be included in the portfolio and on the USB flash drive.
- D. The animation is not to exceed three (3) minutes in length. There will be a three (3)-point deduction for each fifteen (15) seconds, or fraction thereof, over the three (3)-minute maximum length. For example: An animation that runs 37 seconds beyond the three (3)-minute limit will receive a deduction of nine (9) points.
- E. Sound may accompany the animation, but it is not required.
- F. All entries must be the original work of the team. Where applicable, all ideas, text, images, and sound from other sources must be cited. If copyrighted material is used, proper written permission must be included. Failure to follow this procedure results in disqualification. Absolutely no purchased content may be used in any part of the animation. (Purchased content includes, but is not limited to, texture, models, and royalty free music.) A completed Student Copyright Checklist must be included in the portfolio.
- G. The presentation team may not exceed two (2) members.
- H. All entries become the property of national TSA and will not be returned after judging.

## EVALUATION

Evaluation is based on the quality of the portfolio and the animation. Please refer to the official rating form for more information.

## NOTES

More information about STEM Animation can be found at this website: [www.ncsu.edu/project/stemgaming/scivis.html](http://www.ncsu.edu/project/stemgaming/scivis.html)

### STEM INTEGRATION

This event aligns with the STEM educational standards noted below. Please refer to the STEM Integration section of this guide for more information.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication — Students will convey scientific concepts through aesthetically effective illustrations. Suggested leadership activities: *Acting Out!* and *Mirror Mirror*
- Creative thinking — Students will think creatively to develop a unique entry. Suggested leadership activities: *Around the World and Be Prepared!*
- Critical thinking — Students will analyze their entry in order to make improvements. Suggested leadership activities: *Rebus Puzzles and Thinking Like Tarzan*

Additional leadership skills promoted in this event:

- Evaluation
- Organization
- Problem solving
- Self-esteem
- Teamwork

### TSA AND CAREERS

This competition connects to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and The 16 Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Computer animator
- Game designer
- Instructional technologist
- Software engineer



## STUDENT COPYRIGHT CHECKLIST

(for students to complete and advisors to verify)

- 1) **Does your solution to the competitive event integrate any music?** YES \_\_\_\_ NO \_\_\_\_

If NO, go to question 2.

If YES, is the music copyrighted? YES \_\_\_\_ NO \_\_\_\_

If YES, move to question 1A. If NO, move to question 1B.

1A) Have you asked for author permission to use the music in your solution and included that permission (letter/form) in your documentation? If YES, move to question 2. If NO, ask for permission (OR use royalty free/your own original music) and if permission is granted, include the permission in your documentation.

1B) Is the music royalty free, or did you create the music yourself? If YES, cite the royalty free music OR your original music properly in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any music into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of music is done so with proper permission and is cited correctly in the student's documentation.

- 2) **Does your solution to the competitive event integrate any graphics?** YES \_\_\_\_ NO \_\_\_\_

If NO, go to question 3.

If YES, is the graphic copyrighted, registered and/or trademarked? YES \_\_\_\_ NO \_\_\_\_

If YES, move to question 2A. If NO, move to question 2B.

2A) Have you asked for author permission to use the graphic in your solution and included that permission (letter/form) in your documentation? If YES, move to question 3. If NO, ask for permission (OR use royalty free/your own original graphic) and if permission is granted, include the permission in your documentation.

2B) Is the graphic royalty free, or did you create your own graphic? If YES, cite the royalty free graphic OR your own original graphic properly in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any graphics into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of graphics is done so with proper permission and is cited correctly in the student's documentation.

- 3) **Does your solution to the competitive event use another's thoughts or research?** YES \_\_\_\_ NO \_\_\_\_

If NO, this is the end of the checklist.

If YES, have you properly cited other's thoughts or research in your documentation? If YES, this is the end of the checklist.

If NO, properly cite the thoughts/research of others in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any thoughts/research of others into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of the thoughts/research of others is done so with proper permission and is cited correctly in the student's documentation.



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
1				
2				
3				
4				
5				
6				
Advisor signature _____				

# STEM ANIMATION

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Assistant for check-in, one (1)
- C. Evaluators, two (2) or more
- D. Evaluators, two (2) or more for semifinalist presentations

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick-on labels for identifying entries
  - 5. Results envelope with coordinator forms
- B. Tables for entries
- C. One (1) extension cord and one (1) power strip as needed for evaluators
- D. One (1) computer with monitor and a USB flash drive as needed for evaluators
- E. Tables and chairs for event coordinator, initial evaluators, semifinalist evaluators, and participants

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. At least one (1) hour before the evaluation of entries is to begin, meet with your evaluators and check-in personnel to review time limits, procedures, and regulations. If questions

arise that cannot be answered, speak to the CRC event manager before the evaluation begins.

- D. Check in entries at the time and place noted in the conference program.
- E. Notify the event manager immediately of any team handing in a portfolio and USB flash drive that is not on the entry list. Determine if the team in question is properly registered.
- F. Evaluators independently assess the entries.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Evaluators determine the twelve (12) semifinalist teams.
- I. Submit semifinalist results to the CRC for posting.
- J. Semifinalists report to the event area at the time and place stated in the conference program. Each semifinalist team signs up for a time to present its animation. During the presentation, semifinalist team representatives will explain their work and answer any questions the evaluators may ask.
- K. Evaluators independently assess the twelve (12) semifinalist teams, and determine the ten (10) finalists. Evaluators discuss and break any ties.
- L. Submit the finalist results and all related forms in the results envelope to the CRC room.
- M. Collect all USB flash drives and portfolios and give them to the event manager.
- N. If necessary, manage security and the removal of equipment and materials from the area.



Participant/Team ID# \_\_\_\_\_

# STEM ANIMATION

2016 & 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Portfolio (30 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation B (X1)	Portfolio is unorganized and/or missing three or more components.	Portfolio includes most components and is generally organized.	All components of the portfolio are included, and content and organization are clearly evident.
<b>Purpose and description</b> (X1)	The purpose and description of the animation idea are unclear.	The purpose and description of the animation are explained appropriately.	The purpose and description of the animation are clear and concisely written.
<b>Storyboard</b> (X1)	The hand-sketches storyboard is sloppy, seems to have been thrown together after the creation of the animation, and/or it does not correlate with the animation.	The storyboard is drawn appropriately and largely correlates with the completed animation.	The storyboard is of exceptional aesthetic and artistic value and clearly correlates with the animation.

**SUBTOTAL (30 points)**

## Animation (50 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Communication of animation</b> (X1)	It is difficult to understand the idea being communicated; an illogical explanation is presented.	The idea is communicated, and thoughts are somewhat organized and/or concise.	The idea is communicated in an organized, clear, and concise manner.
<b>Creativity</b> (X1)	The animation lacks creativity; no, or very few, design principles are integrated in the animation.	Some elements of creativity are expressed, and essential design principles are used somewhat effectively.	The animation exudes creativity; essential design principles and elements are integrated.
<b>Aesthetics and artisanship</b> (X1)	Unorganized, sloppy work is evident; the animation seems to be an afterthought and/or thrown together.	An organized presentation of essential issues in a logical format is evident.	An exemplary use of layout and design principles to logically communicate important data is evident.
<b>Graphical representations</b> (X1)	Graphical representations do not help to clarify the idea, or they are of little significance to the idea.	Graphical representations are appropriate and help supplement the idea by providing some clarity.	Graphical representations are of excellent quality and completely clarify the idea.
<b>Originality</b> (X1)	The animation lacks imagination, originality, and artistic detail.	The animation is effective and innovative, conveying some depth.	The animation is inspiring, inventive, resourceful, and completely motivating.

**SUBTOTAL (50 points)**

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Record scores in the column spaces below.



Time Deductions	
A three (3)-point deduction will be incurred for each fifteen (15) seconds, or fraction thereof, over the three (3)-minute animation maximum length.	
<b>Total animation time</b>	
<b>Number of time interval deductions</b>	
<b>TOTAL TIME DEDUCTION POINTS</b>	

Semifinalist Presentation (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the presentation; illogical explanation of the idea is presented.	Participants are generally prepared for the presentation; explanation of idea is communicated and generally organized.	The presentation is logical, well organized, and easy to follow; the idea is communicated in an organized and concise manner.
<b>Articulation</b> (X1)	The presentation is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The presentation is somewhat logical, easy to follow, and/or there is sufficient information provided describing the project.	The presentation is clear, concise, and there is ample information provided describing the project.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its presentation; participants' posture, gestures, and lack of eye contact diminish the presentation.	The team is somewhat well-spoken and clear in its presentation; participants' posture, gestures, and eye contact are acceptable in the presentation.	The team is well-spoken and distinct in its presentation; participants' posture, gestures, and eye contact result in a polished, natural, and effective presentation.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of their project.
<b>Team participation</b> (X1)	The majority of the delivery is made by one member of the team; the partner may be disengaged from the presentation.	Both team members generally are engaged in the process, though one member may take on more responsibility than the other.	Both team members are actively involved in the presentation and responses to any questions; there is shared responsibility between team members.
<b>SUBTOTAL (60 points)</b>			

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

(To arrive at the TOTAL score, add any subtotals and subtract rules violation and time deduction points as necessary.) **TOTAL (140 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# STRUCTURAL ENGINEERING

## OVERVIEW

Teams apply the principles of structural design and engineering through basic research, design, construction, and destructive testing to determine the design efficiency of a structure.

Details about the structure and information related to it will be posted on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/ Themes and Problems. The on-site semifinalist problem will be a variation of the pre-conference problem posted on the TSA website.

## ELIGIBILITY


Participants are limited to one (1) team of two (2) individuals per chapter, one (1) entry per team.

## SAFETY EYEWARE

Participants are required to wear safety-approved eyewear during the on-site phase of this event. Prescription eyewear will need to have side shields to be considered safety eyewear. Should a team member remove the eyewear and fail to replace it, s/he will be reminded once. If there is a second infraction, the team will be asked to leave the competition. Sunglasses are not suitable.

## TIME LIMITS

- A. Pre-built structures must be started and completed during the current school year.
- B. On-site structures (semifinalist teams only) must be started, completed, and checked in during the three (3) hours allowed for design and construction.
- C. Semifinalist participants with time conflicts must present a written explanation of the conflict to the event coordinator at least one (1) hour before the construction time noted in the conference program. Work must begin during the time scheduled for the event.

 Teams are encouraged to seek the mentorship of a structural engineer/ construction specialist as they plan and prepare for this competition.

### **ATTIRE**

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

### **PRE-BUILT STRUCTURE REGULATIONS**

- A. All work must be completed by the team members only, and verified by the team's chapter advisor using the Team Verification form.
- B. Teams must provide a full-size, three (3)-view (front, top, and right end) drawing (hand or computer-generated) of their structure.
- C. The structure and any related required materials (including the Analysis and Assessment form) must be submitted at the designated time and place noted in the conference program.
- D. The structure will undergo destructive testing.

### **PROCEDURE FOR ON-SITE DESTRUCTIVE TESTING OF PRE-BUILT STRUCTURES**

- A. Open viewing of the destructive testing of pre-built structures is allowed.
- B. All structures will be assessed prior to the destructive testing.
- C. Destructive testing will be completed using structural testing equipment, as designated by TSA.
- D. When the destructive testing is completed, a list of twenty (20) semifinalist teams will be posted.
- E. The twenty (20) semifinalist teams will take part in the on-site problem, which will feature the construction and destructive testing of a designated structure to determine the ten (10) finalist teams.


### **REGULATIONS AND PROCEDURE FOR SEMIFINALIST ON-SITE CONSTRUCTION AND DESTRUCTIVE TESTING**


- A. Twenty (20) semifinalist teams report to the event area at the time and place stated in the conference program.
- B. Participants must provide and wear safety glasses for this portion of the event.
- C. Participants are required to provide their own tool box (with identification [school name, address, and advisor cell phone number]), which should not exceed twenty (20) inches (508



mm) length x ten (10) inches (254 mm) width x ten (10) inches (254 mm) height. The box must contain all items needed to fabricate the solution. The following is a suggested list:

1. Cutting devices; NONE may be electric
  2. Adhesives
    - a. aerosol and electric applicators are not allowed
    - b. a bottle of Uncure or Debonder is recommended
  3. Temporary fastening devices
    - a. straight pins
    - b. clamps
    - c. tape
  4. A cutting surface that prevents table-top marring (required)
  5. Rulers, straightedges, and/or measuring scales
  6. Abrasives sheets, sponges, boards
  7. Marking devices (pens, pencils, etc.) and sharpener
  8. Sheet of wax paper, as large as is needed for the competition (required)
  9. Pliers, wrenches, nut drivers, as needed
  10. Safety glasses and side shields, as required
- D. Teams will be issued a packet of construction materials to use for fabrication of the designated structure. These materials will be withheld until the team's design drawing is complete.
1. Planning and fabrication supplies (these materials may not be part of the structure submitted for testing):
    - a. 11" x 17" paper with 1/4" grids for sketching the structure
    - b. pin board
    - c. a sheet of wax paper
    - d. structure label
- E. Teams will be seated by a monitor.
- F. The design problem will be explained and a list of directions for the construction problem will be provided.
- G. Teams will be allowed thirty (30) minutes to review the problem and create a sketch/drawing of their solution.
- H. During the building of the team's structure, construction regulations must be observed.
- I. Participants may leave early, but they must complete check-out as directed.
- J. All work stops at the coordinator's signal.
- K. Teams return all supplied items as directed, and clean and clear their work stations.

 Participants should practice with various types of adhesives to determine the one they prefer.

 Read the General Rules and Regulations in the front of this guide for information that applies to all of TSA's competitive events.



- L. Teams must identify their structure with only their team ID number, using the label provided.
- M. Structures are allowed to dry in a secure area until destructive testing time.
- N. Structures are checked for rules violations and weighed before testing.
- O. Destructive testing is completed by evaluators and is open for spectator viewing.
- P. When all testing is completed, the greatest failure weight of all tested structures is recorded on the rating form, the efficiency rating of individual structures is calculated, and ranking is determined.
- Q. Teams that fail to comply with coordinator or monitor directions, after one (1) warning, will be issued a penalty of 20% of the team's total score.
- R. Videotaping of the destructive testing of a structure is permitted, but only by a participant or representative of a respective team.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### **EVALUATION**

Evaluation is based on the compliance and design efficiency of a pre-built structure and an on-site structure (semifinalists only), both of which are destructively tested. Please see the official rating form for more information.



Team ID# \_\_\_\_\_

# MIDDLE SCHOOL STRUCTURAL ENGINEERING ANALYSIS AND ASSESSMENT

## PRE-BUILT STRUCTURE

### For TEAMS:

How many structures were designed, built, and tested prior to competition?	
Record the weight of the structure designated for competition:	
Predict the ultimate load-carrying capacity of the structure:	
Predict where or how the structure will fail:	
What are the four major types of forces that act on a structure under stress?	1. _____ 2. _____ 3. _____ 4. _____
What is the static load of a structure?	
What part of a testing device should be considered live load?	
What effect would a shorter length test block have during stress testing?	

### For JUDGES:

Record the weight of the structure after check-in and prior to testing:	
Record the actual load-carrying capacity of the structure:	

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Evaluation: Students will work to eliminate the failure of their entry. Suggested leadership activities: *Evaluation Imagination* and *Evaluation Methods*
- Problem solving: Students will work under time and material constraints to build their entry. Suggested leadership activities: *Effective Brainstorming* and *Finding the Right Way*
- Teamwork: Students will prepare in advance to work together effectively on site. Suggested leadership activities: *Teams* and *Stepping Stones*

Additional leadership skills promoted in this event:

- Creative thinking
- Critical thinking

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Architect
- Civil engineer
- Engineering technician
- Mathematician
- Structural engineer
- Structural iron and steel work technician

# STRUCTURAL ENGINEERING EVENT COORDINATOR INSTRUCTIONS

## PERSONNEL

- A. Event coordinator
- B. Evaluators to judge pre-built structures, two (2) or more
- C. Construction monitor, one (1) per twenty teams
- D. Timekeeper, one (1)
- E. Semifinalist evaluators to qualify structures after construction, two (2) or more
- F. Semifinalist destructive test evaluators, two (2) or more
  - 1. One (1) to weigh the structure, record structure weight, and record failure weight
  - 2. One (1) to bring the structure to the testing location, position the structure on the testing device, operate the tester, and then remove and store the structure following testing

## MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stick on labels for identifying entries
  - 5. Results envelope with coordinator forms
- B. Testing equipment, provided by TSA
- C. Evaluation and recording equipment
  - 1. Gram scale (3-decimal place calculation)
  - 2. Tape measure or 2' rule
  - 3. Evaluation gauges
- D. Site requirements
  - 1. Construction session
    - a. tables and chairs suitable for cutting and gluing
    - b. work area, at least 2' x 3' for each team (suggested space is two (2) teams per 6' x 2' or 8' x 2' area)
    - c. one (1) chair per participant
    - d. tables for equipment check-out and check-in
    - e. tables and chairs for evaluators

- f. secured area for drying of entries and storage of supplies
- 2. Testing session
  - a. tables for storage of structures
  - b. table for weighing
  - c. table for testing
  - d. table for recording
  - e. tables for storage of failed structures
  - f. chairs for spectators
  - g. barricade to separate testing area from spectators
- 3. Semifinalist team packets provided by TSA containing construction materials and instructions.
  - a. Construction tools per team, to be used and returned to the event coordinator or helpers after construction:
    - i. Pin board as supplied, but generally a one-foot by two-foot (1' x 2') piece of fiber or foam board
    - ii. Grid paper, 1/4" x 1/4" grid on 11" x 17" paper for structure sketch (to remain with the completed structure when turned in)
    - iii. Wax paper to cover the pin board (to remain with the completed structure when turned in)
    - iv. label for structure
  - b. Instructions

### RESPONSIBILITIES

- A. Prepare the structure problem statement (including any necessary related information) for posting on the TSA website.
- B. Upon arrival at the conference report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- C. Check to see that all event equipment and materials have been secured.
- D. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- E. Set up check-in for testing of pre-built structures.
- F. Coordinate and manage the on-site testing of pre-built structures, the recording and tabulation of results, and the determination of the twenty (20) semifinalist teams.
- G. Submit semifinalist results to the CRC for posting.

- H. Assemble semifinalist packets of construction materials and directions for the twenty (20) on-site semifinalist teams.

### On-site construction

1. This portion of the event is not open to spectators. No individuals other than participants and event personnel will be allowed in the construction area.
  2. Check-in will begin at the time noted in the conference program and will continue until all teams arriving on time have been checked in and seated. The event will begin at the posted time.
  3. Both members of a team must be present during check-in.
  4. No team is allowed to begin late unless its members have complied with the following: Participants with time conflicts must present a written explanation of the conflict to the event coordinator at least one (1) hour before the construction time noted in the conference program. Work must begin during the time frame scheduled for the event.
  5. Assign team construction locations.
  6. When all teams are seated, distribute instructions and review these, as well as any details for the assigned structure.
  7. Teams will be allowed a maximum of three (3) hours to complete their structure. Thirty (30) minutes of this time is allotted for completing the design drawing, and two and one-half (2 ½) hours, is allotted for actual construction.
  8. When a team notifies a monitor that the required sketch is complete, and the monitor confirms this, the team will receive a materials packet and may begin the on-site construction phase of the event.
  9. No additional supplies are provided during the event.
  10. Call time at the end of the allotted three (3) hour time-frame. All teams must stop working at this point.
- I. Establish the procedure for check-in and recording of finished structures, designate an area for storage, and allow for the return of construction materials.

### Team check-out

1. Teams must leave their work space clean. Failure to do so will result in a 20% penalty deduction.
2. Teams check in excess supplies as directed by the monitors.
3. Teams place their structures in the storage area with the sketch as directed by the monitor. The structure must be identified with the team number only (using the label provided in the materials packet).

4. Once check-in is complete, all participants leave the competition area.
5. The structures are secured by the monitor and allowed to dry for a minimum of twelve (12) hours.

J. Evaluation

1. Check (with assistance from evaluators) all structures for regulations compliance. Structures that are in compliance will be tested without penalty.
  - a. Weigh all structures before testing and record the weight on the evaluation rubric.
  - b. Use the testing device, designated by TSA, to test each structure. (A specific testing block or attachment for the structure may be necessary for the on-site problem.)
  - c. Apply an increasing load to the structure, via the test block or attachment, until the structure fails.
  - d. Record the greatest failure weight on the rubric. This weight is the greatest weight recorded (of all the tested structures) during testing before failure of the structure.
  - e. Determine each structure's efficiency by the greatest failure weight x 4.54, divided by the weight of the structure in grams; round off the efficiency to three (3) decimal places and record it on the rubric.
  - f. The highest numeric efficiency determines the winner. In the case of an efficiency tie, the greatest weight held by the tied entries will determine the winner.
2. Structures will not be tested if:
  - a. Two (2) or more non-compliance construction regulation violations are determined before testing.
  - b. The structure cannot be placed on the tester.
  - c. The testing attachment cannot be properly placed within or on the structure.
  - d. Straight pins are left in the structure.
  - e. There is a failure to wear safety eyewear.
  - f. Laminations contain more than two (2) pieces or members that are face to face in the same grain direction.
3. Structures with one (1) construction regulation non-compliance mark will be tested, but a 20% penalty will be noted on the rating form. (The penalty, a 20% reduction of the greatest weight held in the competition, is subtracted from the team's failure weight. This penalty factor will not be determined until all structures have been tested).
4. Manage, with assistance from evaluators, the destructive testing of all structures that were not officially tested due to non-compliance.





- 5. For participants who violate the rules, the decision either to
  - 1) deduct twenty percent (20%) of the total possible points
  - or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- K. Submit the finalist results and all other related forms in the results envelope to the CRC room.
- L. Semifinalist teams may pick up their structures at a time determined by the event coordinator.



Team ID# \_\_\_\_\_

# STRUCTURAL ENGINEERING

**2016 & 2017 OFFICIAL RATING FORM**

**MIDDLE SCHOOL**

For the PRE-BUILT STRUCTURE: Indicate N for noncompliant or C for compliant, as appropriate, in the Qualification and Construction sections below. In the Qualification section, one noncompliant mark will result in disqualification. In the Construction section, one noncompliant mark will result in a 20% deduction; two noncompliant marks will result in disqualification.

## PRE-BUILT STRUCTURE

QUALIFICATION	NON-COMPLIANT		COMPLIANT	
<b>Team of two</b>	Only one team member is present.		Both team members are present	
<b>Team Verification form</b>	Form is incomplete or missing.		Form is complete and submitted.	
<b>Assessment form</b>	Form is incomplete or missing.		Form is complete and submitted.	
<b>Structure identification</b>	The identification sticker is not attached.		The identification sticker is attached.	

## PRE-BUILT STRUCTURE

QUALIFICATION	NON-COMPLIANT		COMPLIANT	
<b>Drawing</b>	The required drawing is not submitted.		The required drawing is submitted.	
<b>Length of structure</b>	The length of the structure is greater or less than the designated tolerance of the assigned construction length.		The length of the structure is within the designated tolerance of the assigned construction length.	
<b>Width of structure</b>	The width of the structure is greater or less than the designated tolerance of the assigned construction width.		The width of the structure is within the designated tolerance of the assigned construction width.	
<b>Height of structure</b>	The height of the structure is greater or less than the designated tolerance of the assigned construction height.		The height of the structure is within the designated tolerance of the assigned construction height.	
<b>Weight of structure</b>	The weight of the structure is greater or less than the designated tolerance for the weight of the completed structure.		The weight of the structure is within the designated tolerance for the weight of the completed structure.	
<b>Plane of abutment (horizontal)</b>	Part of the structure assembly does not meet the designated requirements for the plane of abutment for the assigned structure.		The structure assembly meets the designated requirements for the plane of abutment for the assigned structure.	
<b>Placement on abutment</b>	The structure length is not appropriate for testing.		The structure length is appropriate for testing.	
<b>Internal clearance</b>	The testing apparatus and rod cannot be placed and passed through the center of the structure to allow for testing.		The testing apparatus and rod pass freely through the center of the structure to allow for testing.	
<b>Laminations</b>	Laminations contain more than two pieces or members face to face in the same direction.		Laminations are correct with no more than two pieces or members glued face to face running in the same direction.	
<b>DISQUALIFIED</b>				



<b>PRE-BUILT STRUCTURE APPROVED FOR TESTING.</b>	
<b>Record the mass (weight) of the structure (in grams) prior to testing.</b>	
<b>Record the failure weight in pounds.</b>	
<b>Record the maximum failure rate for all tested structures.</b>	
<b>If only one construction regulation is noncompliant, record a deduction of 20% of the maximum failure weight.</b>	
<b>Adjusted failure weight</b>	
<b>Determine the efficiency (shown to three decimal places) by multiplying the failure weight (or adjusted failure weight, as applicable) by 4.54 and then dividing by the mass (weight) of the structure.</b>	
<b>PRE-BUILT STRUCTURE TOTAL POINTS</b>	

ON-SITE STRUCTURE			
For the ON-SITE STRUCTURE: Indicate N for noncompliant or C for compliant, as appropriate, in the Qualification and Construction sections below. In the Qualification section, one noncompliant mark will result in disqualification. In the Construction section, one noncompliant mark will result in a 20% deduction; two noncompliant marks will result in disqualification.			
QUALIFICATION	NON-COMPLIANT	COMPLIANT	
<b>Team of two</b>	Only one team member is present.	Both team members are present	
<b>Safety eyewear</b>	Warnings about eyewear are issued.	No warnings about eyewear are issued.	
<b>Structure identification</b>	The identification sticker is not attached.	The identification sticker is attached.	
<b>Tools and fabrication supplies</b>	Inappropriate tools or supplies are brought to the event.	Appropriate tools and supplies are brought to the event.	
<b>Plane of abutment (horizontal)</b>	Part of the structure assembly does not meet the designated requirements for the plane of abutment for the assigned structure.	The structure assembly meets the designated requirements for the plane of abutment for the assigned structure.	
<b>Placement on abutment</b>	The structure length is not appropriate for testing.	The structure length is appropriate for testing.	
<b>Internal clearance</b>	The testing apparatus and rod cannot be placed and passed through the center of the structure to allow for testing.	The testing apparatus and rod pass freely through the center of the structure to allow for testing.	
<b>Construction pins</b>	Pins are still in place when the structure is submitted.	All pins have been removed from the structure.	
<b>Laminations</b>	Laminations contain more than two pieces or members face to face in the same direction.	Laminations are correct with no more than two pieces or members glued face to face running in the same direction.	



ON-SITE STRUCTURE			
CONSTRUCTION	NON-COMPLIANT		COMPLIANT
Drawing	The required drawing is not submitted.		The required drawing is submitted.
Length of structure	The length of the structure is greater or less than the designated tolerance of the assigned construction length.		The length of the structure is within the designated tolerance of the assigned construction length.
Width of structure	The width of the structure is greater or less than the designated tolerance of the assigned construction width.		The width of the structure is within the designated tolerance of the assigned construction width.
Height of structure	The height of the structure is greater or less than the designated tolerance of the assigned construction height.		The height of the structure is within the designated tolerance of the assigned construction height.
Weight of structure	The weight of the structure is greater or less than the designated tolerance for the weight of the completed structure.		The weight of the structure is within the designated tolerance for the weight of the completed structure.
			<b>DISQUALIFIED</b>
			<b>On-site structure approved for testing</b>
			<b>Record the mass (weight) of the structure (in grams) prior to testing.</b>
			<b>Record the failure weight in pounds.</b>
			<b>Record the maximum failure rate for all tested structures.</b>
			<b>If only one construction regulation is noncompliant, record a deduction of 20% of the maximum failure weight.</b>
			<b>Adjusted failure weight</b>
			<b>Determine the efficiency (shown to three decimal places) by multiplying the failure weight (or adjusted failure weight, as applicable) by 4.54 and then dividing by the mass (weight) of the structure.</b>
			<b>ON-SITE STRUCTURE TOTAL POINTS</b>

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_



# SYSTEM CONTROL TECHNOLOGY

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## OVERVIEW

Participants use a team approach to develop a computer-controlled model solution to a given problem, typically one based on an industrial setting. Teams analyze the problem, build a computer-controlled mechanical model, program the model, explain the program and mechanical features of the model-solution, and leave instructions for evaluators to operate the device.

## ELIGIBILITY

Participants are limited to one (1) team of three (3) individuals per state, one (1) entry per team. Team members must be from the same chapter.

## TIME LIMITS


- A. The competition consists of three phases:
  1. one (1) hour for set up (team captain)
  2. fifteen (15) minutes for analysis (team)
  3. two and a half (2 ½) hours for problem solution (team)

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. An orientation meeting for teams will take place at the beginning of the set-up time. Each team selects a team captain prior to the orientation meeting.
- B. The captain checks in for the team during the set-up time meeting by submitting his/her ID# and the team's ID # for the identification of the written and model portions of the event.
- C. The problem and the inventor's log are presented to teams at the beginning of the fifteen (15)-minute problem analysis session prior to model-building. Teams must complete their description or interpretation of the problem during this time.
- D. Each team is given a maximum of two and one-half (2½) hours to construct a model that simulates realistic industrial

 This challenging event attracts a special kind of student: team players who are creative and who can perform under pressure.

processes to program the model, to test the solution, to describe the program and mechanical features of the model-solution, and to complete directions for evaluators to use to activate the model.

- E. When finished, teams save their programs and leave them on-screen in operable form with the ability to be reset.
  - 1. Before leaving the event room, teams demonstrate the operation of the model with evaluators present. Evaluators may ask questions during the demonstration.
  - 2. After evaluators have observed the operation of a team's model, the team leaves the room. The coordinator determines the amount of time permitted for the team's demonstration based on the number of teams and the complexity of the problem.
  - 3. Evaluation of the solutions takes place without the teams present.
- F. Team members report to the event area at the time and place stated by the event coordinator to pick up their equipment.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Each team provides pencils and scrap paper along with its own materials kit, software, and laptop computer. No reference materials or building cards are allowed. Each team's materials kit must be appropriate to build a system that can identify, secure, and move objects and that has light and/or sound outputs. A problem will be developed by the coordinator based upon the assumption that every materials kit will contain at least:
  - 1. Two (2) optical sensors
  - 2. Two (2) touch sensors
  - 3. Two (2) motors
  - 4. Two (2) audio and two (2) light outputs
  - 5. Gears, wheels, and axles appropriate to build a motorized vehicle and/or conveyor belt
  - 6. Balls, blocks, and pegs that can be used as objects to be moved and manipulated



7. Velcro, tape, clamps, and other materials to secure or move the above objects (balls, blocks, and pegs)
- B. Participants provide their own hardware and software systems.
- C. The following definitions are an integral part of the event regulations:
1. Repeatability—the device is programmed to reset automatically
  2. Functional control—the device must accomplish the task in an efficient manner and be user friendly
  3. Model-solution—the physical device must simulate the realistic processes used in industry
  4. Conservation of materials—the model reflects the best use of materials to solve the problem, without being overbuilt
- D. Programs must be written completely on site. Use or modification of any programs written prior to the competition result in disqualification.
- E. An example of a problem for this event is given below to help students understand and interpret a typical issue common to business and industry.

Johnson Recycling Center needs an automatic system for separating its two primary types of recycling material products. If type A material is detected in the product, the system should move the product to the right side of a sorting line. If type B material is detected on the assembly line, the product should be delivered to the left side. Whenever a product is delivered, a light or buzzer should activate for 10 seconds to alert workers that a product is available on one or the other of the sorting lines. The system should then reset to separate and deliver a new product.

Design a prototype that can automatically deliver at least four products without any user intervention, then reset.

## EVALUATION

Teams are evaluated on their written work, model function, and programming structure and efficiency. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Creative thinking: Students develop a creative way to meet all required parameters of the problem. Use leadership activities: *And the Next Contestant Is...* and *Be Prepared!*
- Problem solving: Students create a solution that will meet all criteria. Use leadership activities: *Breaking It Down* and *Implementation Ideas*
- Teamwork: Students work as a team of three (3) members to develop both a program and a device to solve a problem. Use leadership activities: *Find Someone Who...* and *TV Station*

Additional leadership skills promoted in this event:

- Communication
- Decision making
- Evaluation
- Organization

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- CNC programmer
- Computer programmer
- Robotics engineer





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## SYSTEM CONTROL TECHNOLOGY INVENTOR'S LOG

### Team captain's and team's ID#s

Use only the space provided.

This section must be completed DURING the process of problem analysis.

1. Description or interpretation of the given problem:

The two parts below are to be completed AFTER the problem analysis session.

2. Description of the team solution (explain the unique features of the program and model):

3. Directions to evaluators to start the system:

## SYSTEM CONTROL TECHNOLOGY EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more
- C. Assistants, two (2)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Stopwatches
  - 5. Copies of the written problem
  - 6. Copies of the Inventor's Log
  - 7. Results envelope with coordinator forms
- B. Large room with sufficient electrical outlets to accommodate a first place team from every state and affiliated country
- C. Power strips with surge protectors and extension cords
- D. One (1) table and three (3) chairs per team

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and evaluators should be in the room at this time. Participants not present may be



disqualified. In order to compete, participants must be on the entry list or must have approval of the CRC.

- E. Secure entrants' equipment in the area designated.
- F. At the orientation meeting, obtain identification numbers for each team captain and the captain's respective team.
  - 1. Evaluators must be present at the orientation meeting.
  - 2. Review the time limits, procedure, and regulations with team captains.
- G. Distribute the problem and Inventor's Log to teams at the beginning of the event. Teams have fifteen (15) minutes to complete their interpretation of the problem, using the Inventor's Log.
- H. Each team is given two and one-half (2 ½) hours to complete the remaining portion of the event.
- I. Prior to leaving the event room, teams must demonstrate that their device/model is operable and has the ability to reset. Evaluators must observe this demonstration and may ask a few questions. Evaluators also may take notes, but evaluation of a team's work occurs only after the team has left the event room.
- J. Evaluators independently the entries without consulting one another.
- K. For participants who violate the rules, the decision either to
  - 1) deduct twenty percent (20%) of the total possible points or
  - 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- L. Evaluators determine the ten (10) finalists.
- M. Submit the finalist results and all related forms in the results envelope to the CRC room.
- N. If necessary, manage security and the removal of materials from the event area.



Participant/Team ID# \_\_\_\_\_

<b>SYSTEM CONTROL TECHNOLOGY</b>			
<b>2016 &amp; 2017 OFFICIAL RATING FORM</b>			<b>MIDDLE SCHOOL</b>
<b>Inventor's Log (20 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Description of problem</b> (X1)	The written description is incomplete, and/or it is illogical and unorganized; the description is simply a restatement of the problem's guidelines.	The written description includes a logical and general understanding of the problem's guidelines.	An organized, logical, and concisely written description of the problem is provided; it includes all major aspects of the problem's guidelines, as well as original thoughts.
<b>Description of solution and activation instructions</b> (X1)	The team's written solution does not correlate with the final system creation; the solution is illogical related to the problem's guidelines, and/or directions to activate the solution are included but incomplete.	The team's written solution correlates generally with the final system creation; adequate directions to activate the solution are included.	A strong correlation between the team's written solution and final system creation is provided; the solution is written clearly and concisely; activation instructions are included and written concisely.
<b>SUBTOTAL (20 points)</b>			
<b>Solution to Problem (60 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Realistic simulation</b> (X1)	The simulation is not realistic; it has an abstract design that would not work effectively in its intended environment.	The simulation is somewhat realistic and logically designed, and it may work effectively in its intended environment.	The simulation is realistic and similar to a system that would be effective in its intended environment.
<b>Dependability of solution</b> (X1)	The solution is not constructed with dependability in mind; when the system is operated, construction pieces fall off, etc.	Most of the solution is well constructed and dependable, with only a few components that are questionable.	Every component of the solution is well constructed and dependable; practical construction techniques have been used.
<b>Conservation of materials</b> (X1)	An inefficient use of construction materials is obvious; too many unnecessary materials are incorporated into the design.	Most of the components of the solution are designed with conservation in mind; the construction is generally adequate.	All components of the solution are designed and assembled with conservation of materials in mind; the construction is elegant and not overbuilt.
<b>Solution to problem</b> (X2)	The solution is missing three or more required attributes/criteria and several do not function as intended.	The solution includes most of the required attributes/criteria, and they function adequately.	The solution includes all required attributes/criteria listed in the design details, and all attributes function appropriately and correctly.
<b>Ingenuity and creativity</b> (X1)	The solution and design are unauthentic, complex, and do not function as a system.	The solution has some original ideas in its design, and its construction is adequate.	The solution is truly unique and authentic; its construction is concise and designed with simplicity.
<b>SUBTOTAL (60 points)</b>			

Record scores in the column spaces below.



Programming Structure (20 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Programming efficiency</b> (X1)	The software used to program the system is overly complex and inefficient; advanced programming techniques, which would have simplified the programming of specific tasks, are not included.	The programming software is efficient, with some advanced features that simplify the solution's criteria and/or attributes.	A concise and logical programming application is used that incorporates advanced features to simplify the solution's criteria and/or attributes.
<b>Program order</b> (X1)	The programming structure is illogical, unorganized, or overly complicated and/or complex; the program does not reset.	There is evidence of an organized programming structure and adequate use of sub-routines; the program resets.	The programming structure is concise and predictable; there is appropriate use of sub-routines where needed; the program resets.
			<b>SUBTOTAL (20 points)</b>

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (100 points)**

Comments:

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I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_

## OVERVIEW

Students demonstrate their knowledge of TSA and concepts addressed in the technology content standards by completing a written objective test; semifinalist teams participate in question/response, head-to-head competition.

## ELIGIBILITY

Participants are limited to one (1) team of three (3) members per chapter. Teams that take the written test and advance to the semifinalist portion of the event must be comprised of the same three (3) members.

## TIME LIMITS


- A. The written test is administered at the same time to all students entering this event. One (1) hour is allowed for this test.
- B. Teams selected as semifinalists must be available as scheduled for oral competition.


## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.


## PROCEDURE

- A. Participants report to the event area at the time and place stated in the conference program.
- B. Participants follow the specific regulations and adhere to the directions provided on site by the event coordinator.
- C. Each team is assigned a number by the event coordinator. This number establishes the initial order of participation in the oral portion of the event.
- D. All team members take the written exam. Participants must provide their own pencils for the test. The sixteen (16) top-scoring teams qualify as semifinalists. A semifinalists list is posted.

 If there were an event “popularity contest,” Tech Bowl would be a clear contender!

 Students are required to bring their own pencils for the test.

- E. Semifinalist team members and their advisor report to the oral event area holding room at the time and place stated in the conference program. After a short briefing, advisors leave and the teams remain in the holding room until they are called for competition. Teams that leave the holding room before being called for competition are eliminated. Teams may visit with other teams in the holding room; no advisors or visitors may enter.
- F. When instructed to do so, two (2) teams enter the event area and are seated according to instructions.
- G. Teams are paired using the semifinalist teams' bracket.
- H. Questions are drawn as needed from a card file resource bank.
- I. If equipment malfunctions, a question that is being considered at that time automatically is disqualified. If equipment malfunctions three (3) times, time is called by the event coordinator to set up back-up equipment. After equipment has been set up and tested, the event continues from the point where it stopped.
- J. Once a team is eliminated, the team is out of the oral competition except for the round in which the third and fourth positions are determined.
- K. Team members may not enter the oral event area as spectators until after their team has been entirely eliminated from competition.

 Participants must provide—and bring to the test site—two (2) pencils (sharpened standard #2/HB grade with an eraser, or #2 mechanical with an eraser) for any competition that involves a written test.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Written exam
  1. Scan-type forms are furnished by the event coordinator.
  2. Participant entry numbers (assigned during conference registration) must be entered on the scan form in the space indicated.
  3. Participants must stop work immediately when time is called.
  4. Should a participant complete the test before the time allocated, the participant holds the test and remains seated

quietly without distracting others. Failure to do so results in disqualification of the participant.

5. All tests must be turned in before leaving the test area.

B. Oral competition

1. The average of the scores of all three (3) team members determines team ranking.
2. Sixteen (16) teams, based upon the written test results, are selected as semifinalists.
3. All three (3) members of a semifinalist team must be available to participate at the scheduled time for the oral competition portion of the event. If a team or member is late for participation, that team forfeits and is eliminated from competition.
4. No transmitting or recording devices are permitted to assist in answering a question in the event area. No prompting is permitted.
5. Teams are asked twelve (12) questions one of which is a bonus question. The bonus question is randomly placed among the twelve (12) questions. Teams are told when the bonus question comes up in the set of twelve (12). Questions, to include the bonus question, may not be discussed by teams. If a team answers the bonus question correctly, they are given an additional question to answer. The team may discuss this question. If the bonus question is not answered correctly, participants are not give an additional question.
6. The team member who “buzzes in” to answer a question has five (5) seconds to answer the question without discussion.
7. After a question is read, competing teams have ten (10) seconds to answer. If neither team can answer the question, then another question is read.
8. If a team member “buzzes in” before a question is finished being read, the reader ceases reading and the team member must give the exact answer as printed on the answer card.

### EVALUATION

- A. Written exam: Scores on a test of fifty (50) multiple choice questions determine the winners of the written exam and the semifinalist teams for the oral competition portion of the event.
- B. Oral competition:
  1. A team’s score is derived from the total number of correct answers to the questions asked. For each correct answer, the team receives ten (10) points.





2. Twelve (12) questions are asked per round; no questions are repeated in another round.
  3. In case of a tie, three (3) additional questions and bonus questions are asked. If a tie exists after the first tiebreaker round, then three (3) additional questions and bonus questions are asked. This procedure continues until the tie is broken. The questions will be selected by the coordinator and manager of the event.
  4. When a question is read, a team member who buzzes in first shall immediately answer the question. A correct answer will give the team ten (10) points, and an incorrect answer will result in a loss of five (5) points.
  5. If a member buzzes in prior to the reader completing the question, the reader stops reading, and the member must answer the question completely and correctly. If the answer is incorrect, the reader will read the entire question for the opposing team.
  6. Bonus questions are worth fifteen (15) points.
- C. Awards: first-place, second-place, and third-place awards are made for both the written and oral competition portions of the event.

## EVALUATION

Evaluation is based on written test scores, and oral head-to-head team competition (semifinalists only). Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Critical thinking: Students complete a written test on technology related questions. Use leadership activities: *Guess the Famous Leader* and *Rebus Puzzles*
- Decision making: Students decide to buzz in or not to buzz in on a question. Use leadership activities: *Learn from the Best* and *To Be or Not to Be*
- Teamwork: Students work together as a team to answer questions correctly. Use leadership activities: *Bozo's Balloons* and *Jump Rope*

Additional leadership skills promoted in this event:

- Self-esteem

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Computer technician
- Construction analyst
- Engineer
- Entrepreneur
- Technology education instructor



# TECH BOWL

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Timer for written exam, one (1)
- C. Proctors for written exam, one (1) for every twenty (20) participants
- D. Timekeeper for oral competition, one (1)
- E. Scorekeeper for oral competition, one (1)
- F. Moderator for oral competition, one (1)

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of event evaluators/assistants
  - 4. Copies of the written test (coded A or B), one (1) for each participant (these tests must be returned immediately following the event)
  - 5. Results envelope with coordinator forms
- B. Written test
  - 1. Stopwatch for timekeeper
  - 2. Tables and chairs or tablet armchairs to accommodate all participants
  - 3. Scan machine and forms
- C. Oral competition
  - 1. Table and chairs for the event evaluators
  - 2. Two (2) tables and six (6) chairs for the event team, facing the moderator and audience
  - 3. Tech Bowl bracket
  - 4. List of chapters for the event
  - 5. Buzzer system and controls
  - 6. A printed sign (to be placed outside the oral competition room) stating that no filming, taking of photos, or use of any electronic recording devices will be allowed in the competition room
  - 7. Stopwatch for timekeeper



8. 5" x 8" question cards selected from the technology bowl test bank, with questions and the acceptable answer(s) clearly typed

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled.
- B. Inspect the area(s) in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. One (1) hour before the event is scheduled to begin, meet with evaluators/assistants to review time limits, procedures, and regulations. If questions arise that cannot be answered, speak to the event manager before the event begins.
- D. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- E. Begin the event at the scheduled time by closing the doors and checking the entry list. All participants and event evaluators should be in the room at this time. In order to compete, participants must be on the entry list or must have approval of the CRC.
- F. Distribute the scan forms to the participants. Direct participants to fill in their entry number and test code letter in the appropriate spaces. Provide an opportunity for any questions about the scan form.
- G. Pass out the written test with the help of the event evaluators (tests are coded A or B). Participants seated next to each other should not have the same coded test; tests should be alternated A, B, A, B, and so on. Instruct the participants to keep the tests face down until they are directed to turn them over and begin.
- H. Acting as the timer and with proctors positioned around the event room, direct the participants to turn their test over, place their code number and the code letter found on the test on their scantron form, and begin.
- I. Exactly one (1) hour from the time that the participants begin the test, call time. Ask participants to turn their scan form face



down and then the test face down. Have participants pass their scan form to one of the proctors. Collect all tests. When all tests have been collected, the participants may be dismissed.

- J. Determine the individual winners of the written exam.
- K. Determine the sixteen (16) semifinalist teams based on team members averaged score on the written test.
- L. Prepare a list of the sixteen (16) semifinalist teams and submit it to the CRC for posting.
- M. Run the oral component of the event as described in the Procedure section.
- N. Determine the ten (10) finalists. Evaluators discuss and break any ties that affect the top three (3) placements.
- O. Submit the finalist results including a ranking of the ten (10) finalists, and all related forms in the results envelope to the CRC room.





Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

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(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (140 points)**

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Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

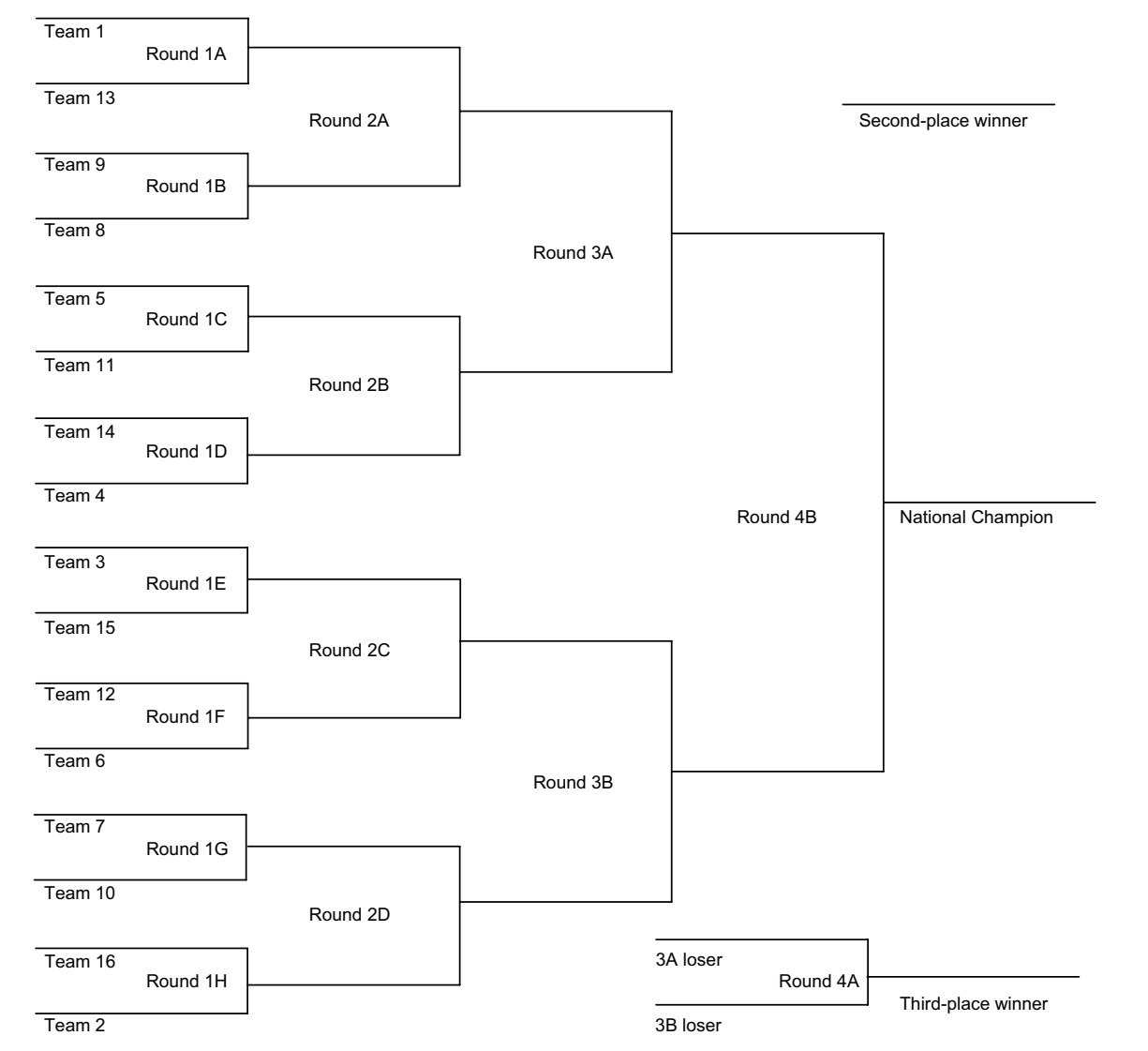
Signature: \_\_\_\_\_



# TECH BOWL

## SEMIFINALIST TEAMS BRACKET

## MIDDLE SCHOOL



Note to evaluators: This is a single elimination format (semifinalist teams ONLY).

Team 1		Team 9	
Team 2		Team 10	
Team 3		Team 11	
Team 4		Team 12	
Team 5		Team 13	
Team 6		Team 14	
Team 7		Team 15	
Team 8		Team 16	





## OVERVIEW

Participants demonstrate their ability to use the technical design process to solve an engineering design problem on site at the conference.

## ELIGIBILITY

Participants are limited to one (1) team of two (2) individuals per chapter.

## TIME LIMITS

Participants will have twenty-four (24) hours to solve the engineering design problem.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

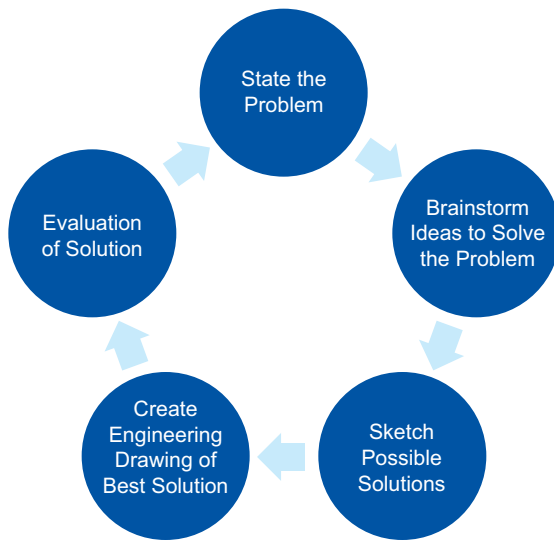
- A. Participants report to the event area at the time and place stated in the conference program to receive the design brief and instructions about where and when to submit their solution to the problem the next day.
- B. Participants will follow the technical design process loop to solve the provided engineering design problem.
- C. All work must be completed solely by the participants entered in this competition. No outside help is permitted.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Students will prepare a portfolio that includes each step of the technical design process loop. (Figure 1). The first step will be to develop a problem statement interpretation from the problem provided. The portfolio should show a logical progression from one step of the loop to the next.
- B. Documentation materials (comprising a "portfolio") are required and should be secured in a clear front report cover. (Click [here](#) for a sample.) The report cover must include the following single-sided, 8½" x 11" pages, in this order:
1. Title page with the event title, conference city and state, the year, and the team/chapter ID number; one (1) page
  2. Table of contents; one (1) page
  3. Team's interpretation of the problem, including a list of criteria and constraints set forth in the design brief; one (1) page
  4. Demonstrated use of a brainstorming technique of the team's choice (mind mapping, reverse engineering, word association, etc.), to develop ideas to solve the problem; brainstorming ideas should be documented; one (1) page
  5. At least three (3) hand-drawn sketches of different solutions to the given problem; each hand-drawn solution should be developed based on the selected brainstorming technique; each hand-drawn sketch also should include a solution pro/con list written on each sketch to aid in selecting the best design; one (1) page for each hand-drawn sketch; three (3) pages total
  6. Based on the pro/con list for each of the hand-drawn solutions to the problem, select the best solution and create an engineering drawing based on the solution; one (1) page
  7. Using the engineering drawing of the final solution, write a paragraph that evaluates the final solution and answers the following question, "Does the final design meet all the elements set forth in the design brief?"; one (1) page

Figure 1. Technical design process loop



- C. A sample design brief is provided below to help students understand a typical engineering design problem for this event.

### DESIGN BRIEF SAMPLE

(This design brief is ONLY an example of the type of problem that participants may expect at the conference.)

#### Problem:

You are to design a solar light mechanism that will illuminate a flag on a pole that is intended to fly outside at night. The light should be capable of moving around the pole as the wind changes direction. The design should be original.

The design should include a pole, flag (3'x 5'), light, and other mechanical items needed to accomplish the task at hand. The solar light, solar panel, sockets, etc., are commercially available and can be used in the design, however, sources must be cited.

(Hint: old style weathervanes move as the wind changes direction.)

### EVALUATION

Evaluation is based on a team's response to each element of the portfolio and the overall technical design process. Please refer to the official rating form for more information.

### STEM INTEGRATION

This event has the connections to the STEM areas noted below. Please refer to the STEM INTEGRATION of this guide.

Science, Technology, Engineering, Mathematics

### COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

### LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students communicate their solution for the engineering design problem. Use leadership activities: *Chefs in the Kitchen* and *Mirror Mirror*
- Critical thinking: Students use critical thinking skills to interpret each element of the design brief and incorporate those elements into a variety of possible solutions, ultimately selecting the best solution. Use leadership activities: *Rebus Puzzles* and *Thinking Like Tarzan*
- Organization: Students organize their portfolios in a logical sequence that corresponds with the technical design process they use in solving their engineering design problem. Use leadership activities: *Organizing the Stress Away* and *Story Creation*

Additional leadership skills promoted in this event:

- Creative thinking
- Problem solving

### TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use The 16 Career Clusters chart and the TSA Competitions and Career Clusters grid as resources for information about careers.

### CAREERS RELATED TO THIS EVENT

- Designer
- Engineer
- Quality assurance engineer
- Engineering manager
- Creative consultant

# TECHNICAL DESIGN

## EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators
  - 4. Results envelope with coordinator forms
- B. One (1) copy of the technical design problem (in design brief format) for each team

### RESPONSIBILITIES

- A. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators have been scheduled.
- B. Inspect the area or room in which the event is being held for appropriate setup, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- C. Meet with all teams at the time and location scheduled in the conference program. Distribute a copy of the technical design problem to each team. Ensure that all participants understand the event requirements, as well as the time and place to submit their entry.
- D. One (1) hour before the event is scheduled to begin, meet with evaluators to review the procedures and regulations of the event. If questions arise that cannot be answered, speak to the event manager before the event begins.
- E. Begin entry check in at the time and place noted in the earlier meeting for participants. Check in all entries.
- F. Evaluators independently review each entry.



- G. For participants who violate the rules, the decision either to  
1) deduct twenty percent (20%) of the total possible points or  
2) disqualify the entry, must be discussed and verified with  
the evaluators, event coordinator, and CRC manager, who all  
must initial either of these actions on the rating form.
- H. Evaluators determine the ten (10) finalists and break any ties.
- I. Submit the finalist results and all related forms in the results  
envelope to the CRC room.
- J. If necessary, manage security and the removal of materials  
from the event area.



Participant/Team ID# \_\_\_\_\_

<b>TECHNICAL DESIGN</b>			
<b>2016 &amp; 2017 OFFICIAL RATING FORM</b>			<b>MIDDLE SCHOOL</b>
<b>Solution (100 points)</b>			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Portfolio</b> See Regulation B (X1)	Not all portfolio pages are included, and/or the pages are formatted incorrectly.	Most portfolio elements are included, organized, and formatted correctly.	Outstanding organization skills are evident in the preparation of the portfolio.
<b>Interpretation of problem</b> (X1)	Interpretation of problem is vague, with few or no criteria/constraints included in the description; statement is difficult to understand.	Interpretation of problem, criteria, and constraints are included and generally identified.	Interpretation of problem is well-developed and further investigates the included criteria/constraints.
<b>Brainstorming technique</b> (X1)	There is no clear evidence of the use of brainstorming to interpret the design of the problem.	Use of brainstorming (which incorporates the problem statement, criteria, and constraints to solve problem) is apparent.	Exceptional and organized use of brainstorming (which incorporates each element of the design brief) is evident.
<b>Sketch 1</b> (X1)	Sketch is sloppy and ill-constructed, and/or it appears to be included as an afterthought to the design; there is no design pro/con list, or it is incomplete.	Sketch is generally well drawn and includes the pro/con list; evidence of the final design is illustrated in the sketch.	Sketch is of exceptional quality and includes a creative pro/con list; clear transformation from the sketch to the final design is evident.
<b>Sketch 2</b> (X1)	Sketch is sloppy and ill-constructed, and/or it appears to be included as an afterthought to the design; there is no design pro/con list, or it is incomplete.	Sketch is generally well drawn and includes pro/con list; evidence of the final design is illustrated in the sketch.	Sketch is of exceptional quality and includes a creative pro/con list; clear transformation from the sketch to the final design is evident.
<b>Sketch 3</b> (X1)	Sketch is sloppy and ill-constructed, and/or it appears to be included as an afterthought to the design; there is no design pro/con list, or it is incomplete.	Sketch is generally well drawn and includes pro/con list. Evidence of the final design is illustrated in the sketch.	Sketch is of exceptional quality and includes a creative pro/con list; clear transformation from the sketch to the final design is evident.
<b>Final solution</b> (X2)	Solution conveys a sloppy design, and/or does not incorporate key elements in the design brief, and/or drafting techniques are not proper.	Solution incorporates most elements laid out in the design brief; drawing uses proper drafting techniques and methods.	Solution exudes creativity and addresses all design brief elements; proper drafting techniques are used in the design.
<b>Evaluation of design</b> (X2)	Evaluation is sloppily written; it is a reiteration of the design brief elements, with little or no examination of the finished design.	Evaluation satisfactorially answers the question "Does the final design meet all the elements set forth in the design brief?"	Evaluation response is creative and unbiased; it is well written and answers the posed question completely.
			<b>SUBTOTAL (100 points)</b>

Record scores in the column spaces below.



Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (100 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_





# VIDEO GAME DESIGN

## OVERVIEW


Participants develop, build, and launch an E-rated, online game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing, and intellectually challenging. The game and all required documentation must be submitted-and will be evaluated-online, pre-conference. Semifinalist teams (list posted at the conference) participate in an on-site interview to demonstrate the knowledge and expertise they gained during the development of the game.


## ELIGIBILITY

One (1) team and one (1) entry per chapter. There will be a minimum of two (2) and a maximum of six (6) participants per team. Up to six (6) members of the team may participate in the semifinalist interview.

## TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. All components of the chapter's entry, including the website address (URL) for the entry, must be finished, submitted, and accessible via the Internet by 11:59 p.m. PDT on May 15th. Submission information will be provided on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competition/Themes and Problems. The URL must point to the team's entry. Email verification of each team's entry will be made by June 10th.
- C. Semifinalists participate in an on-site interview that lasts approximately five to ten (5-10) minutes.
- D. The game submitted for evaluation must be greater than three (3) minutes in length of play and must be interactive. Judges must be able to play the game to the third (3rd) level. A deduction of five (5) points total will be incurred for a game that completes under the three (3)-minute time minimum.
- E. The timing of the game segment starts with the first image or sound presented.

 Evaluation of Video Game Design entries takes place before the conference; A semifinalist list will be posted on the first full day of the national TSA conference.

 The Video Game Design submission procedure noted in this guide applies to entries for the national TSA conference only, and not TSA state conferences.

### ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

### PROCEDURE

- A. All questions pertaining to Video Game Design should be emailed to the event coordinator or the event manager.
- B. Participants design, create, provide documentation for, and submit the game entry by 11:59 p.m. (PDT) on May 15th (see Time limits C). Entries received, or changes made to submitted entries after this deadline will not be judged.
- C. Entries are reviewed by evaluators prior to the national TSA conference.
- D. A semifinalist list of twelve (12) entries (determined prior to the conference) in random order will be posted at the conference on the first full day of competition.
- E. Semifinalist teams sign up for an interview time on the date and time noted in the conference program. Up to all six (6) members from each semifinalist team may report to the event area for their interview.
- F. Semifinalist teams will have a chance to answer questions about their documentation, game, the game's purpose, value, design, rules, and development process.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/ Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

### REGULATIONS

- A. The game and required documentation must be located online and accessible for evaluation.
- B. Game instructions must be clear and understandable.
- C. Entries must be a team project.
- D. The game must include original work of the team, but game architecture, game engines, graphics, and sounds may be used from other sources. Work that is not created by the



team must have proper documentation, showing copyright permissions and/or license for usage in the game segment.

- E. The required documentation (noted below) must be submitted with the game address in the form of a PDF attachment:
  - 1. A completed Student Copyright Checklist
  - 2. A hand-drawn storyboard, which depicts the design concept of the video game; pages as needed
  - 3. Purpose and description of the game, the target audience, and a detailed explanation of how to play the game, including a list of control functions; two (2) pages
  - 4. A completed Plan of Work Log; pages as needed
  - 5. Permission letters for the use of copyrighted material; pages as needed (if applicable)
- F. Required documentation becomes the property of TSA.



## EVALUATION

Only the first three (3) levels of the game will be evaluated.

Evaluation is based on the quality of the required documentation and the game's aesthetics, flow, story, content, sound (preferred but not required), and characters. Up to ten (10) bonus points may be added by the judges for exceptional game features, or for content showing exemplary educational and social value. Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Creative thinking: Students create a new, entertaining game using images, sounds, and other resources. Use leadership activities: *And the Next Contestant Is...* and *Be Prepared!*
- Ethics: Students address social and educational values in their game. Use leadership activities: *The Good and Bad of Ethics* and *The Letter Activity*
- Evaluation: Students decide on the purpose of the game and the best method to implement it. Use leadership activities: *Evaluation Methods* and *The Great "Evaluate"*

Additional leadership skills promoted in this event:

- Communication
- Organization
- Teamwork

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Animator
- Computer programmer
- Electronic game designer
- Electronic game technician
- Technical writer



# STUDENT COPYRIGHT CHECKLIST

(for students to complete and advisors to verify)

1) **Does your solution to the competitive event integrate any music?** YES \_\_\_\_ NO \_\_\_\_

If NO, go to question 2.

If YES, is the music copyrighted? YES \_\_\_\_ NO \_\_\_\_

If YES, move to question 1A. If NO, move to question 1B.

1A) Have you asked for author permission to use the music in your solution and included that permission (letter/form) in your documentation? If YES, move to question 2. If NO, ask for permission (OR use royalty free/your own original music) and if permission is granted, include the permission in your documentation.

1B) Is the music royalty free, or did you create the music yourself? If YES, cite the royalty free music OR your original music properly in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any music into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of music is done so with proper permission and is cited correctly in the student's documentation.

2) **Does your solution to the competitive event integrate any graphics?** YES \_\_\_\_ NO \_\_\_\_

If NO, go to question 3.

If YES, is the graphic copyrighted, registered and/or trademarked? YES \_\_\_\_ NO \_\_\_\_

If YES, move to question 2A. If NO, move to question 2B.

2A) Have you asked for author permission to use the graphic in your solution and included that permission (letter/form) in your documentation? If YES, move to question 3. If NO, ask for permission (OR use royalty free/your own original graphic) and if permission is granted, include the permission in your documentation.

2B) Is the graphic royalty free, or did you create your own graphic? If YES, cite the royalty free graphic OR your own original graphic properly in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any graphics into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of graphics is done so with proper permission and is cited correctly in the student's documentation.

3) **Does your solution to the competitive event use another's thoughts or research?** YES \_\_\_\_ NO \_\_\_\_

If NO, this is the end of the checklist.

If YES, have you properly cited other's thoughts or research in your documentation? If YES, this is the end of the checklist.

If NO, properly cite the thoughts/research of others in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any thoughts/research of others into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of the thoughts/research of others is done so with proper permission and is cited correctly in the student's documentation.



# TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK

Date	Task	Time involved	Team member responsible	Comments
<b>1</b>				
<b>2</b>				
<b>3</b>				
<b>4</b>				
<b>5</b>				
<b>6</b>				

Advisor signature \_\_\_\_\_

## VIDEO GAME DESIGN EVENT COORDINATOR INSTRUCTIONS

### PERSONNEL

- A. Event coordinator
- B. Evaluators (for pre-conference judging), two (2) or more
- C. Evaluators for semifinalists, two (2) or more

### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. TSA Event Coordinator Report
  - 3. List of evaluators/assistants
  - 4. Results envelope with coordinator forms
- B. Evaluation of Video Game Design entries and determination of semifinalists takes place before the conference; coordinators must bring the evaluation results to the conference on a flash drive and a semifinalist list will be posted at the conference on the first full day of competition.
- C. Tables for entries
- D. One (1) extension cord for semifinalist evaluation team
- E. One (1) power bar with surge protection for semifinalists, as needed
- F. Laptop computer with high speed Internet capability
- G. Tables and chairs for event coordinator, semifinalist evaluators, and participants

### RESPONSIBILITIES

- A. Review entries as they are submitted to the designated online storage utility. Entry submission is allowed only until 11:59 p.m. (PDT) on May 15th. Send email verification to all entrants by June 10th.
- B. At least five (5) days prior to the national TSA conference, make accessible the online storage utility link for Video Game Design entries.





- C. Manage communication and pre-conference evaluation (at least two [2] or more evaluators should be recruited earlier in the year). Collect completed rating forms electronically and bring them to the conference on a flash drive.
- D. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- E. On the first full day of competition, post a list of the twelve (12) semifinalists in random order.
- F. Review the time limits, procedures, and regulations with the evaluators. Clear up any questions or misunderstandings. Distribute the guidelines for the interview.
- G. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- H. Semifinalist teams report to the event area at the time and place noted in the conference program to sign up for an interview time. Manage completion of the on-site interviews.
- I. Evaluators determine the ten (10) finalists. Evaluators discuss and break any ties that affect the top three (3) placements. Note: Determine the procedure for breaking ties before the on-site competition begins.
- J. Submit the finalist results and all related forms in the results envelope to the CRC room.



Participant/Team ID# \_\_\_\_\_

# VIDEO GAME DESIGN

2016 & 2017 OFFICIAL RATING FORM

MIDDLE SCHOOL

## Documentation (30 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Game directions and control functions</b> (X1)	Game explanation is difficult to follow; functions provided are illogical or incorrect.	Game directions can be followed, and generally sync with overall workings of the game; most control functions match the functions of the game.	Game explanation is easy to follow, and control functions clearly match the game functions.
<b>Storyboard</b> (X2)	Storyboard is sloppy, disorganized, and incomplete and/or does not follow overall flow of the game design.	Storyboard is generally organized and includes aspects and overall scenes of the game.	Storyboard is complete, concise, neat, and follows the overall flow of the game.

**SUBTOTAL (30 points)**

## Game Design (60 points)

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Creativity and artanship</b> (X1)	Game lacks creativity; poor artanship and development are evident.	Game exhibits adequate creativity and artanship.	Game is highly creative and well crafted.
<b>Technical skill</b> (X2)	Game lacks originality and shows few technical skills.	Game is original and shows some evidence of programming skills.	Game is original, highly artistic, and shows evidence of programming skills.
<b>Storyline/flow of game</b> (X1)	Game follows little or no storyline; there is little to no logical flow to the game.	Game follows a storyline and flows adequately from one scene/level to another.	Game is well-organized and flows smoothly from one scene/level to the next.
<b>Overall appeal</b> (X2)	Game is dull and monotonous; it is not engaging.	Game is adequate and maintains complexity and focus.	Game is extremely entertaining and engaging.

**SUBTOTAL (60 points)**

## TIME DEDUCTIONS

A deduction of five (5) points total will be incurred for a game that completes under the three (3) minute time minimum.  
\_\_\_\_\_ (total deduction)

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Record scores in the column spaces below.



Semifinalist Interview (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the interview; illogical explanation of the game is presented.	Participants are generally prepared for the interview; explanation of the game is communicated and generally organized.	The interview is logical, well organized, and easy to follow; the game explanation is communicated in an organized and concise manner.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of their project.
<b>Articulation</b> (X1)	The interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The interview is somewhat logical, easy to follow, and/or there is sufficient information provided describing the project.	The interview is clear, concise, and there is ample information provided describing the project.
<b>Team participation</b> (X1)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged in the interview.	Team members generally are engaged in the interview, though one member may take on more responsibility than the other(s).	All team members are actively involved in the interview and responses to questions; there is shared responsibility among team members.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its interview; participants' posture, gestures, and lack of eye contact diminish the interview.	The team is somewhat well-spoken and distinct in its interview; participants' posture, gestures, and eye contact are acceptable in the interview.	The team is well-spoken and distinct in its interview; participants' posture, gestures, and eye contact result in a polished, natural, and effective interview.
			<b>SUBTOTAL (60 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) **TOTAL (150 points)**


Comments:


---

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_ Signature: \_\_\_\_\_

 Website Design entries must be posted online. Students should follow submission instructions noted on the TSA website under Competitions/Themes and Problems.

 The Website Design submission procedure noted in this guide applies to entries for the national TSA conference only, and not to TSA state conferences.

## OVERVIEW

Participants are required to design, build, and launch a website that features the team's ability to incorporate the elements of website design, graphic layout, and proper coding techniques. The design brief for the website will be posted on the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems. Semifinalists (determined prior to the conference) participate in an on-site conference interview to demonstrate the knowledge and expertise gained during the development of the website, with an emphasis on web design as it pertains to their solution.

## ELIGIBILITY

Participants are limited to one (1) team of three to six (3-6) members per chapter. One (1) entry per team is permitted. Up to six (6) members of a team participate in the semifinalist interview.

## TIME LIMITS


- A. All components of the chapter's entry, (including the website address (URL) for the entry, must be finished, submitted to [webentry@tsaweb.org](mailto:webentry@tsaweb.org), and accessible via the Internet by 11:59 p.m. PDT on May 15th. The URL must point to the main page of the team's entry. Note: After 11:59 p.m. on May 15th changes should not be made to the website. If the team makes changes or updates to the website after the evaluators begin judging the entry, those changes will not be considered.
- B. Email verification of each team's entry will be made by June 10th. Five (5) days prior to the national TSA conference, links from the national TSA website to all Website Design entries will become available.
- C. Semifinalists participate in an on-site interview that lasts approximately five to ten (5-10) minutes.

## ATTIRE

TSA competition attire, as described in the National TSA Dress Code section of this guide, is required.

## PROCEDURE

- A. Participants obtain the event design brief from the national TSA website at ([www.tsaweb.org](http://www.tsaweb.org)) under Competitions/Themes and Problems. (Criteria for the middle school Website Design and high school Webmaster are different.)
- B. All questions pertaining to Website Design should be emailed to the event coordinator or the event manager.
- C. Participants design and submit a website that features the chapter's solution to the design brief.
- D. Evaluators review and score the entries prior to the national TSA conference.
- E. A semifinalist list of twelve (12) entries (determined prior to the conference) in random order is posted at the conference on the first full day of competition.
- F. Semifinalist teams sign up for an interview time on the date and time noted in the conference program. Up to six (6) members of the semifinalist team may report to the event area at the appropriate time for the interview.
- G. Each semifinalist team will be interviewed by the evaluators for approximately five to ten (5-10) minutes.

 Teams must be sure to work on the correct design brief—high school and middle school criteria are different.

**It is essential that students and advisors routinely check the TSA website ([www.tsaweb.org](http://www.tsaweb.org)) for updated information about TSA general rules and competitive event guidelines. This information is found on the website under Competitions/Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.**

## REGULATIONS

- A. Participants must launch their entry on a web server that can be accessed via the Internet 24 hours a day, seven (7) days a week, 52 weeks per year.
- B. Each entry must consist of web pages that specifically display the chapter's solution to the design brief.
- C. The solution to the design brief is developed as a series of web pages with a minimum of three (3) pages and no maximum of pages linked under the main design brief solution web page. One (1) of the pages must list all sources of information used to create the website.



- D. All web pages must be completed during the current school year.
- E. If copyrighted material, such as text, images, or sound from other sources is used, proper written permission must be included/documented. Students must submit a completed Student Copyright Checklist (in PDF format) as a link on their website reference page.
- F. Students also must include a completed Plan of Work log (in PDF format) as a link on their website reference page.
- G. All entries must be compatible using the latest versions of Internet Explorer, Firefox, and Chrome.
- H. Each team selects up to six (6) members to represent the chapter in the on-site interview.
- I. In addition to basic HTML code, the website may contain Java applets, HTML5, Shockwave, Flash, and other state-of-the-art web-based applications.



Evaluation of Website Design entries takes place before the conference; a semifinalist list will be posted on the first full day of the national TSA conference.

### EVALUATION

Evaluation is based on the team's entry and the quality of the interview (semifinalists only). Evaluation targets overall design and originality, and the scope and sequence of the design brief solution. Also evaluated are the website's compatibility with different browsers, screen resolutions, and the appropriate use of new Internet and web-based applications. Please refer to the official rating form for more information.



## STEM INTEGRATION

This event has connections to the STEM areas noted below. Please refer to the STEM INTEGRATION section of this guide.

Science, Technology, Engineering, Mathematics

## COMMON CORE STATE STANDARDS (CCSS) INTEGRATION

Please refer to the Common Core State Standards (CCSS) Integration section of this guide for more information.

## LEADERSHIP SKILLS

Leadership skills promoted in this event:

- Communication: Students effectively communicate information to an audience. Use leadership activities: *Mirror Mirror* and *Take Action*
- Critical thinking: Students work to gather information related to the challenge and present it in an effective manner. Use leadership activities: *Fact or Fiction* and *Rebus Puzzles*
- Teamwork: Students work as a team to plan and develop an appropriate website. Use leadership activities: *Find Someone Who...* and *Jump Rope*

Additional leadership skills promoted in this event:

- Creative thinking
- Evaluation
- Organization

## TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 16 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

## CAREERS RELATED TO THIS EVENT

- Computer engineer
- Computer programmer
- Researcher
- Software designer
- Webmaster



# STUDENT COPYRIGHT CHECKLIST

(for students to complete and advisors to verify)

1) Does your solution to the competitive event integrate any music? YES \_\_\_\_ NO \_\_\_\_

If NO, go to question 2.

If YES, is the music copyrighted? YES \_\_\_\_ NO \_\_\_\_

If YES, move to question 1A. If NO, move to question 1B.

1A) Have you asked for author permission to use the music in your solution and included that permission (letter/form) in your documentation? If YES, move to question 2. If NO, ask for permission (OR use royalty free/your own original music) and if permission is granted, include the permission in your documentation.

1B) Is the music royalty free, or did you create the music yourself? If YES, cite the royalty free music OR your original music properly in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any music into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of music is done so with proper permission and is cited correctly in the student's documentation.

2) Does your solution to the competitive event integrate any graphics? YES \_\_\_\_ NO \_\_\_\_

If NO, go to question 3.

If YES, is the graphic copyrighted, registered and/or trademarked? YES \_\_\_\_ NO \_\_\_\_

If YES, move to question 2A. If NO, move to question 2B.

2A) Have you asked for author permission to use the graphic in your solution and included that permission (letter/form) in your documentation? If YES, move to question 3. If NO, ask for permission (OR use royalty free/your own original graphic) and if permission is granted, include the permission in your documentation.

2B) Is the graphic royalty free, or did you create your own graphic? If YES, cite the royalty free graphic OR your own original graphic properly in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any graphics into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of graphics is done so with proper permission and is cited correctly in the student's documentation.

3) Does your solution to the competitive event use another's thoughts or research? YES \_\_\_\_ NO \_\_\_\_

If NO, this is the end of the checklist.

If YES, have you properly cited other's thoughts or research in your documentation? If YES, this is the end of the checklist.

If NO, properly cite the thoughts/research of others in your documentation.

**CHAPTER ADVISOR: Sign below if your student has integrated any thoughts/research of others into his/her competitive event solution.**

I, \_\_\_\_\_ (chapter advisor), have checked my student's solution and confirm that the use of the thoughts/research of others is done so with proper permission and is cited correctly in the student's documentation.





## WEBSITE DESIGN

### EVENT COORDINATOR INSTRUCTIONS

#### PERSONNEL

- A. Event coordinator, one (1)
- B. Evaluators for pre-conference judging, two (2) or more
- C. Evaluators for semifinals, two (2) or more

#### MATERIALS

- A. Coordinator's packet, containing:
  - 1. Event guidelines, one (1) copy for the coordinator and each evaluator
  - 2. Pre-conference evaluations: these should be brought to the conference by the event coordinator on a USB flash drive; only the scores of those who qualify as semifinalists are needed for conference on-site evaluation
  - 3. TSA Event Coordinator Report
  - 4. List of evaluators/assistants
  - 5. Results envelope with coordinator forms
- B. Evaluation of Website Design entries takes place before the conference; a semifinalist list will be posted on the first full day of the national TSA conference.
- C. The latest version of Internet Explorer, Firefox, and Chrome.
- D. List of questions for on-site interviews
- E. Laptop computer with high speed Internet capability

#### RESPONSIBILITIES

- A. Complete the design brief in time for posting on the TSA website in mid-August.
- B. Review entries as they are submitted to the designated online storage utility. Entry submission is allowed only until 11:59 p.m. (PDT) on May 15th. Send email verification to all entrants by June 15th.
- C. At least five (5) days prior to the national TSA conference, make accessible the online storage utility link with Website Design entries.

- D. Manage communication and pre-conference evaluation (at least two [2] or more evaluators should be recruited earlier in the year). Collect completed rating forms electronically and bring them to the conference on a USB flash drive.
- E. Upon arrival at the conference, report to the CRC room and check the contents of the coordinator's packet. Review the event guidelines and check to see that enough evaluators/assistants have been scheduled. Inspect the area or room in which the event is to be held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- F. On the first full day of the conference, post a list of the twelve (12) semifinalists in random order.
- G. Review the time limits, procedures, and regulations with evaluators. Clear up any questions or misunderstandings. Distribute the guidelines for the interview.
- H. For participants who violate the rules, the decision either to 1) deduct twenty percent (20%) of the total possible points or 2) disqualify the entry, must be discussed and verified with the evaluators, event coordinator, and CRC manager, who all must initial either of these actions on the rating form.
- I. Semifinalist teams report to the event area at the time and place noted in the conference program to sign up for an interview time. Manage completion of the on-site interviews.
- J. Evaluators determine the ten (10) finalists. Evaluators discuss and break any ties that affect the top three (3) placements. NOTE: Determine the procedure for breaking ties before the on-site competition begins.
- K. Submit the finalist results and all related forms in the results envelope to the CRC room.



Participant/Team ID# \_\_\_\_\_

<b>WEBSITE DESIGN</b>			
2016 & 2017 OFFICIAL RATING FORM			MIDDLE SCHOOL
Website Development (90 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Evaluators: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the right. The X1 or X2 notation in the criteria column is a multiplier factor for determining the points earned. (Example: an "adequate" score of 7 for an X1 criterion = 7 points; an "adequate" score of 7 for an X2 criterion = 14 points.)			
<b>Content</b> (X1)	Several inaccuracies occur in the information provided by students; the website does not align with the design brief criteria; not enough content is included, or content is very incomplete.	Most information provided by students on the website is applicable to the design brief criteria.	All information provided by students on the website is applicable to the design brief criteria.
<b>Layout</b> (X1)	Web pages are cluttered looking or confusing; it is often difficult to locate important elements.	Web pages have an attractive and usable layout; it is easy to locate most important elements.	Web pages have an exceptionally attractive and usable layout; It is easy to locate all important elements; white space, graphics, and/or alignment are used effectively to organize material.
<b>Graphics</b> (X1)	Graphics seem randomly chosen and are of low quality, and/or they distract the reader; many images are broken.	Graphics are related to the theme/ purpose of the site, are of good quality, and enhance reader interest or understanding; there are few or no broken images.	Graphics are related to the theme/ purpose of the site; they are thoughtfully cropped, exhibit high quality, and they enhance reader interest or understanding; there are no broken images.
<b>Navigation</b> (X1)	Some links are missing and/ or do not navigate to the pages described; a user typically feels lost.	Links for navigation are adequately labeled; they allow for easy movement from one page to related pages (forward and back); a user rarely becomes lost.	Links for navigation are clearly labeled, consistently placed, and allow for easy navigation from one page to related pages (forward and back); a user does not become lost.
<b>Color scheme</b> (X1)	Colors, fonts, and unvisited and visited links make the content hard to read or otherwise distracting.	Colors, fonts, and unvisited and visited links do not detract from the content and are consistent across pages.	Colors, fonts, and unvisited and visited links form a pleasing palette, complement the content, and are consistent across pages.
<b>Interest</b> (X1)	Participants have provided only the minimum amount of information and have not transformed the information to make it more interesting to the people for whom it is intended.	Participants have tried to make the content of the website interesting to the people for whom it is intended.	Participants have made an exceptional attempt to ensure that the content of the website is interesting to the people for whom it is intended.
<b>Spelling and grammar</b> (X1)	There are many spelling and/or grammatical errors in the site.	There are a few spelling and/or grammatical errors in the site.	There are either no, or very minor, spelling or grammatical errors in the site.
<b>Solution to design brief</b> (X2)	Website is missing three or more criteria and/or constraints of the design brief.	Website includes most criteria and/or constraints of the design brief.	Website includes all components of the design brief.
			<b>SUBTOTAL (90 points)</b>

Record scores in the column spaces below.



Rules violations (a deduction of 20% of the total possible points) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

Semifinalist Interview (60 points)			
CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
<b>Organization</b> (X1)	Participants seem unorganized and unprepared for the interview; illogical explanation of the website is presented.	Participants are generally prepared for the interview; explanation of the website is communicated and generally organized.	The interview is logical, well organized, and easy to follow; the website explanation is communicated in an organized and concise manner.
<b>Knowledge</b> (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.
<b>Articulation</b> (X1)	The interview is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The interview is somewhat logical, easy to follow, and/or there is sufficient information provided describing the project.	The interview is clear, concise, and there is ample information provided describing the project.
<b>Team participation</b> (X1)	The majority of the delivery is made by one member of the team; the partner(s) may be disengaged from the interview.	Team members generally are engaged in the process, though one member may take on more responsibility than the other(s).	All team members are actively involved in the interview and responses to questions; there is shared responsibility among team members.
<b>Delivery</b> (X1)	The team is verbose and/or uncertain in its interview; participants' posture, gestures, and lack of eye contact diminish the interview.	The team is somewhat well-spoken and clear in its interview; participants' posture, gestures, and eye contact are acceptable in the interview.	The team is well-spoken and distinct in its interview; the participants' posture, gestures, and eye contact result in a polished, natural, and effective interview.
			<b>SUBTOTAL (60 points)</b>

Rules violations (a deduction of 20% of the total possible points for the semifinalist section) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: \_\_\_\_\_

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL (150 points)**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator

Printed name: \_\_\_\_\_

Signature: \_\_\_\_\_



## EVENT PROPOSAL INFORMATION

As technology changes and technology education attempts to keep pace and reflect these changes, new TSA events are added, some are revised, and others are dropped. TSA chapter advisors, state advisors, and others are encouraged to submit proposals for new events.

The following topics reflect potential direction for development:

Lasers/satellites/radar	Cloud computing
Engineering	Mobile apps
3-D printing	STEM
Transportation technology	Economic development
Environmental technology	Future technologies
Innovative power sources	21st-century technology
Biotechnology problem solving	Leadership development
Electronic publishing	Data management
Social media marketing	Green technology
Manufacturing technology	Cybersecurity

When submitting a proposal for consideration, include these elements:

- Overview (description of the event and participant expectations)
- Eligibility for entry
- Limitations (such as time or entry submission requirements)
- Specific regulations
- Required personnel
- Standards alignment with STEM standards and Common Core State Standards (CCSS)

Formative ideas are welcome, but the more complete the proposal the less likely it will be misinterpreted. The Competition Regulations Committee (CRC) acknowledges all submissions, and each is given consideration for possible inclusion in a competitive events guide. Once submitted, ideas and events become the property of national TSA. Proposals must be submitted by August 15, 2017 in order to be considered for the next middle school guide.

Proposals must include the submitter's name and complete contact information. Proposals may be mailed to CRC, c/o National TSA, 1914 Association Drive, Reston, VA 20191-1540, or submitted in a Word file to [general@tsaweb.org](mailto:general@tsaweb.org).



## EVENT REVISION SUGGESTION

As TSA expands its membership, and participation in competitive events increases, parts of some competitive events may need revision. Also, whenever guidelines are misinterpreted, they are revised for better clarity. TSA encourages input so that competitive events continue to improve. Please use this form for comments. (Use one form for each suggestion.)

Event title \_\_\_\_\_

Note a reference to the exact section and page number in *2016 & 2017 Middle School Technology Activities, National TSA Conference Competitive Events Guide*.

State the suggestion. Be very specific. List exactly what should be deleted, replaced, and/or added to the event rule or procedure.

Provide a rationale. List the pros and cons from a personal viewpoint.

Are any STEM areas addressed by this change? Explain.

Signature	Date	State advisor's signature	Date
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Address/city/state/zip \_\_\_\_\_

Include signatures of two people from different TSA chapters who support the suggestion.

Signature	Date	Signature*	Date
-----------	------	------------	------

Mail to: CRC, c/o National TSA, 1914 Association Drive, Reston, VA 20191-1540  
Email to: [general@tsaweb.org](mailto:general@tsaweb.org)



## RULES INTERPRETATION PANEL GRIEVANCE

Site of national TSA conference \_\_\_\_\_

Advisor's name \_\_\_\_\_

Chapter name \_\_\_\_\_

School name \_\_\_\_\_

Competitive event (including level) \_\_\_\_\_

Student or team identification number \_\_\_\_\_

STATEMENT OF CONCERN (Please print or type.)

\_\_\_\_\_  
Signature of advisor Date

\_\_\_\_\_  
Signature of state advisor Date

The decisions of the Rules Interpretation Panel (RIP) at the national conference are final.



## RULES INTERPRETATION PANEL RESPONSE TO GRIEVANCE

Panel members:

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Signature Date

Site of national TSA conference \_\_\_\_\_

Date \_\_\_\_\_

Competitive event (including level) \_\_\_\_\_

Student or team identification number \_\_\_\_\_

Advisor's name \_\_\_\_\_

STATEMENT OF RESPONSE

The decisions of the Rules Interpretation Panel (RIP) at the national conference are final.