



Technology Student Association (TSA)

HIGH SCHOOL COMPETITIVE EVENTS GUIDE

for the 2021 and 2022
National TSA Conferences

with correlations to
Science, Technology, Engineering, and
Mathematics (STEM) Standards



ACKNOWLEDGMENTS

TSA is grateful to many people for their advice and expertise in developing the competitive events program over the years. The organization especially appreciates the volunteer efforts of the members of the Competition Regulations Committee (CRC), noted below, who have written and refined the event specifications that appear in this guide.

Frank D. Calfee, Tennessee
Leigh Davis, Tennessee
Hal Harrison, South Carolina
Anton Jackson, Pennsylvania
Emily McAdams, North Carolina
Valerie McCauley, Oklahoma
Dale Moll, Pennsylvania
Natalie Norman, North Carolina

Steve Price, Georgia
Kristin Rausch, Texas
Tara Royal, Texas
B.J. Scott, Virginia
Andy Stephenson, Kentucky
Matt Walton, Virginia
Bud Worley, Texas

This competitive events guide is dedicated in memory of

Dr. Laura Hummel

Laura's contributions as a TSA Competition Regulations Committee (CRC) manager, her commitment to education, and her service to others have had a significant impact on the TSA community nationwide.

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For more information, please contact:

Technology Student Association
1904 Association Drive, Reston, VA 20191-1540
phone 703.860.9000 • toll free 888.860.9010 • fax 703.758.4852

TSAweb.org • general@tsaweb.org



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TSA, THE ORGANIZATION

TSA MISSION

The Technology Student Association (TSA) enhances personal development, leadership, 21st century skills, and career opportunities in STEM, whereby members apply and integrate these concepts through intra-curricular activities, competitions, and related programs.

WHO ARE TSA MEMBERS?

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 and engineering courses, TSA has 250,000 middle and high school student members across the country. TSA is supported by educators, parents, and business leaders who believe in the need for a technologically literate society. TSA members learn through exciting competitive events, leadership opportunities, and membership activities. It is the intent of TSA 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.

Explore what TSA has to offer by using this guide and by visiting 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 by enhancing STEM curriculum, emphasizing and promoting the development of leadership and 21st century skills, and increasing exposure to future career choices.

THE ROLE OF COMPETITIVE EVENTS

To follow its mission, TSA offers stimulating competitive events. TSA believes that by participating in thoughtfully designed competitions, students learn 21st century skills such as collaboration, perseverance, critical thinking, and problem solving, thereby becoming “winners”

irrespective of placement 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 subject matter experts (SME's) in the Competition Regulations Committee (CRC), a standing group of technology and engineering educators with hands-on classroom experience. The *Technology Student Association (TSA) High School Competitive Events Guide for the 2021 & 2022 National TSA Conferences* is the result of the collaboration of CRC managers, competitive event coordinators, teachers, proposals of numerous TSA state and chapter advisors, and students who make TSA competitive events current and dynamic. The guide presents rules and regulations for all National TSA Conference competitive events; a view of each event's connection to STEM standards; and suggested careers. 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 study and activities in the classroom.

ABOUT THIS GUIDE

With the publication of the *2021 & 2022 TSA High School Competitive Events Guide*, come the following changes:

1. The format of this guide has been streamlined to familiarize competitors and advisors with the TSA Conference General Rules and Regulations, and the procedures, regulations, and assessment for each event.
2. General rules that apply to all participants across every competitive event are no longer identified in each competition's regulations. Therefore it is critical, and a personal responsibility of each competitive event participant and advisor, to read and fully adhere to the TSA Conference General Rules and Regulations. As an example, should a competitive event require a test to be taken, there is no longer a specific reminder in the event guidelines for participants to bring their own pencil to the event.
3. Every event's guidelines have been revised in some form, whether in content or in format.



COMPETITIVE EVENTS PROGRAM



LEVELS OF COMPETITION

- A. The breakdown of grades noted below is used to designate levels for competition entries. Each level has its own unique competitive events guide.
- Middle School/Junior High School level—Grades 5, 6, 7, 8, 9
 - High School level—Grades 9, 10, 11, 12
 - Ninth graders must compete at the level in which the chapter affiliates.
 - If the configuration of the school includes grades 9-12, ninth grade students must compete in high school events.
 - If the configuration of the school includes grades 6-9 or 7-9, 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, national TSA should be contacted for clarification and approval regarding the appropriate school level designation.

GENERAL RULES AND REGULATIONS

NOTE: General rules and regulations apply to *all* competitive events and are *in addition* to each event's specific guidelines.

A. Affiliation and Membership

1. TSA members, advisors, and chapters must be currently affiliated with TSA to enter any competitive event.
2. TSA membership rights extend through the year of graduation.
3. Students who graduate midyear may compete at the national conference that immediately follows their end-of-year graduation.

B. Conference Registration, Attendance, and Participation in Events

1. Individuals who wish to attend the conference must complete conference registration.
2. Students must be registered and be in attendance with an adult chaperone at the National TSA Conference in order to enter and become a semifinalist or finalist in any event.
3. All adult advisors, chaperones, and student participants must be in attendance for the entire conference.
4. National TSA Conference registrants must wear conference identification badges at all times.
5. The TSA competitive event limit is six (6) events per conference participant—individual and team events combined.
6. Team events:
 - a. All team members must be affiliated with the same chapter.
 - b. To enter a team event, the chapter designates only that it is participating; names of the individual team members are not required.
 - c. Unless otherwise designated in a competition's eligibility guideline, the maximum size of a team is six (6) members.

C. Student Responsibilities for Competitions

1. It is the individual responsibility of each participant to obtain all rules and guidelines for competitive events.
2. Lack of knowledge or understanding about a particular event is neither reason nor excuse for an individual to request an accommodating adjustment or change.
3. *Students and advisors must routinely check the TSA website, [TSAweb.org](https://tsa.org), for updated information about TSA general rules and competitive event guidelines.*
4. Students who participate in any TSA competitive event are responsible for knowing all updates, changes, and clarifications related to that event.

D. Competition Entries

1. Entries must be started and completed during the current school year.
2. Entries may be submitted for one (1) year, and one (1) competition only. An infraction of this rule results in disqualification.
3. Each participant/team shall submit only one (1) entry per event.
4. All entries requiring documentation materials (comprising a “portfolio”) must be secured in a clear front report cover unless otherwise indicated in an event's regulations (Click [here](#) for a sample report cover).
5. All entries must be in English.
6. Participants must check in and pick up their event entries at the times and places stated in the conference program, or as announced during the National TSA Conference.
7. For any competition that involves the use of a pencil (e.g., for taking a test, for producing required sketches), participants must provide—and bring to the test site two (2) pencils, either:
 - sharpened standard #2/HB grade with an eraser, or
 - #2 mechanical with an eraser
8. Entry content:
 - a. National TSA provides guidelines for individual and team entry content but does not bear responsibility for content choices made by participants.
 - b. Entries are evaluated on the basis of an event's official rating form.
9. Projects and/or products:
 - a. Unless otherwise specified, no identifying information—other than a student or team ID#—is to be included on an entry.

b. Exceptions to this rule are:

i. middle school competitive events:

1. Career Prep
2. Children's Stories
3. Community Service Video
4. Construction Challenge
5. Structural Engineering

ii. high school competitive events:

1. Children's Stories
2. Digital Video Production
3. Structural Design and Engineering

iii. Events that require submission of a Plan of Work Log shall include indication of student initials only.

c. 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.

10. TSA may choose to keep National TSA Conference student entries.

- a. Such entries may be used by national TSA for promotional purposes. Should that occur, credit for any such entry would be noted by TSA.
- b. If applicable, the USB flash drive entries will become property of TSA and will not be returned.

E. Citations, References, and Copyrighted Material

1. For all applicable competitive events, citations or references must follow Modern Language Association (MLA) style.
2. All entries must be the original work of the student participant or student team.
3. All ideas, text, images (including those labeled “for reuse”), and sound from other sources must be cited.
4. If copyrighted material is used, written permission must be included.

- a. 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.
 - b. For information about the use of the TSA logo, see [TSAweb.org](https://tsa.org).
5. Failure to follow any of the above procedures results in disqualification.

F. Prohibited Materials, References, and Images

1. Hazardous materials, chemicals, lighted or open flames, combustibles, wet cell batteries, and other similar substances are not allowed at the National TSA Conference.
2. 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.
3. Entries or presentations may not promote products that students may not legally buy, such as tobacco, alcohol, or illegal drugs.
4. Images of guns, knives, or other weapons are prohibited.
5. Failure to follow any of the above procedures results in disqualification.

G. TSA Liability

1. 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.

H. Event Scheduling Conflicts

1. When an event scheduling conflict could prevent an individual from participating in an event, the individual has the right to not compete in an event.

I. Emergencies

1. Team member substitution may be allowed should a documented emergency arise in team events that involve written and semifinalist segments. All substitutions must be approved by the event manager and coordinator.

2. Change Requests:

- a. Should a change be requested for any reason after the stated conference registration deadline, a \$50 change fee will be charged per person per event, if the change is approved.
- b. Only chapter members previously registered as competitors by the conference registration deadline will be eligible for change requests.
- c. TSA reserves the right to approve or not approve a requested change.
- d. Fees must be paid by credit card, check, or cash prior to any change being made.
- e. No changes will be made once competitions start.

J. Event Judging

1. All events are judged in accordance with the stated event criteria noted in this competitive events guide.
2. The decisions of judges related to competitive events are final.

K. Procedure for filing a grievance with the 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 state advisors may express grievances and concerns about conference situations that pertain to events, and it ensures continuity from year to year for competitive event rules and regulations.

1. All concerns must be in writing using the correct form in the guide. The Rules Interpretation Panel Grievance form (see Forms Appendix) must be completed in its entirety.
2. Only state advisors may submit a request to the Rules Interpretation Panel (RIP) at the national conference. Should an individual/team/chapter advisor have a concern about an event, the state advisor shall be the point of contact. National TSA will not accept forms from anyone other than the state advisor.

3. During the conference, the RIP panel will meet to discuss and analyze the advisor's concern.
4. It is the intent of the panel to resolve any grievances at the conference with a written response to the state advisor.
5. Only the state advisor may pick up the written response from the RIP panel.
6. All decisions made by the panel are final.

L. Rules Violations and Disqualifications

1. A rules violation that gives a contestant an unfair advantage will result in a twenty percent (20%) deduction of the total possible points in either a preliminary or semifinal round, as applicable.
2. The coordinator or manager of an event has the right to disqualify a contestant when this type of incident occurs.
3. The event coordinator and manager must sign off on both a twenty percent (20%) deduction and a disqualification.

M. Semifinalists

1. Should the competition have a semifinal round, the event will have a minimum of twelve (12) semifinalists.
2. Semifinalists (individuals or teams, as applicable) will compete against one another to determine the top ten (10) finalists in an event.
3. All members of a semifinalist team will participate in the semifinalist portion of an event, unless otherwise noted in the event's regulations.

N. Electronic Devices

1. Recording devices are not allowed in certain competitive events.
2. CRC manager and event coordinator approval is required before any event may be recorded.
3. All electronic devices—including but not limited to, cell phones, iPads/tablets, electronic readers, smart watches, etc.—*must* be turned off unless otherwise noted in specific event regulations.
4. No electronic communication devices of any kind are permitted during competition.

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. The all-volunteer CRC is composed of dedicated STEM 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 the TSA Directory on the [TSA website](#).

Ideas and feedback regarding events are always welcome. Guidelines and forms can be found in the Forms Appendix of this guide for proposing a new event and for suggesting revisions to existing event.

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 a mandatory coordinator's meeting on the first day of the conference.
- B. 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.
 1. Generally speaking, "check-in" is on the evening of registration day, and "check-out" is held on the day before the awards ceremony.
 2. Tentative schedule information will be available before the conference on the [TSA website](#).
- C. 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

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

EVENT PROPOSAL INFORMATION

As technology evolves 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:

- 21st century technology
- 3D printing
- Adaptive/Assistive Technology
- Cloud computing
- CoDrone
- Cyber Robotics Coding
- Data management
- Economic development
- Electronic publishing
- Engineering
- Environmental technology
- Fluid power technology
- Future technologies
- Green technology
- Innovative power sources
- Lasers/satellites/radar
- Manufacturing technology
- Mobile apps
- Social media marketing
- Transportation technology

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)
- Resource considerations (i.e. are the resources a limiting factor, or are they affordable/readily available to all populations? Can this be executed at the national level?)
- Specific regulations
- Required personnel
- Alignment with STEM standards

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 July 1 of the prior conference year in order to be considered for the next guide.

Find the form in the Forms Appendix of this guide. Proposals must include the submitter's name and complete contact information. Proposals may be mailed to CRC, c/o National TSA, 1904 Association Drive, Reston, VA 20191-1540, or emailed in a Word file attachment to general@tsaweb.org.

NATIONAL TSA CONFERENCE DRESS CODE AND OFFICIAL CONFERENCE ATTIRE GUIDELINES

- A. 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.
- B. Everyone who is registered for the conference, including parents, guests, and children, must comply with the TSA dress code policy.
- C. TSA attire may be purchased online via the SHOP tab on the [TSA website](#).
- D. 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.
- E. Students must adhere to the TSA dress code requirements as listed in this section and on the [TSA website](#).
- F. When students compete in any competitive event they must wear competition attire.
- G. 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 points per round.

COMPETITION ATTIRE

1. **Shirt:** official royal blue TSA shirt
2. **Pants or skirt:** gray
3. **Shoes:** black dress shoes worn with black or dark blue socks, hosiery (optional):
 - open-toed shoes or sandals are acceptable
 - *unacceptable:* athletic shoes; flip-flops; military boots; or work boots

4. Also required for the middle school or high school level Chapter Team event only (but may be worn for other competitions if preferred by participants):

- **Blazer:** navy blue with official TSA patch
- **Tie:** official TSA tie (males)

Females are not penalized for wearing the official TSA tie to Chapter Team or any other competitive event

GENERAL SESSION ATTIRE

1. **Shirt:** The official TSA shirt (royal blue) is preferred; button-down shirt; polo/golf shirt
 - *Unacceptable:* T-shirts; halter tops; tank tops
2. **Dress, skirt, or pants**
 - *Unacceptable:* jeans; baggy pants; exterior pocket pants; shorts
3. **Shoes:** dress shoes worn with dark socks or hosiery (optional); open-toed shoes or sandals are acceptable
 - *Unacceptable:* athletic shoes; flip-flops; military boots; or work boots

CASUAL ATTIRE

1. Appropriate t-shirts, shorts, or jeans
2. Casual attire **may not** be worn at competitions or general sessions

AWARDS CEREMONY

1. TSA General Session Attire is required for the Awards Ceremony.
2. Registered parents, guests, and children who are not compliant with TSA General Session Attire and who wish to attend the Awards Ceremony, may be asked to sit in a designated section, if permitted entry.

TSA'S LEADERSHIP PROGRAM



PARTNERSHIP FOR 21ST CENTURY SKILLS (P21)

In 2002, the Partnership for 21st Century Skills (now the Partnership for 21st Century Learning, or P21) was founded as a non-profit organization by a coalition that included members of the national business community, education leaders, and policymakers. To foster a national conversation on “the importance of 21st century skills for all students” and “position 21st century readiness at the center of US K-12 education.”

21st century skills comprise skills, abilities, and learning dispositions that have been identified as being required for success in 21st century society and workplaces by educators, business leaders, academics, and governmental agencies. This is part of a growing international movement focusing on the skills required for students to master in preparation for success in a rapidly changing, digital society. Many of these skills are also associated with deeper learning, which is based on mastering skills such as analytic reasoning, complex problem solving, and teamwork. TSA's competitive events provide a natural platform to highlight the leadership and 21st century capabilities of students.

TSA's leadership program engages participants to be the best member they can be, as they seek knowledge about themselves, the organization, and their community, while developing and demonstrating leadership and 21st century skills. Leadership and 21st century skills components are all specifically tailored for each individual competitive event, and are evaluated based on the official rules and rubrics.

- For example, in one competitive event team members might note the communication, collaboration, and teamwork skills they used to finalize their idea/design in their Plan of Work Log. While in another event, a brief discussion of leadership skills and/or 21st century skills that they developed or demonstrated while working on a project might be highlighted as part of an existing presentation/interview. Criteria will be included in the rubric to evaluate the leadership and 21st century skills documented or demonstrated within these components.

TSA's leadership program has recently been revised to incorporate the 21st century skills. LEAP has been replaced with a TSA leadership program that features the development of leadership and 21st century skills. All references to LEAP, required documentation, and LEAP interviews will no longer be part of the competitive events program, along with the LEAP Legacy Chapter program.

TSA will provide related resources to affiliated chapters through the updated TSA member database. Participation in the TSA competitive events develops leadership and 21st century skills in student members, skills essential for success in the job market.

- There will be other competitive events in which a student/team may naturally demonstrate leadership skills as part of the event. In these events, criteria will be included in the rubric to evaluate the overall leadership and 21st century skills demonstrated.

During the course of preparing for, and participating in a TSA competitive event, participants will study leadership and 21st century skills, and put them into practice. Participants will use the widely accepted leadership and 21st century skills resources, in addition to other resources provided on the TSA website, as they complete the competitive event leadership requirements for all TSA competitions.

TSA believes that acquiring leadership and 21st century skills is critical to the success of young people. The resources found on the TSA website provide TSA advisors with a source for teaching, and students with an opportunity to practice these crucial skills.

TSA's leadership program focuses on the below definitions of leadership and 21st century skills as developed through participation in middle and high school competitions:

Communication: a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior

Collaboration/Social Skills: to work jointly with others, especially in an intellectual endeavor

Initiative: energy or aptitude displayed in initiation of action

Problem Solving/Risk Taking: the process or act of finding a solution to a problem/the act or fact of doing something that involves danger or risk in order to achieve a goal

Critical Thinking (lateral thinking): a method for solving problems by making unusual or unexpected connections between ideas

Perseverance/Grit: continued effort to do or achieve something despite difficulties, failure, or opposition/firmness of mind or spirit—unyielding courage in the face of hardship or danger

Creativity: the quality of being creative

Relationship Building/Teamwork: work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole

Dependability/Integrity: capable of being trusted or depended on/firm adherence to a code of especially moral or artistic values

Flexibility/Adaptability: characterized by a ready capability to adapt to new, different, or changing requirements

SOURCES

en.wikipedia.org/wiki/21st_century_skills

www.merriam-webster.com/dictionary/dictionary

www.edglossary.org/21st-century-skills

www.nea.org/home/34888.htm

www.lead4change.org/wp-content/uploads/2019/09/L4C_21stCenturySkillsAlignment_12-Track_2020.pdf

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



In recent years, not only educators, but also political, civic, and industry leaders have pushed for a greater emphasis on STEM education in schools. It is globally recognized that in order for any nation to be competitive, our future generations must develop competency in the 21st century skills afforded through STEM fields. TSA promotes a vision of students literate in these fields and believes competitions within this guide help make that vision a reality.

STEM education is not just an isolated and discreet acquisition of STEM knowledge and skills. Rather, STEM education demands the interdisciplinary application of these academic fields to improve outcomes in comprehension, communication, and problem solving. It is commonly accepted that the correlation between these STEM disciplines is interdependent. In order to develop a deep comprehension of one STEM area, one must simultaneously have an encompassing knowledge of another. For example, to design and engineer with any degree of complexity, one also must be familiar with technology, mathematics, and science. 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, learning, and what motivates our 21st century learners.

When students participate in TSA competitions, they find they must not only embrace the value of design when they compete, but they also must conceptualize, assess, and materialize that vision. Students may choose to work

collaboratively, depending upon the requirements of an event, or they may choose to work independently.

Irrespective of this choice, students develop the essential leadership and critical thinking skills to execute their strategy and align their intention with the STEM objectives set forth in this guide. STEM education is intrinsically exciting, rewarding, and meaningful for instructors and students alike. Through TSA competitive events, instructors challenge students to solve real-world problems through project-based learning and reflective experiences. This rigorous process supplements and complements classroom objectives by asking students to critically evaluate all aspects of their thought processes—from design, to communication, to execution.

Deserving of mention are three other essential areas embedded in most of TSA's competitive events—creativity, innovation, and ethics. Teaching students to think outside the box while considering the ethical consequences provides a global perspective essential to the success of our society. Through TSA competitions, students are asked to design creatively, while assessing the effects and impacts of what they develop.

The competitions found in this guide provide a hands-on venue for learning about STEM. By participating in TSA's competitive events, students gain a broader understanding of these content areas as they 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.

NEXT GENERATION SCIENCE STANDARDS* (GRADES 9-12)

A. Structure and Properties of Matter

1. **PS1-1:** Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.
2. **PS1-3:** Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.
3. **PS1-8:** Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.
4. **PS2-6:** Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.

B. Chemical Reactions

1. **PS1-2:** Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
2. **PS1-4:** Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.
3. **PS1-5:** Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
4. **PS1-6:** Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.
5. **PS1-7:** Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

C. Forces and Interactions

1. **PS2-1:** Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration
2. **PS2-2:** Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.
3. **PS2-3:** Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.*
4. **PS2-4:** Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects
5. **PS2-5:** Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.

D. Energy

1. **PS3-1:** Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
2. **PS3-2:** Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).
3. **PS3-3:** Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.*
4. **PS3-4:** Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics)

5. **PS3-5:** Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.

E. Waves and Electromagnetic Radiation

1. **PS4-1:** Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media
2. **PS4-2:** Evaluate questions about the advantages of using a digital transmission and storage of information.
3. **PS4-3:** Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.
4. **PS4-4:** Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.
5. **PS4-5:** Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.*

F. Structure, Function, and Information Processing

1. **LS1-1:** Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells
2. **LS1-2:** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
3. **LS1-3:** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

G. Matter and Energy in Organisms and Ecosystems

1. **LS1-5:** Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
2. **LS1-6:** Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
3. **LS1-7:** Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.
4. **LS2-3:** Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
5. **LS2-4:** Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.
6. **LS2-5:** Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

H. Interdependent Relationships in Ecosystems

1. **LS2-1:** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.
2. **LS2-2:** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
3. **LS2-6:** Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
4. **LS2-7:** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*

5. **LS2-8:** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
6. **LS4-6:** Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.*

I. Inheritance and Variation of Traits

1. **LS1-4:** Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms
2. **LS3-1:** Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring
3. **LS3-2:** Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
4. **LS3-3:** Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population

J. Natural Selection and Evolution

1. **LS4-1:** Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
2. **LS4-2:** Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
3. **LS4-3:** Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait
4. **LS4-4:** Construct an explanation based on evidence for how natural selection leads to adaptation of populations

5. **LS4-5:** Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

K. Space Systems

1. **ESS1-1:** Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.
2. **ESS1-2:** Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.
3. **ESS1-3:** Communicate scientific ideas about the way stars, over their life cycle, produce elements.
4. **ESS1-4:** Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.

L. History of Earth

1. **ESS1-5:** Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.
2. **ESS1-6:** Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.
3. **ESS2-1:** Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

M. Earth's Systems

1. **ESS2-2:** Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.
2. **ESS2-3:** Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection

3. **ESS2-5:** Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
4. **ESS2-6:** Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere..
5. **ESS2-7:** Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

N. Weather and Climate

1. **ESS2-4:** Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.
2. **ESS3-5:** Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

O. Human Sustainability

1. **ESS3-1:** Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
2. **ESS3-2:** Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.*
3. **ESS3-3:** Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
4. **ESS3-4:** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.*
5. **ESS3-6:** Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

P. Engineering Design

1. **ETS1-1:** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
2. **ETS1-2:** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
3. **ETS1-3:** Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
4. **ETS1-4:** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Although not formally aligned, this standards alignment of TSA competitive events has been developed in accordance with the Next Generation Science Standards (NGSS) model.

*The Next Generation Science Standards (NGSS) were developed by educators, content experts and policymakers, using as a guiding document the Framework for K-12 Science Education from the National Research Council. The Next Generation Science Standards is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of this product, and do not endorse it.

NEXT GENERATION SCIENCE STANDARDS (GRADES 9-12)																									
Event	Standard Number	A-PS1-1	A-PS1-3	A-PS1-8	A-PS2-6	B-PS1-2	B-PS1-4	B-PS1-5	B-PS1-6	B-PS1-7	C-PS2-1	C-PS2-2	C-PS2-3	C-PS2-4	C-PS2-5	D-PS3-1	D-PS3-2	D-PS3-3	D-PS3-4	D-PS3-5	E-PS4-1	E-PS4-2	E-PS4-3	E-PS4-4	E-PS4-5
Animatronics																									
Architectural Design																									
Biotechnology Design					X																				
Board Game Design																									
Chapter Team																									
Children's Stories																									
Coding																									
Computer-Aided Design (CAD), Architecture																									
Computer-Aided Design (CAD), Engineering																									
Computer Integrated Manufacturing (CIM)																									
Cybersecurity																									
Data Science and Analytics																									
Debating Technological Issues																									
Digital Video Production																									
Dragster Design																									
Engineering Design																									
Essays on Technology																									
Extemporaneous Speech																									
Fashion Design and Technology																									
Flight Endurance																									
Forensic Science																									
Future Technology and Engineering Teacher																									
Geospatial Technology																									
Music Production																									
On Demand Video																									
Photographic Technology																									
Prepared Presentation																									
Promotional Design																									
Scientific and Technical Visualization (SciVis)																									
Software Development																									
Structural Design and Engineering																									
System Control Technology																									
Technology Bowl																									
Technology Problem Solving																									
Transportation Modeling																									
Video Game Design																									
Webmaster																									

NEXT GENERATION SCIENCE STANDARDS (GRADES 9-12) – continued																									
Event	Standard Number	F-LS1-1	F-LS1-2	F-LS1-3	G-LS1-5	G-LS1-6	G-LS1-7	G-LS2-3	G-LS2-4	G-LS2-5	H-LS2-1	H-LS2-2	H-LS2-6	H-LS2-7	H-LS2-8	H-LS4-6	I-LS1-4	I-LS3-1	I-LS3-2	I-LS3-3	J-LS4-1	J-LS4-2	J-LS4-3	J-LS4-4	J-LS4-5
Animatronics																									
Architectural Design																									
Biotechnology Design			X											X		X									
Board Game Design																									
Chapter Team																									
Children's Stories																									
Coding																									
Computer-Aided Design (CAD), Architecture																									
Computer-Aided Design (CAD), Engineering																									
Computer Integrated Manufacturing (CIM)																									
Cybersecurity											X	X	X	X	X							X			X
Data Science and Analytics																									
Debating Technological Issues																									
Digital Video Production																									
Dragster Design																									
Engineering Design																									
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Webmaster																									

NEXT GENERATION SCIENCE STANDARDS (GRADES 9-12) – continued														
Event	Standard Number	K-ESS1-1	K-ESS1-2	K-ESS1-3	K-ESS1-4	L-ESS1-5	L-ESS1-6	L-ESS2-1	M-ESS2-2	M-ESS2-3	M-ESS2-5	M-ESS2-6	M-ESS2-7	N-ESS2-4
Animatronics														
Architectural Design														
Biotechnology Design														
Board Game Design														
Chapter Team														
Children's Stories														
Coding														
Computer-Aided Design (CAD), Architecture														
Computer-Aided Design (CAD), Engineering														
Computer Integrated Manufacturing (CIM)														
Cybersecurity														
Data Science and Analytics														
Debating Technological Issues														
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Video Game Design														
Webmaster														

TECHNOLOGY CONTENT STANDARDS

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

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)

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
Animatronics				X	X				X	X	X	X	X				X			X	
Architectural Design		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X	X
Biotechnology Design					X	X	X		X	X	X	X			X	X					
Board Game Design						X	X		X			X	X	X				X			
Chapter Team												X									
Children's Stories									X			X						X			
Coding									X			X						X			
Computer-Aided Design (CAD), Architecture						X			X	X	X	X	X	X					X	X	
Computer-Aided Design (CAD), Engineering						X			X	X	X	X	X	X					X		
Computer Integrated Manufacturing (CIM)	X	X	X				X	X	X	X	X	X	X								
Cybersecurity																					
Data Science and Analytics																					
Debating Technological Issues				X	X	X								X	X	X					
Digital Video Production				X					X		X	X	X	X				X			
Dragster Design	X	X	X						X	X	X	X	X					X	X		
Engineering Design	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							
Extemporaneous Speech	X	X	X	X	X				X		X			X				X			
Fashion Design and Technology									X								X				
Flight Endurance				X					X	X	X	X							X		
Forensic Science				X						X	X				X						
Future Technology and Engineering Teacher	X	X	X	X	X	X	X	X	X	X	X	X									
Geospatial Technology																					
Music Production									X				X					X			
On Demand Video										X	X	X		X				X			
Photographic Technology	X	X		X	X		X	X				X	X					X			
Prepared Presentation	X	X		X	X													X			
Promotional Design	X	X	X	X	X		X		X			X						X			
Scientific and Technical Visualization (SciVis)	X		X	X					X			X						X			
Software Development	X	X	X	X	X	X	X	X	X	X	X	X	X					X			
Structural Design and Engineering	X	X							X	X	X	X	X	X					X		X
System Control Technology				X					X	X	X	X	X					X	X	X	X
Technology Bowl														X	X	X	X	X	X	X	X
Technology Problem Solving									X		X	X									
Transportation Modeling	X	X	X						X	X	X	X	X					X		X	
Video Game Design									X	X	X	X	X					X			
Webmaster									X	X	X	X	X	X				X			

AP COMPUTER SCIENCE STANDARDS

A. Creative Development (CRD)

1. **CRD-1:** Incorporating multiple perspectives through collaboration improves computing innovations as they are developed.
 - a. **CRD-1.A:** Explain how computing innovations are improved through collaboration.
 - b. **CRD-1.B:** Explain how computing innovations are developed by groups of people.
 - c. **CRD-1.C:** Demonstrate effective interpersonal skills during collaboration.
2. **CRD-2:** Developers create and innovate using an iterative design process that is user-focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.
 - a. **CRD-2.A:** Describe the purpose of a computing innovation.
 - b. **CRD-2.B:** Explain how a program or code segment functions.
 - c. **CRD-2.C:** Identify input(s) to a program.
 - d. **CRD-2.D:** Identify output(s) produced by a program.
 - e. **CRD-2.E:** Develop a program using a development process.
 - f. **CRD-2.F:** Design a program and its user interface.
 - g. **CRD-2.G:** Describe the purpose of a code segment or program by writing documentation.
 - h. **CRD-2.H:** Acknowledge code segments used from other sources.
 - i. **CRD-2.I:** For errors in an algorithm or program:
 - i. Identify the error.
 - ii. Correct the error.
 - j. **CRD-2.J:** Identify inputs and corresponding expected outputs or behaviors that can be used to check the correctness of an algorithm or program.

B. Data (DAT)

1. **DAT-1:** The way a computer represents data internally is different from the way the data are interpreted and displayed for the user. Programs are used to translate data into a representation more easily understood by people.
 - a. **DAT-1.A:** Explain how data can be represented using bits.
 - b. **DAT-1.B:** Explain the consequences of using bits to represent data.
 - c. **DAT-1.C:** For binary numbers:
 - i. Calculate the binary (base 2) equivalent of a positive integer (base 10) and vice versa.
 - ii. Compare and order binary numbers.
 - d. **DAT-1.D:** Compare data compression algorithms to determine which is best in a particular context.
2. **DAT-2:** Programs can be used to process data, which allows users to discover information and create new knowledge.
 - a. **DAT-2.A:** Describe what information can be extracted from data.
 - b. **DAT-2.B:** Describe what information can be extracted from metadata.
 - c. **DAT-2.C:** Identify the challenges associated with processing data.
 - d. **DAT-2.D:** Extract information from data using a program.
 - e. **DAT-2.E:** Explain how programs can be used to gain insight and knowledge from data.

C. Algorithms and Programming (AAP)

1. **AAP-1:** To find specific solutions to generalizable problems, programmers represent and organize data in multiple ways.
 - a. **AAP-1.A:** Represent a value with a variable.
 - b. **AAP-1.B:** Determine the value of a variable as a result of an assignment.
 - c. **AAP-1.C:** Represent a list or string using a variable.

- d. **AAP-1.D:** For data abstraction:
 - i. Develop data abstraction using lists to store multiple elements.
 - ii. Explain how the use of data abstraction manages complexity in program code.
- 2. **AAP-2:** The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
 - a. **AAP-2.A:** Express an algorithm that uses sequencing without using a programming language.
 - b. **AAP-2.B:** Represent a step-by-step algorithmic process using sequential code statements.
 - c. **AAP-2.C:** Evaluate expressions that use arithmetic operators.
 - d. **AAP-2.D:** Evaluate expressions that manipulate strings.
 - e. **AAP-2.E:** For relationships between two variables, expressions, or values:
 - i. Write expressions using relational operators.
 - ii. Evaluate expressions that use relational operators.
 - f. **AAP-2.F:** For relationships between Boolean values:
 - i. Write expressions using logical operators.
 - ii. Evaluate expressions that use logic operators.
 - g. **AAP-2.G:** Express an algorithm that uses selection without using a programming language.
 - h. **AAP-2.H:** For selection:
 - i. Write conditional statements.
 - ii. Determine the result of conditional statements.
 - i. **AAP-2.I:** For nested selection:
 - i. Write nested conditional statements.
 - ii. Determine the result of nested conditional statements.
 - j. **AAP-2.J:** Express an algorithm that uses iteration without using a programming language.
 - k. **AAP-2.K:** For iteration:
 - i. Write iteration statements.
 - ii. Determine the result or side effect of iteration statements.
 - l. **AAP-2.L:** Compare multiple algorithms to determine if they yield the same side effect or result.
 - m. **AAP-2.M:** For algorithms:
 - i. Create algorithms.
 - ii. Combine and modify existing algorithms.
 - n. **AAP-2.N:** For list operations:
 - i. Write expressions that use list indexing and list procedures.
 - ii. Evaluate expressions that use list indexing and list procedures.
 - o. **AAP-2.O:** For algorithms involving elements of a list:
 - i. Write iteration statements to traverse a list.
 - ii. Determine the result of an algorithm that includes list traversals.
 - p. **AAP-2.P:** For binary search algorithms:
 - i. Determine the number of iterations required to find a value in a data set.
 - ii. Explain the requirements necessary to complete a binary search.
- 3. **AAP-3:** Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing them to write programs more quickly and with more confidence.
 - a. **AAP-3.A:** For procedure calls:
 - i. Write statements to call procedures.
 - ii. Determine the result or effect of a procedure call.

- b. **AAP-3.B:** Explain how the use of procedural abstraction manages complexity in a program.
 - c. **AAP-3.C:** Develop procedural abstractions to manage complexity in a program by writing procedures.
 - d. **AAP-3.D:** Select appropriate libraries or existing code segments to use in creating new programs.
 - e. **AAP-3.E:** For generating random values:
 - i. Write expressions to generate possible values.
 - ii. Evaluate expressions to determine the possible results.
 - f. **AAP-3.F:** For simulations:
 - i. Explain how computers can be used to represent real-world phenomena or outcomes.
 - ii. Compare simulations with real-world contexts.
4. **AAP-4:** There exist problems that computers cannot solve, and even when a computer can solve a problem, it may not be able to do so in a reasonable amount of time.
- a. **AAP-4.A:** For determining the efficiency of an algorithm:
 - i. Explain the difference between algorithms that run in reasonable time and those that do not.
 - ii. Identify situations where a heuristic solution may be more appropriate.
 - b. **AAP-4.B:** Explain the existence of undecidable problems in computer science.

D. Computer Systems and Networks (CSN)

- 1. **CSN-1:** Computer systems and networks facilitate the transfer of data.
 - a. **CSN-1.A:** Explain how computing devices work together in a network.
 - b. **CSN-1.B:** Explain how the Internet works.
 - c. **CSN-1.C:** Explain how data are sent through the Internet via packets.

- d. **CSN-1.D:** Describe the differences between the Internet and the World Wide Web.
 - e. **CSN-1.E:** For fault-tolerant systems, like the Internet:
 - i. Describe the benefits of fault tolerance.
 - ii. Explain how a given system is fault-tolerant.
 - iii. Identify vulnerabilities to failure in a system.
2. **CSN-2:** Parallel and distributed computing leverage multiple computers to more quickly solve complex problems or process large data sets.
- a. **CSN-2.A:** For sequential, parallel, and distributed computing:
 - i. a. Compare problem solutions.
 - ii. b. Determine the efficiency of solutions.
 - b. **CSN-2.B:** Describe benefits and challenges of parallel and distributed computing.

E. Impact of Computing (IOC)

- 1. **IOC-1:** While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.
 - a. **IOC-1.A:** Explain how an effect of a computing innovation can be both beneficial and harmful.
 - b. **IOC-1.B:** Explain how a computing innovation can have an impact beyond its intended purpose.
 - c. **IOC-1.C:** Describe issues that contribute to the digital divide.
 - d. **IOC-1.D:** Explain how bias exists in computing innovations.
 - e. **IOC-1.E:** Explain how people participate in problem solving processes at scale.
 - f. **IOC-1.F:** Explain how the use of computing can raise legal and ethical concerns.
- 2. **IOC-2:** The use of computing innovations may involve risks to personal safety and identity.
 - a. **IOC-2.A:** Describe the risks to privacy from collecting and storing personal data on a computer system.

AP Computer Science Standards																						
Event	Standard Number	CRD-1.A	CRD-1.B	CRD-1.C	CRD-2.A	CRD-2.B	CRD-2.C	CRD-2.D	CRD-2.E	CRD-2.G	CRD-2.H	CRD-2.I	CRD-2.J	DAT-1.A	DAT-1.B	DAT-1.C	DAT-1.D	DAT-2.A	DAT-2.B	DAT-2.C	DAT-2.D	DAT-2.E
Animatronics		X		X		X	X	X	X	X		X										
Architectural Design																						
Biotechnology Design																						
Board Game Design																						
Chapter Team																						
Children's Stories																						
Coding						X	X	X		X	X	X	X	X	X	X	X					
Computer-Aided Design (CAD), Architecture																						
Computer-Aided Design (CAD), Engineering																						
Computer Integrated Manufacturing (CIM)		X		X	X		X	X				X	X									
Cybersecurity				X			X				X	X						X	X	X	X	
Data Science and Analytics																		X	X	X	X	X
Debating Technological Issues																						
Digital Video Production																						
Dragster Design																						
Engineering Design																						
Essays on Technology																						
Extemporaneous Speech																						
Fashion Design and Technology																						
Flight Endurance																						
Forensic Science																						
Future Technology and Engineering Teacher																						
Geospatial Technology																		X	X	X	X	X
Music Production																						
On Demand Video																						
Photographic Technology																						
Prepared Presentation																						
Promotional Design																						
Scientific and Technical Visualization (SciVis)		X		X	X	X	X	X	X	X	X	X	X	X	X							
Software Development		X		X		X	X	X	X	X	X											
Structural Design and Engineering																						
System Control Technology		X		X	X	X	X	X	X	X	X	X	X									
Technology Bowl																						
Technology Problem Solving																						
Transportation Modeling																						
Video Game Design		X		X			X	X	X	X	X	X	X									
Webmaster							X	X	X		X	X										

AP COMPUTER SCIENCE STANDARDS – continued															
Event	Standard Number	AAP-1.A	AAP-1.B	AAP-1.C	AAP-1.D	AAP-2.A	AAP-2.B	AAP-2.C	AAP-2.D	AAP-2.E	AAP-2.F	AAP-2.G	AAP-2.H	AAP-2.I	AAP-2.J
Animatronics				X			X	X	X	X			X	X	
Architectural Design															
Biotechnology Design															
Board Game Design															
Chapter Team															
Children's Stories															
Coding		X	X	X	X		X	X	X	X			X	X	
Computer-Aided Design (CAD), Architecture															
Computer-Aided Design (CAD), Engineering															
Computer Integrated Manufacturing (CIM)															
Cybersecurity															
Data Science and Analytics															
Debating Technological Issues															
Digital Video Production															
Dragster Design															
Engineering Design															
Essays on Technology															
Extemporaneous Speech															
Fashion Design and Technology															
Flight Endurance															
Forensic Science															
Future Technology and Engineering Teacher															
Geospatial Technology															
Music Production															
On Demand Video															
Photographic Technology															
Prepared Presentation															
Promotional Design															
Scientific and Technical Visualization (SciVis)		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Software Development															
Structural Design and Engineering															
System Control Technology															
Technology Bowl															
Technology Problem Solving															
Transportation Modeling															
Video Game Design		X	X	X			X	X	X	X	X		X	X	X
Webmaster				X			X	X	X	X	X		X	X	X

AP COMPUTER SCIENCE STANDARDS – continued														
Event	Standard Number	AAP-3.B	AAP-3.C	AAP-3.D	AAP-3.E	AAP-3.F	AAP-4.A	AAP-4.B	CSN-1.A	CSN-1.B	CSN-1.C	CSN-1.D	CSN-1.E	CSN-2.A
Animatronics		X	X	X										
Architectural Design														
Biotechnology Design														
Board Game Design														
Chapter Team														
Children's Stories														
Coding							X							
Computer-Aided Design (CAD), Architecture														
Computer-Aided Design (CAD), Engineering														
Computer Integrated Manufacturing (CIM)														
Cybersecurity						X			X	X	X	X	X	X
Data Science and Analytics														
Debating Technological Issues														
Digital Video Production														
Dragster Design														
Engineering Design														
Essays on Technology														
Extemporaneous Speech														
Fashion Design and Technology														
Flight Endurance														
Forensic Science														
Future Technology and Engineering Teacher														
Geospatial Technology														
Music Production														
On Demand Video														
Photographic Technology														
Prepared Presentation														
Promotional Design														
Scientific and Technical Visualization (SciVis)		X	X	X		X								
Software Development		X	X	X	X		X		X					
Structural Design and Engineering														
System Control Technology		X	X	X			X		X					
Technology Bowl														
Technology Problem Solving														
Transportation Modeling														
Video Game Design		X	X	X		X	X							
Webmaster		X		X										

AP COMPUTER SCIENCE: COMPUTATIONAL THINKING PRACTICES**Practice 1: Computational Solution Design**

Design and evaluate computational solutions for a purpose.

- A. Investigate the situation, context, or task.
- B. Determine and design an appropriate method or approach to achieve the purpose.
- C. Explain how collaboration affects the development of a solution.
- D. Evaluate solution options.

Practice 2: Algorithms and Program Development

Develop and implement algorithms.

- A. Represent algorithmic processes without using a programming language.
- B. Implement and apply an algorithm.

Practice 3: Abstraction in Program Development

Develop programs that incorporate abstractions.

- A. Generalize data sources through variables.
- B. Use abstraction to manage complexity in a program.
- C. Explain how abstraction manages complexity.

Practice 4: Code Analysis

Evaluate and test algorithms and programs.

- A. Explain how a code segment or program functions.
- B. Determine the result of code segments.
- C. Identify and correct errors in algorithms and programs, including error discovery through testing.

Practice 5: Computing Innovations

Investigate computing innovations.

- A. Explain how computing systems work.
- B. Explain how knowledge can be generated from data.
- C. Describe the impact of a computing innovation.
- D. Describe the impact of gathering data.
- E. Evaluate the use of computing based on legal and ethical factors.

Practice 6: Responsible Computing

Contribute to an inclusive, safe, collaborative, and ethical computing culture.

- A. Collaborate in the development of solutions.
- B. Use safe and secure methods when using computing devices.
- C. Acknowledge the intellectual property of others.

AP Computer Science: Computational Thinking Practices																					
Event	Standard Number	1A	1B	1C	1D	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	5D	5E	6A	6B	6C
Animatronics			X	X					X				X						X		
Architectural Design		X	X		X																
Biotechnology Design		X	X		X											X					
Board Game Design																					
Chapter Team																					
Children's Stories																					
Coding							X		X	X	X	X	X	X	X				X		
Computer-Aided Design (CAD), Architecture		X	X		X																
Computer-Aided Design (CAD), Engineering		X	X		X																
Computer Integrated Manufacturing (CIM)																					
Cybersecurity				X	X							X	X					X	X	X	X
Data Science and Analytics		X	X		X	X		X							X		X	X			
Debating Technological Issues																					
Digital Video Production																					
Dragster Design																					
Engineering Design																					
Essays on Technology																					
Extemporaneous Speech																					
Fashion Design and Technology																					
Flight Endurance																					
Forensic Science																					
Future Technology and Engineering Teacher																					
Geospatial Technology		X		X											X		X	X	X		X
Music Production																					
On Demand Video																					
Photographic Technology																					
Prepared Presentation																					
Promotional Design		X	X		X																X
Scientific and Technical Visualization (SciVis)		X	X	X	X				X				X						X		X
Software Development		X	X	X	X		X		X	X			X	X	X	X		X	X	X	X
Structural Design and Engineering																					
System Control Technology		X	X	X	X		X						X		X	X		X	X	X	X
Technology Bowl																					
Technology Problem Solving																					
Transportation Modeling																					
Video Game Design			X	X	X				X				X								X
Webmaster			X	X	X				X				X						X		X

ISTE STANDARDS FOR STUDENTS – 2016 INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION

1. Empowered Learner

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

- articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes
- build networks and customize their learning environments in ways that support the learning process
- use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways
- understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies

2. Digital Citizen

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

- cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world
- engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices
- demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property
- manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online

3. Knowledge Constructor

Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

- plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits
- evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources
- curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions
- build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions

4. Innovative Designer

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

- know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems
- select and use digital tools to plan and manage a design process that considers design constraints and calculated risks
- develop, test and refine prototypes as part of a cyclical design process
- exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems

e. Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

- a. formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions
- b. collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making
- c. break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving
- d. understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions

6. **Creative Communicator**

Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

- a. choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication
- b. create original works or responsibly repurpose or remix digital resources into new creations
- c. communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations
- d. publish or present content that customizes the message and medium for their intended audiences

7. **Global Collaborator**

Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

- a. use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning
- b. use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints
- c. contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal
- d. explore local and global issues and use collaborative technologies to work with others to investigate solutions

Although not formally aligned, this standards alignment of TSA competitive events has been developed in accordance with the ISTE Standards for Students framework. The ISTE Standards for Students are a framework for teaching and learning in the digital age and are adopted by schools, districts, states locally, nationally and internationally. The ISTE Standards for Students are a registered trademark of International Society for Technology in Education (ISTE). ISTE was not involved in the production of this product and does not endorse, support, or sponsor it.

ISTE STANDARDS FOR STUDENTS																													
Event	Standard Number	1a	1b	1c	1d	2a	2b	2c	2d	3a	3b	3c	3d	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	6d	7a	7b	7c	7d
Animatronics		X		X										X	X	X	X				X	X	X	X			X	X	
Architectural Design		X	X	X						X	X	X	X	X	X	X	X				X	X	X	X			X	X	
Biotechnology Design		X								X	X	X	X	X			X		X		X	X	X	X			X	X	
Board Game Design		X								X	X	X	X	X			X	X			X	X	X	X			X	X	
Chapter Team																													
Children's Stories																													
Coding				X															X								X		
Computer-Aided Design (CAD), Architecture														X	X	X	X				X	X	X	X					
Computer-Aided Design (CAD), Engineering														X	X	X	X				X	X	X	X					
Computer Integrated Manufacturing (CIM)																													
Cybersecurity		X	X	X	X	X	X			X	X	X	X					X	X			X	X	X			X	X	
Data Science and Analytics		X								X	X	X	X									X	X	X			X	X	
Debating Technological Issues		X																				X	X	X			X	X	
Digital Video Production		X	X	X	X					X				X			X					X	X	X		X	X	X	
Dragster Design																													
Engineering Design																													
Essays on Technology																													
Extemporaneous Speech																													
Fashion Design and Technology																													
Flight Endurance																													
Forensic Science																													
Future Technology and Engineering Teacher																													
Geospatial Technology		X								X	X	X	X	X			X		X			X	X	X			X	X	
Music Production		X		X	X					X		X	X	X			X					X	X	X			X		
On Demand Video		X		X	X					X		X		X			X					X	X	X			X		
Photographic Technology		X		X	X					X		X		X			X					X	X	X			X		
Prepared Presentation		X								X	X	X	X	X			X					X	X	X			X		
Promotional Design		X			X					X		X		X			X					X	X	X			X		
Scientific and Technical Visualization (SciVis)		X		X	X					X		X		X			X					X	X	X			X		
Software Development		X		X	X					X	X	X	X	X			X	X				X	X	X			X		
Structural Design and Engineering																													
System Control Technology		X		X	X					X	X	X	X	X			X					X	X	X			X		
Technology Bowl																													
Technology Problem Solving																													
Transportation Modeling																													
Video Game Design		X		X	X					X		X		X			X					X	X	X			X		
Webmaster		X		X	X					X	X	X		X			X					X	X	X			X		

CRITERIA FOR ACCREDITING ENGINEERING PROGRAMS (Accreditation Board for Engineering and Technology [ABET, Inc.])

Engineering programs must have documented student outcomes that prepare graduates to attain the program educational objectives.

Student outcomes are outcomes (A) through (K) plus any additional outcomes that may be articulated by the program.

- A. An ability to apply knowledge of mathematics, science and engineering
- B. An ability to design and conduct experiments, as well as to analyze and interpret data
- C. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- D. An ability to function on multidisciplinary 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 solutions in a global, economic, environmental, and social context
- 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 are found in the *2016-2017 Criteria for Accrediting Engineering Programs* and used with permission from the Engineering Accreditation Commission of ABET, Inc.

Access the [2018-2019 Criteria for Accrediting Engineering Programs](#) for the latest outcomes.

(The outcomes were designed for higher education engineering programs, but they are relevant for middle school and high school level engineering-related courses.)

CRITERIA FOR ACCREDITING ENGINEERING PROGRAMS (ABET, INC.)													
Standard	Event	Standard Letter	A	B	C	D	E	F	G	H	I	J	K
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.	Animatronics		X			X	X						X
	Architectural Design		X		X	X	X	X	X	X	X	X	X
	Biotechnology Design		X	X	X	X	X	X	X	X	X	X	X
	Board Game Design		X		X		X		X		X	X	X
	Chapter Team									X	X		
	Children's Stories				X	X		X	X		X		
	Coding		X		X	X			X				X
	Computer-Aided Design (CAD), Architecture		X				X		X	X	X	X	X
	Computer-Aided Design (CAD), Engineering		X				X		X	X	X	X	X
	Computer Integrated Manufacturing (CIM)		X	X	X	X	X	X	X	X	X	X	X
	Cybersecurity					X		X	X			X	
	Data Science and Analytics		X	X					X	X			X
	Debating Technological Issues								X	X	X		
	Digital Video Production								X	X		X	
	Dragster Design		X	X	X			X	X	X			X
	Engineering Design		X	X	X	X	X	X	X	X	X	X	X
	Essays on Technology		X	X					X				X
	Extemporaneous Speech								X	X	X		
	Fashion Design and Technology						X	X			X		
	Flight Endurance		X	X	X			X	X	X		X	
	Forensic Science		X	X						X			X
	Future Technology and Engineering Teacher		X		X				X	X			X
	Geospatial Technology			X	X	X	X		X	X			X
	Music Production									X			
	On Demand Video						X		X	X			
	Photographic Technology		X						X	X		X	X
	Prepared Presentation									X	X	X	
	Promotional Design		X						X	X			
Scientific and Technical Visualization (SciVis)			X			X							X
Software Development		X	X	X	X	X	X	X	X	X	X	X	X
Structural Design and Engineering		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
Technology Bowl		X	X	X	X		X			X		X	X
Technology Problem Solving		X		X									
Transportation Modeling		X	X	X			X	X	X				X
Video Game Design				X	X	X		X	X		X		
Webmaster					X	X			X				

**NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS (NCTM)
PRINCIPLES AND STANDARDS FOR SCHOOL MATHEMATICS****A. Numbers and operations**

1. Understand numbers, ways of representing numbers, relationships among numbers and number systems
2. Understand meanings of operations and how they relate to one another
3. Compute fluently and make reasonable estimates

B. Algebra

1. Understand patterns, relations, and functions
2. Represent and analyze mathematical situations and structures using algebraic symbols
3. Use mathematical models to represent and understand quantitative relationships
4. Analyze change in various contexts

C. Geometry

1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems
3. Apply transformations and use symmetry to analyze mathematical situations
4. Use visualization, spatial reasoning and geometric modeling to solve problems

D. Measurement

1. Understand measurable attributes of objects and the units, systems and processes of measurement
2. Apply appropriate techniques, tools and formulas to determine measurements

E. Data analysis and probability

1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them
2. Select and use appropriate statistical methods to analyze data
3. Develop and evaluate inferences and predictions that are based on data
4. Understand and apply basic concepts of probability

F. Problem solving

1. Build new mathematical knowledge through problem solving
2. Solve problems that arise in mathematics and in other contexts
3. Apply and adapt a variety of appropriate strategies to solve problems
4. Monitor and reflect on the process of mathematical problem solving

G. Reasoning and proof

1. Recognize reasoning and proof as fundamental aspects of mathematics
2. Make and investigate mathematical conjectures
3. Develop and evaluate mathematical arguments and proofs
4. Select and use various types of reasoning and methods of proof

H. Communication

1. Organize and consolidate mathematical thinking through communication
2. Communicate mathematical thinking coherently and clearly to peers, teachers and others
3. Analyze and evaluate the mathematical thinking and strategies of others
4. Use the language of mathematics to express mathematical ideas precisely

I. Connections

1. Recognize and use connections among mathematical ideas
2. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
3. Recognize and apply mathematics in contexts outside of mathematics

J. Representation

1. Create and use representations to organize, record, and communicate mathematical ideas
2. Select, apply, and translate among mathematical representations to solve problems
3. Use representations to model and interpret physical, social and mathematical phenomena

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Principles and Standards for School Mathematics																																						
Event	Standard Number	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	E1	E2	E3	E4	F1	F2	F3	F4	G1	G2	G3	G4	H1	H2	H3	H4	I1	I2	I3	J1	J2	J3		
Animatronics													X	X						X	X																	
Architectural Design		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																
Biotechnology Design		X	X	X	X	X	X	X							X	X	X	X	X	X	X	X																
Board Game Design		X	X	X	X	X	X	X																														
Chapter Team																																						
Children's Stories																																						
Coding		X	X																X							X												
Computer-Aided Design (CAD), Architecture									X	X		X	X	X												X												
Computer-Aided Design (CAD), Engineering									X	X		X	X	X																								
Computer Integrated Manufacturing (CIM)									X	X	X	X	X	X					X	X	X	X																
Cybersecurity			X	X																X	X	X																
Data Science and Analytics																																						
Debating Technological Issues				X																																		
Digital Video Production				X									X	X																								
Dragster Design				X				X	X	X		X	X	X						X	X																	
Engineering 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	X	X	X	X	
Essays on Technology				X																																		
Extemporaneous Speech																																						
Fashion Design and Technology													X	X																								
Flight Endurance		X	X	X	X				X			X	X	X						X	X	X																
Forensic Science																																						
Future Technology and Engineering Teacher				X																																		
Geospatial Technology																																						
Music Production													X	X																								
On Demand Video													X	X																								
Photographic Technology																																						
Prepared Presentation																																						
Promotional Design																																						
Scientific and Technical Visualization (SciVis)		X	X	X	X			X				X								X	X						X											
Software Development																				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Structural Design and Engineering			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	X	X	X	X	X	X	X	X	X
Technology Bowl																																						
Technology Problem Solving																																						
Transportation Modeling																																						
Video Game Design				X																																		

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



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16 CAREER CLUSTERS®

A. AGRICULTURE, FOOD & NATURAL RESOURCES

- Agribusiness Systems
- Animal Systems
- Environmental Service Systems
- Food Products & Processing Systems
- Natural Resources Systems
- Plant Systems
- Power, Structural & Technical Systems Architecture & Construction

B. ARCHITECTURE & CONSTRUCTION

- Construction
- Design/Pre-Construction
- Maintenance/Operations

C. ARTS, A/V TECHNOLOGY & COMMUNICATIONS

- A/V Technology & Film
- Journalism & Broadcasting
- Performing Arts
- Printing Technology
- Telecommunications
- Visual Arts

D. BUSINESS MANAGEMENT & ADMINISTRATION

- Administrative Support
- Business Information Management
- General Management
- Human Resources Management
- Operations Management

E. EDUCATION & TRAINING

- Administration & Administrative Support
- Professional Support Services
- Teaching/Training

F. FINANCE

- Accounting
- Banking Services
- Business Finance
- Insurance
- Securities & Investments

G. GOVERNMENT & PUBLIC ADMINISTRATION

- Foreign Service
- Governance
- National Security
- Planning
- Public Management & Administration
- Regulation
- Revenue & Taxation

H. HEALTH SCIENCES

- Biotechnology Research & Development
- Diagnostic Services
- Health Informatics
- Support Services
- Therapeutic Services

I. HOSPITALITY & TOURISM

- Lodging
- Recreation, Amusements & Attractions
- Restaurants & Food/Beverage Services
- Travel & Tourism

J. HUMAN SERVICES

- Consumer Services
- Counseling & Mental Health Services
- Early Childhood Development & Services
- Family & Community Services
- Personal Care Services

K. INFORMATION TECHNOLOGY

- Information Support & Services
- Network Systems
- Programming & Software Development
- Web & Digital Communications

L. LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY

- Correction Services
- Emergency & Fire Management Services
- Law Enforcement Services
- Legal Services
- Security & Protective Services

M. MANUFACTURING

- Health, Safety & Environmental Assurance
- Logistics & Inventory Control
- Maintenance, Installation & Repair
- Manufacturing Production Process Dev.
- Production
- Quality Assurance

N. MARKETING

- Marketing Communications
- Marketing Management
- Marketing Research
- Merchandising
- Professional Sales

O. SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS

- Engineering & Technology
- Science & Mathematics

P. TRANSPORTATION, DISTRIBUTION & LOGISTICS

- Facility & Mobile Equipment Maintenance
- Health, Safety & Environmental Management
- Logistics Planning & Management Services
- Sales & Service
- Transportation Operations
- Transportation Systems/Infrastructure
- Planning, Management & Regulation
- Warehousing & Distribution Center Operations

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More information on the Career Clusters® can be found at www.careertech.org.



TSA COMPETITIONS AND THE 16 CAREER CLUSTERS®

Event	Cluster letter	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Animatronics				X						X				X			
Architectural Design		X	X		X		X	X	X	X	X	X		X		X	
Biotechnology Design		X	X						X					X		X	X
Board Game Design			X	X		X					X			X	X	X	X
Chapter Team					X			X					X				
Children's Stories				X		X					X					X	
Coding												X				X	
Computer-Aided Design (CAD), Architecture			X	X								X	X				
Computer-Aided Design (CAD), Engineering			X	X								X	X				
Computer Integrated Manufacturing (CIM)						X			X			X		X		X	X
Cybersecurity		X			X	X	X	X	X	X	X	X	X			X	X
Data Science and Analytics		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Debating Technological Issues									X						X	X	
Digital Video Production				X						X		X				X	
Dragster Design											X						
Engineering Design		X	X	X	X	X	X	X	X	X			X	X	X	X	X
Essays on Technology				X	X												
Extemporaneous Speech				X	X	X		X							X		
Fashion Design and Technology				X										X			
Flight Endurance																X	
Forensic Science													X			X	
Future Technology and Engineering Teacher						X						X					
Geospatial Technology		X	X					X		X			X			X	X
Music Production				X								X			X		
On Demand Video				X								X			X		
Photographic Technology		X		X		X			X	X		X		X	X	X	
Prepared Presentation				X	X			X									
Promotional Design				X							X						
Scientific and Technical Visualization (SciVis)				X								X				X	
Software Development				X								X	X	X		X	X
Structural Design and Engineering			X					X		X			X	X		X	X
System Control Technology														X		X	
Technology Bowl		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Technology Problem Solving		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Transportation Modeling											X						
Video Game Design				X								X					
Webmaster				X								X					

HIGH SCHOOL COMPETITIVE EVENTS

NEW EVENTS

- Cybersecurity
- Data Science and Analytics
- Geospatial Technology

REVISIONS

- Every event's guidelines have been revised in some form, whether in content or in format.
- In addition to specific event guidelines, all advisors and participants must read the General Rules and Regulations in this guide.
- Every two years the specifics of many events are changed, keeping the competitions dynamic!

Animatronics
 Architectural Design
 Biotechnology Design
 Board Game Design
 Chapter Team
 Children's Stories
 Coding
 Computer-Aided Design (CAD), Architecture
 Computer-Aided Design (CAD), Engineering
 Computer Integrated Manufacturing (CIM)
 Cybersecurity
 Data Science and Analytics
 Debating Technological Issues
 Digital Video Production
 Dragster Design
 Engineering Design
 Essays on Technology
 Extemporaneous Speech
 Fashion Design and Technology
 Flight Endurance
 Forensic Science
 Future Technology and Engineering Teacher
 Geospatial Technology
 Music Production
 On Demand Video
 Photographic Technology
 Prepared Presentation
 Promotional Design
 Scientific and Technical Visualization (SciVis)
 Software Development
 Structural Design and Engineering
 System Control Technology
 Technology Bowl
 Technology Problem Solving
 Transportation Modeling
 Video Game Design
 Webmaster

COMPETITIVE EVENTS ELIGIBILITY



2021 & 2022 HIGH SCHOOL COMPETITIONS	ELIGIBILITY
Animatronics	one (1) team per chapter
Architectural Design	one (1) team per chapter; individual entries are permitted
Biotechnology Design	one (1) team per chapter
Board Game Design	one (1) team per chapter
Chapter Team	one (1) team of six (6) members per chapter
Children's Stories	Three (3) teams or three (3) individuals per state
Coding	one (1) team of two (2) individuals per state; individual entries are permitted
Computer-Aided Design (CAD), Architecture	two (2) individuals per state
Computer-Aided Design (CAD), Engineering	two (2) individuals per state
Computer Integrated Manufacturing (CIM)	one (1) team per chapter
Cybersecurity	two (2) teams per chapter
Data Science and Analytics	three (3) teams of two (2) individuals per state; individual entries are permitted
Debating Technological Issues	three (3) teams of two (2) individuals per state
Digital Video Production	three (3) teams or three (3) individuals per state
Dragster Design	two (2) individuals per chapter
Engineering Design	three (3) teams of three (3) or more individuals per state
Essays on Technology	three (3) individuals per state
Extemporaneous Speech	three (3) individuals per state
Fashion Design and Technology	five (5) teams of two to four (2-4) individuals per state
Flight Endurance	two (2) individuals per chapter
Forensic Science	one (1) team of two (2) individuals per chapter
Future Technology and Engineering Teacher	three (3) individuals per chapter
Geospatial Technology	one (1) team of no more than three (3) individuals per chapter
Music Production	three (3) teams per state; individual entries are permitted
On Demand Video	one (1) team per chapter
Photographic Technology	one (1) individual per chapter
Prepared Presentation	three (3) individuals per state
Promotional Design	three (3) individuals per state
Scientific and Technical Visualization (SciVis)	one (1) team per chapter; individual entries are permitted
Software Development	one (1) team per chapter
Structural Design and Engineering	one (1) team of two (2) individuals per chapter
System Control Technology	one (1) team of three (3) individuals per state
Technology Bowl	one (1) team of three (3) individuals per chapter
Technology Problem Solving	one (1) team of two (2) individuals per chapter
Transportation Modeling	one (1) individual per chapter
Video Game Design	five (5) teams per state
Webmaster	one (1) team per chapter



TSA COMPETITIVE EVENTS RATING FORM/RUBRIC

The Technology Student Association (TSA) High School Competitive Events Guide for the 2021 & 2022 National TSA Conferences contains a rating form (rubric) for each competition. Rubrics are embraced by STEM educators because they provide a way to evaluate performance. 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.

GO/NO GO SPECIFICATIONS

- Each competitive event has a Go/No Go Specifications checklist placed at the beginning of the official event rating form/rubric.
- Specifications in the checklist are required and must be met, or the individual or team will not be allowed to compete in the event.
- Refer to each competitive event's official rating form/rubric for details.



OVERVIEW

Animatronics refers to a robotic device that emulates a human or an animal, or brings an inanimate object “to life.” Applying leadership and 21st century skills, teams produce an animatronics device complete with an appropriate display. The animatronics device must use control technology in its performance and fulfill the requirements of the theme to communicate, entertain, inform, demonstrate and/or illustrate a topic, idea, subject, or concept. Sound, lights, and surrounding environment are to accompany the device. The annual design problem is posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

- A. Up to five (5) minutes to set up.
- B. Up to nine (9) minutes for the presentation.
 - 1. The presentation time begins when students present background information about the project and must conclude on or before the nine (9)-minute time limit.
 - 2. Five (5) points will be deducted for every thirty (30) seconds over the time limit.
 - 3. The judges’ interview is not considered part of the presentation time.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the design problem on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants concentrate their efforts on designing an animatronics device that uses control technology.
- C. Participants create a display.

ON-SITE PRESENTATION/INTERVIEW

- A. Participants report to the time and place stated in the conference program to:
 - 1. Check in
 - 2. Sign up for a presentation/interview timeNo animatronics devices are submitted during this time.
- B. Participants report for the presentation/interview at the selected demonstration time with the animatronics device and display. Only three (3) team members are allowed to set up equipment, present the project, and participate in the event-specific interview.
- C. If the manager/coordinator of the event deems it necessary to run the event in heats, then the finalists are determined from each heat.
- D. Judges independently assess the entries.
- E. A list of ten (10) finalist teams is announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. The display may not exceed 15" deep x 3' wide x 4' high. The device may extend beyond the dimensions of the display during the demonstration.
- B. The exterior shell or skin is required. It must be removable in order to show the judges the internal components of the project.
- C. The animatronic device must have at least three (3) separate movements that must include:
 - 1. Fluid power to aid in the movement of the animatronics device. If no fluid power is used, a ten (10)-point deduction will be incurred.
 - 2. Sound, lights, and sensors in the project model.
 - 3. Gearing systems, linkages, and/or cabling systems, etc., to aid in the movement of the device.

- D. Control technology must be used during the performance.
- E. A wet cell battery may not be used in the animatronics device.
- F. The animatronics device may use AC power, but the team will only have access to an AC outlet during the demonstration/presentation.
- G. **Should the device suggest anything that is inappropriate by language, sound, or movement, immediate disqualification will result.**
- H. A team that fails to appear for its demonstration forfeits evaluation.

EVALUATION

- A. The device
- B. The presentation/interview

Refer to the official rating form for more information.

NOTES

Learn more about animatronics by visiting the following:

www.roborobotics.com/Animatronics/Animatronics.html

www.animalmakers.com

www.garnerholt.com

www.dreamation.com/Animatronics.htm

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Amusement park robotics maintenance engineer
- Electronics technician
- Film industry special effects engineer
- Industrial designer
- Toy developer

ANIMATRONICS

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

-
- ☐ Skins/shells are removable
- ☐ Interior skeleton and mechanism are accessible for inspection
- ☐ ENTRY NOT EVALUATED

DEMONSTRATION PRESENTATION (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization and Knowledge (X1)	Team seems unprepared and unorganized for the presentation/interview, with an illogical explanation of the project; team members seem to have little understanding of the concepts in their project; vague interview answers are provided.	Team is prepared for the interview and is somewhat organized in its presentation to judges; team's presentation is somewhat logical and/or clear; team members have a general understanding of the concepts discussed and answer questions adequately.	Team's presentation/interview with judges is well organized; the interview is concise and logical, with a clear explanation of the development of the project; evidence is clear that team members have a thorough understanding of the concepts discussed; they answer questions thoroughly.	
Articulation (X1)	Communication of the design process is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Team Participation (X1)	Only one person in the group communicates with judges; there is little or no participation from other team members.	Team members all participate to some extent and seem to understand the concepts.	Team members seem to fully understand the concepts and share an equal role in the interview.	
DEMONSTRATION INTERVIEW SUBTOTAL (30 points)				

MODEL APPEARANCE (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Creativity, Aesthetics and Artisanry, Originality (X3)	Model lacks creativity; very few or no design principles are integrated in the model; work is unorganized and/or sloppy; model seems to be an afterthought and/or thrown together; model lacks imagination, originality, and artistic detail.	Some elements of creativity are evident, and most essential design principles are included and used somewhat effectively; some layout and design principles are integrated into the model, and aesthetics are adequate; model is somewhat innovative.	Model exudes creativity; essential design principles and elements are integrated; there is exemplary use of layout and design principles; artistic and aesthetic values are incorporated; model is inspiring, inventive, and resourceful.	
MODEL APPEARANCE SUBTOTAL (30 points)				

MODEL FUNCTION (60 points)				Record scores in the column spaces below.
Skin and skeletal function: There is no point value for the skin and skeletal function of the animatronics model. The model's skin must be removable in order to reveal skeletal function and mechanics located beneath the skin. If the skin is not removable then the entry will not be evaluated.				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Sound Inclusion (X1)	There is little or no sound included, or the design suggests that the inclusion of sound was an afterthought to the model.	Sound is included, and it somewhat contributes to the overall function of the model.	The inclusion of sound is creative and effectively contributes to the design and performance of the model.	
Light Inclusion (X1)	Light is minimal, or the design suggests that the inclusion of lights was an afterthought to the model.	Light is included, and it somewhat contributes to the overall function of the model.	The inclusion of a light creatively and effectively contributes to the model's design and performance.	
Sensor Inclusion (X1)	Sensors are included minimally, or the design suggests that the inclusion of sensors was an afterthought to the model.	Sensors are included, and they somewhat contribute to the overall function of the model.	The inclusion of sensors (and the interactivity that sensors allow) in the model is creative and effectively contributes to its design and performance.	
Control Technology (X1)	Little control technology is used during the performance.	Some basic control technology is used during the performance.	Advanced control technology is used during the performance; the model is fully autonomous.	
Fluid Power System Inclusion (X1)	A fluid power system is included, but it functions inadequately or not at all.	A fluid power system is included, and it contributes somewhat to the overall function of the model.	The inclusion of a fluid power system(s) and the fluidity of movement that this system(s) provides in an animatronics model creatively and effectively contribute to the model's design and performance.	
Use of Gears, Linkages, Cabling, etc. (X1)	The use of gears, linkages, cabling, etc. is minimally apparent or improperly incorporated into the model; the team shows little understanding of how to properly use these systems in the model.	Most gears, linkages, cabling systems, etc. are incorporated and used properly in the model; there is evidence of an adequate understanding of the systems.	Efficient and varied use of gears, linkages, cabling systems, etc. is apparent and properly incorporated in the model; there is evidence of a complete understanding of these systems.	
MODEL FUNCTION SUBTOTAL (60 points)				

TIME DEDUCTIONS

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)

Rules violations (a deduction of 20% of the total possible points in the above sections) must be initialed by the judge, 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.

JUDGE

Printed name: _____ Signature: _____

ANIMATRONICS

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistant for check-in, one (1)
- C. Timekeeper, one (1)
- D. Judges, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Results envelope
- B. Tables for presentation
- C. Table and chairs for judges

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough judges/assistants have been scheduled.
- D. 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. At least one (1) hour before the event is scheduled to begin, meet with judges and review the time limits, procedures, regulations, evaluation, and all other details related to the event. If questions arise that cannot be answered, speak to the CRC event manager before the event begins.

CHECK-IN

- A. Check in participants at the time and place stated in the conference program. During check-in, participants only sign up for a presentation time and do not submit their entry.
- B. As participants sign up for a presentation/interview time, notify them that they are to report fifteen (15) minutes prior to their scheduled time.
- C. Late participants and/or entries are considered on a case-by-case basis and only when lateness is caused by events beyond the participant's control.
- D. In order to compete, participants must be on the entry list or must have approval from the CRC.

ON-SITE PRESENTATION/INTERVIEW

- A. Oversee the presentation/interviews.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Judges determine the ten (10) finalists and discuss and break any ties.
- D. Review and submit the finalist results and all related forms in the results envelope to the CRC room.
- E. If necessary, manage security and the removal of materials from the area.

OVERVIEW

Using leadership and 21st century skills, participants develop a set of architectural plans and related materials in response to an annual architectural design challenge and construct a physical, as well as a computer-generated model, to accurately depict their design. Participants must demonstrate an understanding of and aptitude for architectural design, the development of plans, modeling techniques and practice, and the awareness of the role that the built environment can play in human behavior and interactions. The design problem for the current school year will be posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

One (1) team per chapter may participate; individual entries are permitted.

TIME LIMITS

PRELIMINARY ROUND

- A. All components of the chapter's portfolio entry, must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.

SEMIFINAL ROUND

- A. Up to ten (10) minutes is allotted for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants access the annual design challenge found on the [TSA website](#) under Themes and Problems.
- B. Participants prepare their architectural design model.
- C. Participants prepare the documentation portfolio according to the regulations.

- D. The documentation portfolio must be submitted by 11:59 p.m. ET on May 15th.
- E. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. No more than two (2) team members report to the event area at the time and place stated in the conference program to submit the model entry.
- B. A list of twenty-four (24) participants is posted on the first full day of the conference; of these participants, models are judged on-site at the conference to determine the twelve (12) semifinalists.
- C. Models are evaluated by judges. Neither students nor advisors are present at this time.
- D. A list of twelve (12) semifinalists (in random order) are posted.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for a presentation/interview.
- B. Up to two (2) representatives from each semifinalist team report at the assigned time and place to participate in the presentation/interview.
- C. 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.
- D. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE

A. Documentation Portfolio:

1. Documentation materials (comprising a "portfolio") are required and must be submitted as a multi-page PDF document with pages in this order:
 - a. Title page with the event title, the conference city and state, and the year; one (1) page
 - b. Table of contents; pages as needed
 - c. A description of the individual/team's interpretation of the design challenge and an explanation of the style and merits of the design concepts; one (1) page
 - d. List and description of each of the construction systems (any and all that apply) and their incorporation and application to the solution: delivery, construction methods and materials, electrical wiring, plumbing, HVAC, and site requirements; maximum of six (6) pages.
 - e. A public health statement defining the restrictions currently in place in your town/city/county and/or state (or students may define their own scenario if the current one is not conducive to the challenge) must be included; one (1) page
 - f. A schedule of finish materials for all exterior and interior surfaces of the architectural design (this is not a list of the model construction materials); one (1) page
 - g. A complete set of reproduction copies of the original hand drawings and printer/plotter-generated copies of CAD drawings (i-iii below) must be submitted with the model.
 - i. Each drawing should be shown on maximum sheet cut size B (11" x 17"), with the appropriate scale noted on the drawing.
 - ii. A copy of each drawing also must be included.
 - iii. Drawings must be appropriately scaled to fit the PDF format required for submission.

1. Site Plan
2. Overall Floor Plan(s) identifying new vs. existing
3. Enlarged Floor Plans as required to describe design elements
4. Roof Plan (identifying new vs. existing)
5. Exterior Elevations (identifying new vs. existing)
6. Building Section(s)
7. Interior Elevation(s) or Perspective(s)
- h. Plan of Work log (see Forms Appendix); pages as needed
- i. Mentorship Verification form; participants are required to seek the mentorship of an architect or other professional involved with construction and renovation (see Mentorship Verification form); one (1) page
- j. A 3D modeling/rendering drawing of the individual/team's final design with appropriate details included; drawing sheet size B, 11" x 17"; one (1) page. Drawing must be appropriately scaled to fit the PDF format required for submission.
- k. List of resources/references; pages as needed

PRELIMINARY ROUND

A. Model:

1. The architectural model must be placed on a site board, the size of which is posted along with the annual problem each year on the [TSA website](#).
2. Model construction concepts, materials, techniques, and applications:
 - a. Foam core sheet or similar materials are suggested (but not limited to) for use as interior walls, exterior walls, and roof construction.
 - b. Foam core board that is ½" thick or greater is recommended for use as the site board for the model.
 - c. Dowels may be used to represent columns or circular components.

3. Participants should pay close attention to the scale of all materials as they relate to the scale of the model.
4. The model may not include any electrical or battery-powered enhancements.
5. No glass or liquid may be used as part of any model.
6. No additional points will be awarded for superfluous aesthetic additions.

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Appraiser
- Architect
- Construction manager
- Interior designer
- Urban and regional planner

EVALUATION

PRELIMINARY ROUND

- A. The documentation portfolio
- B. The architectural model

SEMIFINAL ROUND

- A. The presentation/interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

HIGH SCHOOL ARCHITECTURAL DESIGN MENTORSHIP VERIFICATION

I certify that I have served as a mentor to the student(s) named below.

Student(s) involved (please print)

Signature of student(s)

Date

TSA chapter advisor (printed name and signature)

Date

Name of mentor (please print)

Occupation (please print)

Employer (please print)

Signature of mentor

Date

Participant/Team ID# _____

ARCHITECTURAL DESIGN

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ PDF of the documentation portfolio was submitted and scored
- ☐ Model is present and submitted on a site board
- ☐ ENTRY NOT EVALUATED

DOCUMENTATION PORTFOLIO (90 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	Portfolio is unorganized and/or is missing three or more components.	Portfolio has most components and is generally organized; it has sufficient content.	All components are included in the portfolio; content and organization are excellent.	
Description of Design Interpretation (X1)	The description of the design and style is unclear or vague.	The description of the design and explanation of the style are included; they are adequately presented.	The description and merits of the design and explanation of the style are clear, effective, and convincing.	
Construction Systems (X1)	There is little or no evidence of attention to the various construction systems.	Most, but not all, construction systems are addressed; they are generally well presented.	All applicable construction systems are addressed, clearly documented, and well presented.	
Schedule of Finish Materials (X1)	Many elements of the interior and exterior finish schedules are missing or incomplete.	Most, but not all, elements of the interior and exterior finish schedules are included.	All interior and exterior finish schedules/materials are detailed and explained clearly.	
Sustainability Statement (X1)	Only a minor attempt has been made to incorporate sustainability into the design.	Some aspects of sustainability are incorporated and documented.	Sustainability was well incorporated and conceptualized in the design, adding to the overall effectiveness.	
Drawings (X2)	A few of the required drawings are present, but they are lacking in quality.	Most, but not all, of the required drawings are included and are in the proper format.	All required drawings are included and in the proper format.	
Resources/References (X1)	There is little or no effort to provide resources and references.	Resources and references included are generally presented appropriately.	There is clear evidence of the appropriate use of applicable resources and references.	
Plan of Work Log (X1)	The Plan of Work log lacks major elements of documentation.	The Plan of Work log is somewhat complete and generally reflects the time and work necessary for the project.	The Plan of Work log completely and accurately reflects the time and work necessary for the project.	
DOCUMENTATION PORTFOLIO SUBTOTAL (90 points)				

DESIGN CHALLENGE (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Effectiveness of Design (X2)	The design is ineffective in meeting the needs of the challenge.	The design is somewhat effective in meeting the needs of the challenge.	The design is clearly effective in meeting the needs of the challenge.	
Access and Flow (X1)	The design reflects an ineffective traffic flow pattern and/or use of space to gain access to the structure.	The design reflects a somewhat effective traffic flow pattern and use of space to access the structure.	The design presents a clear, effective traffic flow pattern and full consideration of the use of space.	
Aesthetic Appeal No additional points will be awarded for superfluous aesthetic additions (X1)	There is little evidence of consideration of aesthetics and curb appeal in the design.	There is some evidence that aesthetics and curb appeal have been considered in the design.	There is clear evidence that aesthetics and curb appeal are fully and effectively integrated into the design.	
Creativity and innovation (X1)	The design lacks originality and exhibits few, if any, creative and/or innovative applications.	Some unique, innovative, and creative concepts are incorporated in the overall design.	Unique, creative, and innovative approaches are fully incorporated into the design.	
DESIGN CHALLENGE SUBTOTAL (50 points)				

MODEL (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Quality of Construction (X2)	Construction is of poor quality and appearance, with little or no attention to neatness.	Construction is somewhat neat and has appropriate quality and appearance.	Construction is of excellent quality and exemplary appearance.	
Use of Materials (X1)	The choice of materials is ineffective and inadequate for the type and scale needed.	There is effective choice of materials and some attention to scale.	There is effective and excellent use of materials and accurate choice of scale.	
Design Representation (X2)	The model is ineffective in depicting the requirements of the design challenge.	The model is somewhat effective in depicting the requirements of the design challenge.	The model clearly and effectively incorporates and depicts all aspects of the design challenge.	
Assembly Plan/Site Board (X2)	The assembly plan and site board are ineffective in portraying the assembly and set-up of the structure on-site.	The assembly plan and site board are somewhat effective in representing most aspects of the assembly and set-up of the structure on-site.	The assembly plan and site board effectively depict all elements of the on-site assembly and set-up.	
MODEL SUBTOTAL (70 points)				

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

PRELIMINARY SUBTOTAL (210 points)	
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SEMIFINAL PRESENTATION/INTERVIEW (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	Participant(s) seems unorganized and unprepared for the presentation/interview.	Participant(s) is/are generally prepared/organized in the overall presentation/interview.	The presentation/interview is logical, well organized, and easy to follow.	
Knowledge (X2)	Participant(s) seems to have little understanding of the concepts of the design challenge; vague answers to interview questions are provided.	An understanding of the concepts of the design challenge, and answers to questions, are adequate.	There is clear evidence of a thorough understanding of the design challenge; questions are answered well.	
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Delivery (X1)	The team/individual is verbose and/or uncertain in the presentation/interview; participant posture, gestures, and lack of eye contact diminish the delivery.	The team/individual is somewhat well-spoken and clear in the presentation/interview; participant posture, gestures, and eye contact result in an acceptable delivery.	The team/individual is well-spoken and distinct in the presentation/interview; participant posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
SEMIFINAL PRESENTATION/INTERVIEW SUBTOTAL (50 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (50 points)				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p>				
TOTAL (260 points)				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

ARCHITECTURAL DESIGN

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistants for check-in, two (2)
- C. Judges:
 - 1. Two (2) or more (documentation)
 - 2. Two (2) or more (models; preferably the same judges who reviewed the documentation)
 - 3. Two (2) or more (semifinal presentation/interview; preferably the same judges who reviewed the documentation)

MATERIALS

- A. Coordinator's packet, containing
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Results envelope
- B. Tables for entries
- C. Tables and chairs for judges

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants by June 10th. The results will be shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designate time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the model entries at the time and place stated in the conference program.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Each entry must include the team's identification number in the upper right-hand corner of the entry.
- F. Instruct participants to position displays for viewing.
- G. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. Judges independently evaluate the entries (top 24 models) to determine the twelve (12) semifinalists.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- D. Create and post a sign-up sheet for semifinalist interviews.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Semifinalists report at the assigned time and place for the presentation/interview.
- C. Manage completion of the on-site presentation/interviews.
- D. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.
- F. Submit the finalist results and all related forms in the results envelope to the CRC room.

OVERVIEW

Applying leadership and 21st century skills, participants conduct research on a contemporary biotechnology based on an annual theme, document their research, and create an effective interactive multimedia display to educate an elementary school audience. The information gathered may be student-performed research or a recreation or simulation of research performed by the scientific community. If appropriate, a model or prototype depicting some aspect of the issue may be included. Semifinalists present and are interviewed about their topic. The topic for the current school year will be posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

- A. Up to ten (10) minutes for the presentation/interview broken down as follows:
 - 1. one (1) minute for set-up
 - 2. seven (7) minutes for the presentation
 - 3. two (2) minutes to respond to questions from judges

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the annual topic found on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants concentrate their efforts researching a selected contemporary biotechnology issue.
- C. Participants prepare their documentation portfolio, interactive display, and multimedia presentation according to the regulations.

PRELIMINARY ROUND

- A. No more than two (2) team members report at the time and place stated in the conference program to set up the display.
- B. Entries are evaluated by the judges with neither students nor advisors present based on the following criteria:
 - 1. Judges score the Display criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four (24) contestants to determine the top twelve (12) semifinalists.
- C. A list of twelve (12) semifinalist teams (in random order) is posted.

SEMIFINAL ROUND

- A. Up to two (2) representatives from each semifinalist team, with their multimedia presentation, report to the event area at the time and place stated in the conference program.
- B. Semifinalists team representatives participate in an on-site presentation/interview that lasts a maximum of ten (10) minutes (see Time Limits).
- C. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Students must understand the fundamental concepts and principles of the contemporary biotechnology topic. Research on a problem within that topic should focus on significant impacts (opportunities and risks) on the environment, economy, and society, as well as any important ethical considerations.

B. Display:

1. The total size of the display may not exceed 15" deep x 3' wide x 4' high, including the portfolio.
2. A model or prototype is optional.
3. Power
 - a. AC electricity may not be used.
 - b. Dry cell or photo-voltaic cells may be used for power, if desired.
 - c. Any power source used must fit within the maximum display area.
4. If operating instructions are necessary, they must be clearly displayed.
5. No harmful or illegal substances, viruses, live plants, or animals may be used as a part of the display. No potentially dangerous processes may be demonstrated or included as part of the display.
6. The display must be presented as if it were in a children's museum that is geared towards educating children in the 5th grade or younger.

C. Documentation Portfolio:

1. Documentation materials (comprising "a portfolio") are required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, the conference city and state, and the year; one (1) page
 - b. Table of contents; pages as needed
 - c. Definition and explanation of the problem; one (1) page
 - d. An explanation of the chosen solution, and other possible solutions and why they were rejected; maximum three (3) pages
 - e. A scenario of possible real-life applications; one (1) page
 - f. Supplementary information such as logs, graphs, sketches, drawings, illustrations, photographs, etc.; maximum four (4) pages
 - g. A print-out of the accompanying multimedia presentation (printed with three [3] slides per page, recommended); pages as needed

- h. Plan of Work log (see Forms Appendix); one (1) page
- i. A minimum of three (3) different types of resources, such as books, interviews, professional journals, websites, magazines, etc. All must be cited using Modern Language Association (MLA) format; pages as needed.
- j. A USB flash drive of the team's multimedia presentation. The USB flash drive and the multimedia presentation become the property of TSA.

SEMIFINAL ROUND

- A. Up to two (2) representatives from each team report at the time and place stated in the conference program with the following computer hardware for the presentation:
 1. a laptop computer
 2. projection equipment is not permitted
 3. power is provided if needed
- B. Representatives may reference their display and documentation during the presentation.
- C. The representatives remove their materials from the event area at the conclusion of the presentation/interview.

EVALUATION

PRELIMINARY ROUND

- A. The interactive display
- B. The portfolio

SEMIFINAL ROUND

- A. The presentation/interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event has connections with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Bioinformatics processor
- Food scientist
- Microbiologist
- Radiographer
- Quality control analyst

BIOTECHNOLOGY DESIGN

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Documentation portfolio is present (both printed and on the flash drive)
- ☐ Display is present
- ☐ ENTRY NOT EVALUATED

DIGITAL DISPLAY (80 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Interactivity (X1)	The display is difficult to understand and interact with, and is presented in an illogical manner; it is not user-friendly.	The display is somewhat organized, but poses some challenges for interaction.	The display is interactive, organized, clear, and user-friendly.	
Explanation of Impacts (X2)	Explanation is missing a description of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation addresses some of the issue's relevance to environmental, economic, social, and/or ethical considerations.	Explanation clearly conveys the issue's relevance to environmental, economic, social, and/or ethical considerations.	
Supporting Information (X1)	Support information does not help to clarify the issue, and/or it is of little significance to the issue.	Support information is somewhat appropriate and helps supplement the solution by providing clarity to the issue.	Support information is highly effective and of excellent quality.	
Communication of Issue (X1)	It is difficult to understand the issue being communicated; an illogical explanation is presented.	The issue is communicated and thoughts are somewhat organized.	The issue is communicated in an organized, clear, and concise manner.	
Communication of Solution (X1)	It is difficult to understand the solution being communicated; an illogical explanation is presented.	The solution is communicated and thoughts are somewhat organized.	The solution is communicated in an organized, clear, and concise manner.	
Creativity (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.	
Aesthetics and Artisanry (X1)	Display is unorganized and sloppy; display seems to be an afterthought or thrown together.	Display is somewhat organized and aesthetically pleasing.	Display is logical, organized, cohesive, and aesthetically pleasing.	
DIGITAL DISPLAY SUBTOTAL (80 points)				

DOCUMENTATION PORTFOLIO (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio (X1)	Portfolio is unorganized and/or missing three (3) or more components.	Portfolio has most components and it is somewhat organized.	Portfolio is missing no components and is clearly well organized.	
Definition and Explanation of Issue (X1)	Definition and explanation of the issue are unclear.	Issue is defined and generally explained.	Clear and concise definition and explanation of the issue are evident.	
Scenario and Research Base (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.	
Support Materials (X1)	Support materials do not help clarify the documentation or are of little significance to the issue.	Support materials are appropriate and somewhat supplement documentation by lending some clarity.	Support materials are of excellent quality; if not original, they are cited; support materials clarify the issue.	
Quality and Effectiveness (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.	
DOCUMENTATION PORTFOLIO SUBTOTAL (50 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
PRELIMINARY SUBTOTAL (130 points)				

SEMIFINAL PRESENTATION/INTERVIEW (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (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.	
Articulation (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Delivery (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.	

SEMIFINAL PRESENTATION/INTERVIEW (60 points) – continued				
Knowledge (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.	
Team Participation (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.	
SEMIFINAL PRESENTATION/INTERVIEW SUBTOTAL (60 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (60 points)				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p> <p>TOTAL (190 points)</p>				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

BIOTECHNOLOGY DESIGN

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistants for check-in, two (2)
- C. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Results envelope
- B. Tape measure for judges
- C. Stopwatch
- D. Display tables for entries (minimum width 18")
- E. Table and chairs for judges and two (2) semifinalist team representatives
- F. A 50' extension cord AND a power strip (for semifinalist interviews)

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time and place stated in the conference program.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Each entry must include the team's identification number in the upper right-hand corner of the entry.
- F. Instruct participants to position displays for viewing.
- G. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. Judges independently assess the entries:
 - 1. The initial round of judging scores the interactive display entries to determine the top twenty-four (24) participants.
 - 2. The second round of judging scores the portfolios of the twenty-four (24) identified participants based on the initial round of judging to determine the twelve (12) semifinalists.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

- C. Judges determine the twelve (12) semifinalists.
- D. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- E. Create and post a sign-up sheet.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign-up for a presentation/interview time.
- B. Semifinalists report at the assigned time and place for the presentation/interview.
- C. Manage the semifinalist presentations/interviews.
- D. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.
- F. Submit the finalist results and all related forms in the results envelope to the CRC room.
- G. If necessary, manage security and the removal of materials from the event area.

BOARD GAME DESIGN



OVERVIEW

Applying leadership and 21st century skills, participants develop, build, and package a board game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing, and intellectually challenging. Each team designs the packaging, instructions, pieces, and/or cards associated with creating and piloting a new board game. Semifinalists set up the game, demonstrate how the game is played, explain the game's features, and discuss the design process.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

SEMIFINAL ROUND

- A. Up to five (5) minutes to set up the game and five (5) minutes to repackage the game.
- B. Up to ten (10) minutes for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants design and create the game entry, including the physical packaging. All components must be designed, engineered, created, and assembled together solely by the team.
- B. Participants create a documentation portfolio to record the process.

PRELIMINARY ROUND

- A. No more than two (2) team members report at the time and place stated in the conference program to submit the:
 - 1. completed Board Game entry
 - 2. documentation portfolio

B. Entries are evaluated by the judges with neither students nor advisors present based on the following criteria:

- 1. Judges score the Packaging and Board Game criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
- 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.

C. A list of twelve (12) semifinalist teams (in random order) is posted.

SEMIFINAL ROUND

- A. Semifinalist teams report at the time and place stated in the conference program to sign up for an interview time.
- B. Semifinalist teams report at the assigned time and place for the interview.
- C. Semifinalist teams may be represented by no more than two (2) members.
- D. Semifinalist teams answer questions about the documentation, the game's purpose, value, design, rules, and the development process.
- E. Judges independently assess the entries.
- F. The top ten (10) finalists are announced during the awards ceremony.
- 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.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Participants design, create and package an entirely original board game including all parts, pieces and/or cards needed to play the game as well as accompanying instructions.
- B. No identifying information other than a team identification number is to appear anywhere on the portfolio and board game.
- C. Board Game:
 - 1. The physical board game should be of high quality and designed for the intended age group.
 - 2. The packaged game must be no larger than 12" x 18" x 3".
 - a. The game must be designed, engineered, created, and packaged solely by the team.
 - b. The materials used in packaging and manufacturing the game are to be determined by the team.
 - 3. Game Instructions:
 - a. must be clear, understandable, and age-appropriate
 - b. must be included in both the packaged game and in the documentation portfolio
 - c. must explain the rules in explicit detail
 - d. The team must determine which format best presents the game's instructions.
 - 4. The game must be able to be set up within five (5) minutes of opening the package.
 - 5. Once evaluation of the game is complete, a player (judge) must be able to repack it within five (5) minutes.
 - 6. The game must include original work of the team. Work that is not created by the team must have proper documentation, showing copyright permissions and/or license for usage in the game segment.

D. Documentation Portfolio:

- 1. Documentation materials (comprising "a portfolio") are required and must be submitted as a multi-page PDF document with pages in this order:
 - a. Title page with the name of the board game, the event title, the conference city and state, the year; and the team identification number; one (1) page
 - b. Table of Contents; one (1) page
 - c. Overview of the game; one (1) page
 - d. Intended audience (age range and number of players) and a game description/reasoning behind the choice of audience; one (1) page
 - e. Game Instructions; pages as needed
 - f. Description of the processes used to create the game and components; two (2) pages
 - g. Engineered drawings of parts/game/packaging; pages as needed
 - h. Cost summary for created game; one (1) page
 - i. Plan of Work Log (see Forms Appendix); pages as needed
 - j. Student Copyright Checklist (see Forms Appendix); pages as needed
 - k. References/research sources; one (1) page
- 2. The USB flash drive and its contents become the property of TSA for communication purposes only. Publishing rights remain with the authors and illustrators.

SEMIFINAL ROUND

- A. Two to three (2-3) members of each semifinalist team report to the event area at the time and place stated in the conference program.
- B. Team members demonstrate set-up and playing of the game, and explain the game's features.
- C. Teams participate in an interview lasting no more than ten (10) minutes following the game's demonstration.

EVALUATION

PRELIMINARY ROUND

- A. The game and packaging
- B. The portfolio

SEMIFINAL ROUND

- A. The demonstration
- B. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event has connections with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Product/packaging design
- Board game designer
- Electronic game designer
- Electronic game technician
- Technical writer

BOARD GAME DESIGN

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ USB documentatin portfolio is present
- ☐ Packaged board game is present
- ☐ ENTRY NOT EVALUATED

PACKAGING (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Appearance (X1)	Three (3) or more elements of the packaging look unfinished, are not aesthetically appealing, and are not retail ready.	One to two (1-2) elements of the packaging look unfinished, are not aesthetically appealing, and are not retail ready.	Packaging appearance is retail ready and aesthetically pleasing.	
Functionality/ Durability (X1)	Packaging is missing three (3) or more necessary components for game play, and/or one to five (1-5) necessary parts are not reusable or sturdy.	Packaging is missing one to two (1-2) necessary components for game play, and/or one to two (1-2) necessary parts are not reusable or sturdy.	Packaging is reusable and meets all needs for the game; construction of the packaging is complete and sturdy.	
Incorporation of Rules (X1)	Rules of the game are not integrated as part of the packaging, and/or the rules are lacking in durability and quality.	Rules of the game are not fully integrated as part of the packaging design; rules are adequate in durability and quality.	Rules are an integrated part of the packaging and are of exceptional durability and quality.	
PACKAGING SUBTOTAL (30 points)				

BOARD GAME (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Appearance (X1)	Three (3) or more elements of the game look unfinished; game is not aesthetically appealing or retail ready.	One to two (1-2) elements of the game look unfinished; game is adequately aesthetically appealing and retail ready.	Game looks finished, is aesthetically appealing, and is retail ready.	
Functionality/ Durability (X1)	Game is missing three (3) or more necessary components for game play, and/or one to five (1-5) necessary parts are not reusable or sturdy.	Game is missing one to two (1-2) necessary components for game play, and/or one to two (1-2) necessary parts are not reusable or sturdy.	Game has all necessary components for game play, and game pieces are all reusable and sturdy.	

BOARD GAME (30 points) – continued				
Game Set-Up (X1)	Total game set-up time is over five (5) minutes, and/or game set-up and/or take down is longer than five (5) minutes.	Total game set-up time is exactly (5) minutes, and/or game set-up and/or take down is exactly (5) minutes.	Total game set-up and total game take down are under five (5) minutes.	
BOARD GAME SUBTOTAL (30 points)				

DOCUMENTATION PORTFOLIO (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	Portfolio is unorganized and/or missing three (3) or more components.	Portfolio is organized adequately, with most, if not all, components present.	No components are missing in the portfolio, and content and organization are clearly evident.	
Overview of the Game (X1)	The overview and purpose of the game are unclear.	The overview and purpose of the game are generally clear.	The overview clearly explains the purpose of the game and how the game is played.	
Intended Audience (X1)	The intended audience and reasoning behind the game are not clear and/or are poorly supported.	The intended audience and reasoning behind the game are clear and generally supported.	The intended audience is clearly expressed and reasoning behind game play is well supported.	
Game Instructions (X1)	The instructions for the game are not clear for the intended age range.	The instructions for the game are generally clear for the intended age range.	The instructions for the game are clearly understandable for the age range intended.	
Description of Processes (X1)	The processes used to create the game are not clearly described and/or are missing four (4) or more aspects of the creation of the game.	The description for the creation of the game and the aspects of the game creation are generally clear.	The processes used to create the game are clearly described and explain all aspects of the game creation.	
Engineering Drawings (X1)	Four (4) or more engineered drawings for all parts, game boards, and packaging are missing and/or are of poor quality.	One to three (1-3) engineered drawings for all parts, game boards, and packaging are missing or are of adequate quality.	Engineered drawings for all parts, game boards, and packaging are present and are of excellent quality.	
Cost Summary (X1)	Cost breakdown for the game is missing or two (2) or more of the following categories are incomplete: quantity of materials used, cost of materials, and/or total cost of the project.	Cost breakdown for the game is present and generally clear with minor information missing for the following categories: quantity of materials used, cost of materials, and/or total cost of the project.	Complete cost breakdown for the game, including the quantity of the materials used, cost of the materials, and total cost of the project are present, complete, and clearly identified.	
DOCUMENTATION PORTFOLIO SUBTOTAL (70 points)				

<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>	
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PRELIMINARY SUBTOTAL (130 points)	
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SEMIFINAL DEMONSTRATION/INTERVIEW (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Theme of Game and Age of the Audience (X1)	The theme of the game is not addressed and/or was unclear; the intended age range of the game is not addressed and the description of the audience was not appropriate.	The theme of the game is adequately addressed; the intended age range of the game is addressed but one to three (1-3) elements of the description did not match the game.	The theme of the game is clearly expressed and easily interpreted; the age range of the intended audience is clearly addressed and the description of the audience matched the game.	
Presentation of Rules and Demonstration of Game Play (X1)	Rules are confusing and difficult for the audience to understand; more than five (5) questions clarifying the rules are asked in order to start the game play; game play is confusing and unorganized; how players win or lose is not addressed.	Rules are somewhat clear for the audience to understand; game play requires less than four (4) questions to clarify the rules; game play is somewhat confusing but organized; how players win or lose is somewhat addressed.	Rules are clearly explained and game play is easily started after presentation of rules, with no clarifying questions needed; various scenarios of the game are addressed and explained; how players win or lose is clearly explained.	
Engagement and Participation (X1)	The team must be prompted to provide answers and information; a clear team leader dominates the interview, while other team members are unresponsive.	Team members generally answer questions with responses of acceptable length and depth; most team members participate adequately in the interview and engage the judges when answering questions.	All team members contribute in the interview; while there may be a clear team leader, all members provide appropriate substantive material to the conversation; the team engages the judges in the interview, which becomes less of a question and answer session and more of a conversation about the topic and solution.	
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
SEMIFINAL DEMONSTRATION/INTERVIEW SUBTOTAL (40 points)				
<p>Rules violations (a deduction of 20% of the total possible points in the semifinalist sections above) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (40 points)				
<p>To arrive at the TOTAL score, add the PRELIMINARY SUBTOTAL and the SEMIFINAL SUBTOTAL.</p> <p>TOTAL (170 points)</p>				

Comments:

I certify these results to be true and accurate to the best of my knowledge.
JUDGE
Printed name: _____ Signature: _____

BOARD GAME DESIGN

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal Round, two (2) or more
- C. Assistants for check-in, one (1)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for identifying entries
 - 5. Results envelope with coordinator forms
- B. Stopwatch
- C. Display tables for entries (minimum width 18")
- D. Tables and chairs for event coordinator, semifinalist judges, and participants

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time stated in the conference program.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Each entry must include the team's identification number in the upper right-hand corner of the entry.
- F. Instruct participants to position the entries for viewing.
- G. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. Judges independently assess the entries using the following procedure:
 - 1. Judges score the Packaging and Board Game criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- D. Create semifinalist sign-up sheet for the demonstration/interview.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign-up for a demonstration/ interview.
- B. Semifinalists report at the assigned time and place stated in the conference program for the demonstration/interview.
- C. Manage semifinalist presentations/interviews.
- D. Judges should be sure to ask questions.
- E. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- F. Judges determine the ten (10) finalists and discuss and break any ties.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.
- H. If necessary, manage security and the removal of materials from the event area.

CHAPTER TEAM



OVERVIEW

Applying leadership and or 21st century skills participants take a parliamentary procedures test in order to qualify for the semifinals. Semifinalist teams are challenged to complete an opening ceremony, items of business, parliamentary actions, and a closing ceremony within a specified time period.

ELIGIBILITY

- A. One (1) team of six (6) members per chapter may participate.
- B. Team members do not have to be elected officers of the local chapter.
- C. Team members who take the test and advance to the semifinalist portion of the event must be the same six (6) members.

TIME LIMITS

PRELIMINARY ROUND

- A. One (1) hour to complete a parliamentary procedures test.

SEMIFINAL ROUND

- A. Fifteen (15) minutes with no penalty, and up to seventeen (17) minutes with penalty (see Time over chart) to complete required parliamentary actions, items of business, set-up time, and a presentation.
- B. The time begins when the team is handed the event materials; 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 may then be taken to another room to complete the minutes).
- C. The secretary has five (5) additional minutes to complete the minutes of the meeting.

- D. Teams are penalized five (5) points per thirty (30) seconds for going over the allotted time, based on the following scale:

<u>Time over fifteen (15) minutes</u>	<u>Penalty</u>
15:01 to 15:30	five (5) points per evaluator
15:31 to 16:00	ten (10) points per evaluator
16:01 to 16:30	fifteen (15) points per evaluator
16:31 to 17:00	twenty (20) points per evaluator

ATTIRE

TSA competition attire, with additional requirements that apply for the Chapter Team event, is required. Refer to the National TSA Dress Code section of this guide or the [TSA website](#).

PROCEDURE

PRELIMINARY ROUND

- A. Participants report for the test at the time and place stated in the conference program for the parliamentary procedures test.
- B. A 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.

SEMIFINAL ROUND

- A. Semifinalist teams report for oral presentations at the time and place stated in the conference program.
- B. Each team follows the procedure for opening and closing a local chapter meeting.
- C. Using knowledge of parliamentary procedures, each team follows an order of business to dispose of five (5) given officer-specific parliamentary actions provided by the event coordinator and then closes the meeting according to the prescribed procedure.
- D. There is a possibility for three (3) additional actions to be demonstrated for bonus points. If the actions are demonstrated correctly, then bonus points are awarded.
- E. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Teams consist of a president, vice president, secretary, treasurer, reporter, and sergeant-at-arms.
- B. Team members take the test individually. These same six (6) team members compete in the semifinalist portion of the event, should the team qualify. Note: Failure to correctly complete the scantron will result in a test score of zero.

SEMIFINAL ROUND

- A. Meeting Set-up:
 1. Officer symbols and a gavel 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.
 2. The president's rostrum should be centered between the two (2) flags.
 3. The symbols of the officers should be placed in front of the respective officers.
 4. The host state banners are optional and do not add to or subtract from a team's scores.
- B. Teams demonstrate a call to order, pledge to the flag, roll call, order of business, and closing ceremony.
 1. Written materials, other than those provided by national TSA, may not be taken to the event room.
 2. A set of secretary's minutes, a treasurer's report, a copy of the TSA creed, and a list of five (5) officer-specific parliamentary actions are provided by the event coordinator when the team members enter the performance room.
 - a. For the parliamentary actions, the list identifies the five (5) officer-specific actions of parliamentary procedure.

Examples of office-specific parliamentary actions include:

- i. President: Putting the Question and Announcing the Vote
- ii. Vice President: Amend
- iii. Treasurer: Divide the Question
- iv. Secretary: Take from the Table
- v. Reporter: Postpone Indefinitely
- vi. Sergeant-at-Arms: Suspend the Rules
- b. Bonus points are awarded for additional motions and parliamentary actions by the officers, other than the president.
3. The event coordinator also supplies each team with paper, six (6) pens, a calculator, and six (6) 3" x 5" notecards.
4. A timepiece may be used by the team, if desired.
 - a. Official timing begins as soon as the parliamentary actions are provided and stop at the team's final gavel to end the meeting.
 - b. Five (5) points will be deducted for every thirty (30)-second interval over the allotted time (see Time Limits).
5. 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 members.
6. No reference should be made to a team's school, chapter name, city, or state.
7. The state name on a TSA patch is acceptable.
- C. At the conclusion of the oral presentation, each team secretary has five (5) minutes to write a copy of chapter minutes that are submitted to a judge. The coordinator begins timing the five (5) minutes when the secretary is seated at the area designated for the writing of the minutes.
- D. All materials given to team members, as well as the chapter minutes and a completed treasurer's report, must be handed to the judges before the team leaves the room.

- E. Any semifinalist 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 judges and event coordinator if time permits.

EVALUATION

PRELIMINARY ROUND

- A. Each team's average test score.

SEMIFINAL ROUND

- A. The demonstration of a chapter business meeting.

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.

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

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

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

CHAPTER TEAM OFFICIAL MINUTES

Team ID number _____

Date _____

Location of conference _____

Use the back of this page, if necessary.

Secretary's signature _____ Date _____

CHAPTER TEAM TREASURER'S REPORT

Team ID number _____

Date _____

Location of conference _____

Balance as of _____ \$ _____

Receipts:

Total receipts \$ _____

Expenditures:

Total expenses \$ _____

Balance as of _____, 2021 \$ _____

Submitted by _____

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 the following 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) Will the meeting 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 gavel 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 using a 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 previous 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.
5. The chairperson calls for committee and officer reports, as necessary. If a committee has no report, it should 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

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ ENTRY NOT EVALUATED

TEAM 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 right.

#1	#2	#3	#4	#5	#6

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 judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

TEAM TEST SUBTOTAL (10 points)

BUSINESS MEETING DEMONSTRATION (190 points)

CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
PREPARATION FOR MEETING (30 points)			
Official Attire/Poise (X2)	Appearance is untidy; grooming is lacking; clothing is not consistent in coloration and visual appearance; shoes are the wrong color; poise and confidence are missing.	Overall appearance is neat and consistent; grooming is good, and professional appearance is adequate.	Overall appearance is cohesive, polished, and businesslike.
Placement of Flags and Officer Symbols; Officer Seating (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 sloppy 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 officer symbols are in proper order, but some are misaligned; and/or officers are seated properly, but some 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.

Record scores
in the column
spaces below.

BUSINESS MEETING DEMONSTRATION (190 points) – continued				
KNOWLEDGE OF TSA (20 points)				
Opening Ceremony (X1)	Many items of sequence and order are incorrect and 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; the opening ceremony progresses as it should.	
Closing Ceremony (X1)	Officers make several mistakes; creed recitation is sloppy, and the overall 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 highly polished.	
KNOWLEDGE OF PARLIAMENTARY PROCEDURE (140 points)				
Voting Procedures (X1)	Several obvious mistakes are made in voting procedures.	Few mistakes are made in voting procedures.	All voting procedures are correct, smooth, and efficient.	
Debate (exclude president) (X3)	Only a few officers participate effectively in the debate, which is loosely presented.	Most officers participate in the debate process and are somewhat convincing.	All officers participate in and present a highly cohesive debate.	
Parliamentary Actions (X5)	Only one (1) of the required actions is completed correctly.	At least two (2) of the actions are completed correctly, with adequate effort.	All five (5) actions are completed correctly, with notable and inspiring effort.	
Communication (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); leadership and/or 21 st century skills are not evident.	Communication is generally clear, with appropriate volume of voices and only minor problems with articulation or verbal expression; leadership and/or 21 st century skills are somewhat evident.	Communication is clear, concise, and easy to understand; voices are well modulated, and speakers are articulate; leadership and/or 21 st century skills are clearly evident.	
Treasurer's Report (X1)	The report is incorrect or not complete; math and spelling errors are evident.	The report generally is correct and complete, with few math and/or spelling errors.	The report is correct and complete, with no math or spelling errors.	
Chapter Minutes (X2)	The format of the minutes is incorrect or not complete; grammar and spelling errors are evident.	The format of the minutes is generally correct and complete, with few grammar and/or spelling errors.	The minutes are formatted correctly, are complete, and have no grammar or spelling errors.	
BUSINESS MEETING DEMONSTRATION SUBTOTAL (190 points)				

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

Indicate the rule violated: _____

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 SEMIFINAL SUBTOTAL score, add the BUSINESS MEETING DEMONSTRATION SUBTOTAL to BONUS points and subtract rules violation points, as necessary.

SEMIFINAL SUBTOTAL (190 points)

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

TOTAL (200 points)

BONUS (20 POSSIBLE POINTS)

For Additional Motions and Parliamentary Actions

(by officers other
than the president)
(X2)

One (1) additional action is
completed correctly.

Two (2) additional actions are
completed correctly.

Three (3) additional actions are
completed correctly.

Comments:

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

JUDGE

Printed name: _____ Signature: _____

OVERVIEW

Applying leadership and 21st century skills, participants create an illustrated children's story of high artistic, instructional, and social value. The narrative may be written in prose or poetry and take the form of a fable, adventure story, or other structure. The physical story book should be of high quality, designed to meet the year's given theme, which will be posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

Three (3) teams or three (3) individuals per state may participate.

TIME LIMITS

SEMIFINAL ROUND

- A. Twelve (12) minutes per team are allotted to read the story and share the illustrations with judges.
- B. Five (5) minutes are allotted for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the annual design challenge found on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants concentrate their efforts researching children's books and literature, particularly the creation of storybooks similar to the annual design challenge (e.g., pop-ups, interactive books, etc.).
- C. Participants develop a high-quality children's storybook with illustrations.
- D. Participants record their design process in a documentation portfolio.
- E. Participants "field test" their storybook and document outcomes and findings.

PRELIMINARY ROUND

- A. No more than two (2) team representatives report to the time and place stated in the conference program to submit:
 - 1. The storybook
 - 2. A hard copy of the portfolio
- B. Entries are reviewed by judges with neither students nor advisors present.
 - 1. Judges score the Storybook criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.
- C. A list of twelve (12) semifinalist teams (in random order) is posted.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for a reading and interview time.
- B. Participants report at the assigned time and place for the reading and interview.
- C. If applicable, teams are represented by no more than two (2) members:
 - 1. One member is the team's reader, who reads the story to the judges.
 - 2. Both members participate in the interview process following the reading of the story, which lasts up to five (5) minutes.
- D. 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.
- E. Ten (10) finalists are announced during the conference award ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE/PRELIMINARY ROUND

A. Storybook:

1. Participants design and create an entirely original storybook, complete with narrative and illustrations to meet the annual design challenge.
2. The physical storybook should be of high quality, designed to meet the age group for which it is intended. For the purposes of this event, children are defined as those twelve (12) years or younger.
3. Together with the storybook, the narrative and accompanying illustrations should result in an experience that delights, enlightens, and contributes to the wholesome development of a child.
4. The storybook and narrative with accompanying illustrations should take between five (5) and ten (10) minutes to read and view.
5. The maximum reading time is twelve (12) minutes, and no minimum.
6. The physical storybook must not exceed 12" x 12" when closed.
7. There is no limit on the number of inside pages (may be one or two-sided).
8. The team must determine which format best presents the team's narrative and illustrations.
9. There must be a minimum of seven (7) illustrations that enhance the story and deepen the child's understanding and enjoyment of the reading experience.
- a. An illustration on the book's cover may count as one (1) of the required seven (7) illustrations.
- b. The team may use the cover illustration within the story as well.
- c. All illustrations **MUST** be original, freehand, and/or computer-generated drawings made by the team member(s).
- d. All computer-generated work **MUST** be developed from primitive lines and shapes and be the sole work of the team members.
- e. Physical or computer templates, previously existing drawings, characters, backgrounds, etc., are **NOT PERMITTED**.
10. The storybook may include the name of the author(s) and illustrator(s) on the cover and is exempt from the general rule that no identifying information may be used.
11. Copyrighted material is **NOT PERMITTED**.
12. All components, including the physical binding, must be the original work of the team members. No professional binding is allowed.
13. If narrative or illustrations appear in the story and they are not authored by one of the team members, the team is disqualified.
14. Photographic verification of the book construction process must be included in the portfolio.
15. The story must be no more than fifteen hundred (1500) words.
 - a. There is a five (5)-point deduction for every hundred (100) words over the fifteen hundred (1500) word limit.
 - b. Stories containing two thousand (2000) or more words is disqualified.
 - c. There is no minimum number of words required.
16. Publishing rights remain with the authors and illustrators.

B. Documentation Portfolio:

1. Documentation materials (comprising “a portfolio”) are required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the title of the story, the event title, the conference city and state, the year, and the team/individual chapter ID number; one (1) page
 - b. Table of contents; pages as needed
 - c. Purpose of story; one (1) page
 - i. Story's intent
 - ii. Summary of storyline and theme
 - iii. Intended audience (age, gender, demographics, and special disabilities, if any)
 - iv. Word count – Number of words comprising the story's narrative
 - d. Photographic verification of book construction and binding; pages as needed
 - e. Plan of Work log (see Forms Appendix); pages as needed
 - i. The Plan of Work log must include a summary of the storybook's assessment during a “field test” with a group of children within the age group specified in the annual challenge.
 - ii. A “field test” is a reading of the storybook to a group of children in the intended target age range, similar to the process outlined in the semifinal round.
 - iii. Participants must document each field test and record outcomes and findings; pages as needed.
 - iv. A minimum of two (2) “field tests” must be conducted.
 - v. Each “field test” must be signed off by the chapter advisor.
 - f. Research summary: A written summary of the research, writing strategies, problems encountered, and solutions developed in the writing and illustrating of the story; one (1) page.
 - g. Project summary: A written summary of the research into the creation of storybooks similar to the annual design challenge (e.g. paper folding, interactive features in books). The summary must include the process and challenges the team encountered and the solutions developed in overcoming them; one (1) page.
 - h. A list of tools, software (if any), and techniques used in the creation of the physical storybook and illustrations, not to exceed one (1) page.
 - i. References/research sources; one (1) page.

SEMIFINAL ROUND

- A. Two (2) members of each semifinalist team report for a reading and interview time.
- B. The team's reader is given up to twelve (12) minutes to read the story to the judges.
- C. The other team member must be prepared to discuss illustrations included in the story.

EVALUATION

PRELIMINARY ROUND

- A. The physical storybook
- B. The portfolio

SEMIFINAL ROUND

- A. The reading
- B. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

Depending upon the subject written about, this event may align with one or more STEM (Science, Technology, Engineering, and Mathematics) educational standards. Please refer to the STEM Integration section of this guide for more information.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

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

CHILDREN'S STORIES

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

-
- ☐ Documentation portfolio is present
 - ☐ Storybook is present
 - ☐ The story is no more than 1,999 words (verified in documentation)
 - ☐ ENTRY NOT EVALUATED

STORYBOOK (130 points)				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Story Narrative (X3)	Narrative is poorly written; there is little apparent purpose; it is lacking a coherent theme and storyline.	Narrative's purpose is somewhat clear, with a focused theme and storyline; pacing and the development of characters and events is somewhat paced, but has room for improvement.	Narrative is extremely well written with a clear purpose; storyline is fast paced and exciting; the details are rich and enchanting.	
Illustrations (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 some technical skill; illustrations add some value to the story's narrative, storyline, and theme.	Artisanship of illustrations is excellent, reflecting sophisticated technical skills; illustrations enhance the story's narrative, storyline, and theme, and they are of high esthetic quality.	
Book Construction and Concept (X3)	Book construction demonstrates little or no creativity or innovation; minimal consideration is given to basic design principles and book construction; book is poorly constructed or is not bound.	Construction of the book is of good quality and demonstrates some degree of creativity and innovation; demonstrates an understanding of basic design principles; adequate choice of materials was used in its construction.	Book is designed with attention to detail; construction is of high quality and demonstrates a thorough understanding of design principles; an excellent choice of materials was used in the construction of the book.	
Impact (X3)	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 somewhat 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.	
Theme (X1)	The annual theme is not addressed.	The annual theme is somewhat addressed but doesn't contribute to the effectiveness of the overall design.	The annual theme is addressed and contributes to the effectiveness of the overall design.	
STORYBOOK SUBTOTAL (130 points)				

Record scores in the column spaces below.

Story length violation: For stories exceeding 1,500 words, a deduction of 5 points will be incurred for every 100 words more than 1,500 up to 2,000. 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.

DOCUMENTATION PORTFOLIO (80 points)

CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Portfolio Components (X1)	Portfolio is unorganized and/or is missing three (3) or more components.	Portfolio is missing one (1) or two (2) components and/or is loosely organized.	Portfolio has all required components and is well organized.
Photographic Verification (X1)	Photographic verification is very unorganized or is missing.	Photographic verification is somewhat disorganized and is missing a few components; the process is somewhat outlined.	Photographic verification has all components and is well organized; the process is clearly outlined.
Purpose of Story (X1)	Story's intent, storyline, and theme are poorly explained and/or the intended audience is not identified.	Story's intent, storyline, theme, and intended audience are adequately explained.	Story's intent, storyline, theme, and intended audience are complete and well explained.
Plan of Work Log (X1)	Log is poorly organized and/or incomplete.	Log is adequately detailed and organized and contains most of 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.
Professional and Technical Information (X2)	Summary of the research, design, and writing process is poorly done and/or is incomplete.	Summary of the research, design, and writing process is somewhat clear and generally complete.	Summary of the research, design, and writing process is very well written, detailed, clear, and complete.
Research Base (X2)	There are few references listed, and/or the references listed show little relevance to the project's goal, or are not credible.	There are a sufficient number of references listed and the research base has some credible references.	Many quality references are listed, reflecting research in writing and illustrating for children, and in child development.

DOCUMENTATION PORTFOLIO SUBTOTAL (80 points)

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

Indicate the rule violated: _____

PRELIMINARY SUBTOTAL (210 points)

Record scores in the column spaces below.

SEMIFINAL READING AND INTERVIEW (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Storybook Reading (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 mostly well-paced and enthusiastic; sufficient time is given for reflection on the illustrations.	The story's reading is exemplary; the reading is clear, well paced, and enthusiastic; sufficient time is given to reflect upon and appreciate the illustrations.	
Knowledge (X1)	Participants seem to have 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 their project.	
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
SEMIFINAL READING AND INTERVIEW SUBTOTAL (30 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (30 points)				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p>				
TOTAL (240 points)				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

CHILDREN'S STORIES

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more
- C. Assistants for check-in, two (2)

MATERIALS

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

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is scheduled to begin, meet with the judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time stated in the conference program.
- B. Participants check in:
 - 1. The storybook
 - 2. A hard copy of the portfolio
- C. Each entry must include the participant's identification number in the upper right-hand corner of the entry.
- D. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- E. In order to compete, participants must be on the entry list or must have approval of the CRC.
- F. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- G. Position the entries for evaluation and viewing.
- H. Secure the entries in the designated area

PRELIMINARY ROUND

- A. Judges independently assess the entries using the following procedure:
 - 1. Judges score the Storybook criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four (24) contestants to determine the top twelve (12) semifinalist teams.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must all initial either of these on the rating form.
- C. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- D. Create semifinalist sign-up sheet for the interviews.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign-up for the reading and interview.
- B. Semifinalists report at the assigned time and place for the reading and interview.
- C. Manage the semifinalist readings and interviews.
- D. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.
- F. Submit the finalist results and all related forms in the results envelope to the CRC room.
- G. If necessary, manage security and the removal of materials from the event area.

OVERVIEW

Applying leadership and 21st century skills, participants respond to an annual coding-related design challenge by developing a software program that will accurately address an onsite problem in a specified, limited amount of time. Specific elements to be used, such as the programming language, operating system, or application programming interface (API), will be released onsite. Every effort will be made to support a wide variety of programming languages, and the specific languages, which will be posted on the [TSA website](#) under Competitions/Themes and Problems. Completed solutions are objectively measured to determine the best and most effective solution for the stated problem.

ELIGIBILITY

One (1) team of two (2) individuals per chapter may participate; individual entries are permitted.

TIME LIMITS

- A. Up to two (2) hours is allowed for the design and construction of the solution.
- B. Performance Time: Due to space limitations, judging may occur in rounds.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

- A. Participants bring their own computer systems to the event area at the time and place stated in the conference program.
- B. Participants are given a problem, evaluation criteria, materials, and allotted two (2) hours for the design and construction of the solution.
- C. Each solution is tested and presented to the judges as soon as possible after the coding phase is completed.
- D. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. The specific languages permitted in the on-site competition are posted each year on the [TSA website](#) under Competitions/Themes and Problems.
- B. All work must be completed in the event area during the time specified for the event.
- C. Individual participants, or each team, must bring
 - 1. one (1) laptop or other device (ex: Microsoft Surface Pro), capable of networking via Wi-Fi, and running solely on battery power for up to two (2) consecutive hours
 - 2. one (1) spare battery
 - 3. pencils and paper
- D. External keyboards, monitors, and mice are not permitted.
- E. Printed reference materials are not allowed.
- F. Participants do NOT have access to the Internet during the event.
- G. Participants do NOT have access to electrical power/ outlets during the event.
- H. Participants must have all software development tools needed for the competition downloaded and accessible on their laptop or other device.
- I. Participants may only use the permissible programming language's standard library during the on-site competition. No third-party libraries may be used.
- J. Participants are presented with a series of coding problems that must be completed on-site at the conference.
- K. All solutions must be tested, demonstrated, and presented by participants in front of the judges exclusively through electronic submission and evaluation.

EVALUATION

- A. The successful completion of the problems and the time in which it takes individuals or teams to complete all the challenges.
- B. A finite measure is defined in the problem and is used to determine the best solution.
 1. Second-best attempts or other objective criteria are used to break ties when possible.
 2. Only as a last resort is subjective criteria, such as originality, used to evaluate solutions.

Refer to the official rating form for more information.

RESOURCES

The USA Computing Olympiad website and the ACM-ICPC International website are helpful resources for the Coding event. Additional resources that can be used to prepare for the event are listed below:

icpc.baylor.edu/compete/preparation

www.codechef.com

www.usaco.org/index.php?page=contests

blog.hackerearth.com/2013/09/competitive-programming-getting-started_11.html

www.quora.com/What-is-the-best-strategy-to-improve-my-skills-in-competitive-programming-in-2-3-months

STEM INTEGRATION

Depending upon the subject of the problem, this event may align with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Computer software engineer
- Mathematician

CODING

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ Computer hardware is present

☐ ENTRY NOT EVALUATED

SOLUTION DEVELOPMENT (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Code Quality (X1)	The logic of the code cannot be followed or is difficult to follow; no comments or very few comments are present in the code.	The logic of the code is sometimes easy to follow by reading through submitted source files; some comments are present, but comments are not always present where necessary.	The logic of the code is easy to follow by reading through the submitted source files; sections where logic may be unavoidably difficult to follow are commented appropriately.	
Use of Standard Libraries (X1)	The solutions do not appropriately use standard libraries for the language in which they are written; solutions attempt to use or import third party libraries	The solutions attempt to use standard libraries available or sometimes use standard libraries available for the language in which they are written.	The solutions make appropriate use of the standard libraries available for the language in which they are written; no attempt is made to use or import a third-party library.	
Subjective Criteria (X1)	Team did not work well together, did not understand the solution, and did not demonstrate an understanding of coding practices; leadership and/or 21 st century skills are not evident.	Team worked reasonably well together; team demonstrates an adequate understanding of the problem solutions and of coding practices; leadership and/or 21 st century skills are somewhat evident.	Team works well together and demonstrates superior understanding of the solution and of coding practice; leadership and/or 21 st century skills are clearly evident.	
SOLUTION DEVELOPMENT SUBTOTAL (30 points)				

TESTING OF SOLUTION (80 points)							
Evaluation: A finite unit of measure, such as elapsed time, linear distance, and/or strength, etc., is used to determine ranking.							
1st: 80 Points	2nd: 75 Points	3rd: 70 Points	4th: 65 Points	5th: 60 Points	6th: 55 Points	7th: 50 Points	8th: 45 Points
9th: 40 Points	10th: 35 Points	11th: 30 Points	12th: 25 Points	13th: 20 Points	14th: 15 Points	15th: 10 Points	16th: 5 Points
TESTING OF SOLUTION SUBTOTAL (80 points)							

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

Indicate the rule violated: _____

SOLUTION SUBTOTAL (110 points)

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

TOTAL (110 points)

Comments:

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

JUDGE

Printed name: _____ Signature: _____

CODING

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges, two (2) or more
- C. Assistants for set-up, monitoring, and clean-up of on-site activity, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope with coordinator forms
- B. Projector
- C. White board or wall for projecting the images
- D. Tables and chairs for participants
- E. Tables and chairs for judges, to be used for information distribution and evaluation
- F. A copy of a well-written, technologically appropriate problem for each participant/team that can be objectively measured
- G. Adequate conditions, tools, materials, monitoring, and testing devices for the problem

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is to begin, meet with judges to review time limits, procedures, regulations, evaluation, and all other details pertaining to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.

ON-SITE CODING CHALLENGE

- A. Begin the event at the scheduled time by closing the doors and checking the entry list.
- B. All participants and judges should be in the room at this time.
- C. Late participants and/or entries are considered on a case-by-case basis and only when lateness is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Check in the semifinalist teams and equipment. Participants must bring:
 - 1. One (1) laptop
 - 2. Extra charged laptop battery or extra charged laptop as backup (but only one laptop may be used at any time)
 - 3. One (1) computer mouse
 - 4. Teams may also bring pencils and paper.
- F. Teams do NOT have access to electrical power/ outlets during the event.
- G. Teams do NOT have access to the Internet during the event.
- H. Students must have all software development tools needed for the competition downloaded and accessible on their computers.
- I. Once teams are seated and general announcements have been given, distribute and review the problem and start the time.
- J. All solutions must be tested, demonstrated and presented by participants in front of the judges. Judges and assistants observe, with judges evaluating solutions as soon as appropriate.

K. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:

1. To deduct twenty percent (20%) of the total possible points in this round or
2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

L. Judges determine the ten (10) finalists and 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 area.

COMPUTER-AIDED DESIGN (CAD), ARCHITECTURE



OVERVIEW

Applying leadership and/or 21st century skills, participants have the opportunity to use complex computer graphic skills, tools, and processes to develop representations of architectural subjects such as foundation and/or floor plans, and/or elevation drawings, and/or details of architectural ornamentation or cabinetry.

ELIGIBILITY

Two (2) individuals per state may participate.

Participants may compete in either CAD, Architecture or CAD, Engineering, but not both events.

TIME LIMITS

- A. Thirty (30) minutes are allowed for set-up time.
- B. Four (4) hours are allowed for participants to develop drawing(s).
- C. One (1) hour is allotted for the final evaluation.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

- A. Participants bring their own computer systems (see Regulation A) 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 to set up and test the equipment. At the end of the thirty (30) minute period, assistants are required to leave the area.
- C. Participants are given a design problem to solve in a four (4)-hour work session.
- D. Participants work independently, without assistance from judges, teachers, or fellow participants.
- E. Participants are advised to save their work on 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. Judges circulate to evaluate the entries and ask questions of the participants.
- H. Participants shall reserve one (1) additional hour for the final evaluation process.
- I. Participants report to the event area at the time and place stated by in the conference program to pick up their equipment.
- J. The top ten (10) finalists are announced during the award ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Participants provide their own computer systems including:
 - 1. computer hardware (only one [1] CPU and one [1] monitor), capable of reading a USB flash drive; laptops are recommended
 - 2. software needed for the challenge, downloaded
 - 3. one (1) USB flash drive; used only to back-up the entry
 - 4. power strip/surge protector
 - 5. reference materials
- B. A table, chair, sketching paper, and electricity is supplied for each participant.
- C. Participants are required to provide their own pencils.
- D. Participants are not permitted to share solutions to problems, reference materials, hardware, or software.
- E. Participants identify their work using only their student identification number.

EVALUATION

- A. The design solution (evaluated on screen according to the criteria on the official rating form)
- B. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Architect
- Automobile designer
- CAD professional
- Machine designer

CAD, ARCHITECTURE

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ Computer hardware is present

☐ ENTRY NOT EVALUATED

SOLUTION TO PROBLEM (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Design (X1)	The layout and design of the drawing as presented do not create an effective model for the problem assigned.	The layout and design of the drawing as presented create a somewhat effective model for the problem assigned.	The layout and design of the drawing completely and effectively model the problem assigned.	
Functionality (X1)	The design as drawn is impractical, disorganized, and lacks directional flow.	The design is somewhat practical in directional flow and organization.	The design is clearly effective, practical, and functional.	
Originality (X1)	The design drawing provides few, if any, attempts at originality or deviation from the traditional.	The design drawing attempts to be somewhat creative and shows some evidence of being non-traditional.	The design drawing provides a unique and creative quality of newness that departs from tradition.	
Aesthetics (X1)	The design is unappealing and fails to capture the observer's attention.	The design is somewhat pleasing and appealing and attempts to capture the observer's attention.	The overall design is pleasing and appealing and effectively draws attention to its appearance/beauty.	
Articulation (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
SOLUTION TO PROBLEM SUBTOTAL (50 points)				

LAYOUT (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Views (X2)	The correct views have not been selected and/or used throughout the drawing process and final layout.	Most of the views that have been selected and used are correct and in the proper layout format.	All of the views that have been selected and used are correct and in the proper layout.	
Detailing (X1)	Many of the details are missing or incorrectly placed.	Most of the details are included and correctly placed.	All the necessary details are included and placed correctly.	
Lettering (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 some inconsistencies/variations.	The choice of appropriate font style, size, color, and application is clearly evident and applied consistently.	
Dimensioning (X1)	Many of the necessary dimensions are missing and/or are incorrectly placed.	Most of the necessary dimensions are included and/or are generally correctly placed.	All necessary dimensions are included and correctly placed.	
Scale (X1)	The scale selected for the drawings is incorrect and improperly noted.	The scale selected for most aspects of the drawings is generally correct and properly noted.	The scale selected for all aspects of the drawings is correct and properly noted.	
LAYOUT SUBTOTAL (60 points)				

ARCHITECTURAL APPLICATION (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Use of Symbols (X1)	Many, if not most, of the symbols selected and used are incorrect.	Most of the symbols selected and used are generally correct and/or appropriately placed.	All of the symbols selected and used are correct and appropriately placed.	
Appropriate Standards (X1)	There is little or no evidence of an appropriate application of architectural standards in the completed design and drawings.	There is some evidence of an appropriate application of architectural standards in the completed design and drawings.	There is clear evidence of an effective and appropriate application of architectural standards in the completed design and drawings.	
ARCHITECTURAL APPLICATION SUBTOTAL (20 points)				

SOFTWARE UTILIZATION (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
CAD Functions (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.	
CAD Features (X1)	There is little evidence of an understanding and application of CAD special features.	There is a general understanding and application of CAD special features.	There is a complete understanding and application of the various special features of CAD.	
SOFTWARE UTILIZATION SUBTOTAL (20 points)				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, 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.

JUDGE

Printed name: _____ Signature: _____

COMPUTER-AIDED DESIGN (CAD), ARCHITECTURE

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

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

MATERIALS

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

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

ON-SITE CHALLENGE

- A. As participants arrive, check the coordinator's report and assign participants to work stations.
- B. All participants and judges should be in the room at this time.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Allow thirty (30) minutes for participants and their assistants (no more than one [1] per participant) to set up equipment.
- F. At the end of the thirty (30)-minute set-up time, non-participants are required to leave the event area.
- G. Review with the participants the time limits, procedures, regulations, and protocol of the event.
- H. Remind participants to save their work at regular time intervals.
- I. Distribute copies of the CAD problem. Answer any appropriate questions concerning the problem.
- J. Begin the event and announce the ending time.
- K. During the event, the judges and assistants monitor and evaluate participant progress and work.
- L. Announce the time remaining to work at one (1) hour, thirty (30) minutes, fifteen (15) minutes, and five (5) minutes before time is called.
- M. When time is called, participants stop and save their work on their hard drives and on their USB flash drives.
- N. Participants remain at their computers for up to one (1) hour as judges circulate to evaluate the entries.
- O. Conduct the interviews as the submissions are reviewed. Interviews should be a maximum of five (5) minutes in length.

- P. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- Q. Judges determine the ten (10) finalists and discuss and break any ties.
- R. Submit the finalist results and all related forms in the results envelope to the CRC room.
- S. If necessary, manage security and the removal of materials from the area.

COMPUTER-AIDED DESIGN (CAD), ENGINEERING



OVERVIEW

Applying leadership and 21st century skills, participants use complex computer graphic skills, tools, and processes to develop three (3)-dimensional representations of engineering subjects such as a machine part, tool, device, or manufactured product.

ELIGIBILITY

Two (2) individuals per state may participate.

Participants may compete in either CAD, Architecture or CAD, Engineering, but not both events.

TIME LIMITS

- A. Thirty (30) minutes are allowed for set-up time.
- B. Four (4) hours are allowed for participants to develop drawing(s).
- C. One (1) hour is allotted for the final evaluation.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

- A. Participants bring their own computer systems (see Regulation A) 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 to set up and test the 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 in a four (4)-hour work session.
- D. Participants work independently, without assistance from judges, teachers, or fellow participants.
- E. Participants are advised to save their work on 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. Judges circulate to evaluate the entries and ask questions of the participants.
- H. Participants shall reserve one (1) additional hour for the final evaluation process.
- I. Participants report to the event area at the time and place stated by in the conference program to pick up their equipment.
- J. The top ten (10) finalists are announced during the award ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Participants provide their own computer systems including:
 - 1. computer hardware (only one [1] CPU and one [1] monitor), capable of reading a USB flash drive; laptops are recommended
 - 2. software needed for the challenge, downloaded
 - 3. one (1) USB flash drive; used only to back-up the entry
 - 4. power strip/surge protector
 - 5. reference materials
- B. A table, chair, sketching paper, and electricity is supplied for each participant.
- C. Participants are required to provide their own pencils.
- D. Using leadership and/or 21st century skills, participants design a solution to the challenge within a four (4) hour limited time frame.
- E. Participants are not permitted to share solutions to problems, reference materials, hardware, or software.
- F. Participants identify their work using only their student identification number.

EVALUATION

- A. The design solution (evaluated on screen according to the criteria on the official rating form)
- B. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Engineer
- Automobile designer
- CAD professional
- Machine designer

CAD, ENGINEERING

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ Computer hardware is present

☐ ENTRY NOT EVALUATED

SOLUTION TO PROBLEM (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Design (X1)	The layout and design of the drawing as presented do 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.	
Functionality (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.	
Originality (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.	
Aesthetics (X1)	The design is unappealing and fails to capture the observer's attention.	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.	
Articulation (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
SOLUTION TO PROBLEM SUBTOTAL (50 points)				

LAYOUT (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Correct Geometry (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 format.	All of the views and orientation that have been selected and used are correct and in the proper layout.	
Detailing (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 are placed correctly.	
Lettering (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.	
Dimensioning (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.	
Scale (X1)	The scale selected for the drawings is incorrect and not properly noted.	The scale selected is generally correct and properly noted for most drawings.	The scale selected for all aspects of the drawings is correct and properly noted.	
LAYOUT SUBTOTAL (60 points)				

ENGINEERING APPLICATION (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Application of Practices (X1)	Many 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.	
Appropriate Use of Conventions (X1)	There is little or no evidence of an effective application of engineering conventions in the completed design and drawings.	There is some evidence of an 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.	
ENGINEERING APPLICATION SUBTOTAL (20 points)				

SOFTWARE UTILIZATION (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
CAD Functions (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.	
CAD Features (X1)	There is little evidence of understanding and application of CAD special features.	There is a general understanding and application of CAD special features.	There is complete understanding and application of the various special features of CAD.	
SOFTWARE UTILIZATION SUBTOTAL (20 points)				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, 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.

JUDGE

Printed name: _____ Signature: _____

COMPUTER-AIDED DESIGN (CAD), ENGINEERING EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

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

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope
- B. Tables and chairs for competitors and judges
- C. One (1) ream of 8½" x 11" white copier paper
- D. Statement of problem as a hard-copy sketch, pages as needed.

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

ON-SITE CHALLENGE

- A. As participants arrive, check the coordinator's report and assign participants to work stations.
- B. All participants and judges should be in the room at this time.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Allow thirty (30) minutes for participants and their assistants (no more than one [1] per participant) to set up equipment.
- F. At the end of the thirty (30)-minute set-up time, non-participants are required to leave the event area.
- G. Review with the participants the time limits, procedures, regulations, and protocol of the event.
- H. Remind participants to save their work at regular time intervals.
- I. Distribute copies of the CAD problem. Answer any appropriate questions concerning the problem.
- J. Begin the event and announce the ending time.
- K. During the event, the judges and assistants monitor and evaluate participant progress and work.
- L. Announce the time remaining to work at one (1) hour, thirty (30) minutes, fifteen (15) minutes, and five (5) minutes before time is called.
- M. When time is called, participants stop and save their work on their hard drives and on their USB flash drives.
- N. Participants remain at their computers for up to one (1) hour as judges circulate to evaluate the entries.
- O. Conduct the interviews as the submissions are reviewed. Interviews should be a maximum of five (5) minutes in length.

- P. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- Q. Judges determine the ten (10) finalists and discuss and break any ties.
- R. Submit the finalist results and all related forms in the results envelope to the CRC room.
- S. If necessary, manage security and the removal of materials from the area.

COMPUTER INTEGRATED MANUFACTURING (CIM)



OVERVIEW

Applying leadership and 21st century skills, participants design, fabricate, and use Computer Integrated Manufacturing (CIM) to create a product that addresses the annual theme found on the [TSA website](#) under Competitions/Themes and Problems. The product may use additive and/or subtractive manufacturing of any traditional, Computer Numerical Control (CNC), 3D printing, or laser technology available. A documentation portfolio, one (1) completed sample, and one (1) set of manufactured parts are checked in and evaluated. Semifinalist teams participate in an on-site challenge to demonstrate their product and give a promotional "sales pitch" to the judges.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

Up to two (2) minutes for the semifinal promotional sales pitch.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRELIMINARY ROUND

- A. Participants report to the time and place stated in the conference program with:
 1. the documentation portfolio
 2. the product
 3. the manufactured pieces of their entry
- B. Judges independently assess the entries.
- C. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. Semifinalist teams report at the time and place stated in the conference program.
- B. Each team makes a sales pitch about their product to "potential buyers" (judges) in the room and respond to questions.
- C. The sales pitch begins on the timekeeper's signal.
- D. Judges evaluate the presentations.
- E. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Documentation Portfolio:
 1. Documentation materials (comprising "a portfolio") are required and should be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, the conference city and state, and the year; one (1) page
 - b. Table of contents; one (1) page
 - c. An isometric assembly drawing showing the promotional product and all its parts; the paper size is 11" x 17", folded, with the drawing facing out and placed in the portfolio; one (1) page
 - d. Detail drawings of each part manufactured labeled to match the items in the parts list (from the working drawing). The paper size is 8½" x 11"; pages as needed (to show all machined parts)

- e. Photographic images (actual photographs, not renderings) of designs tested, with a descriptive caption per image of what was improved or proved by the testing of the design; two (2) pages maximum
- f. Plan of Work log (see Forms Appendix); pages as needed
- g. Bill of materials

B. Materials:

1. The sample work pieces contain the subtractive and additive (CNC/3D printing) machined parts of the promotional product.
2. The assembled product must be accurate and within tolerances + or - .0625 or $\frac{1}{16}$ " of the dimensions provided in the documentation drawings and in the fabricated parts.
3. Fabricated parts:
 - a. The finished product must not exceed the dimensions 7" x 7" x 7".
 - b. Five (5) major parts are required; major parts are those with drawings that have been manufactured.
 - c. Plastic, wood, or metal may be used for any of the parts for the promotional product.
 - d. Machined parts submitted for judging must be removed from the waste stock.
 - e. Parts may be finished (i.e., painted or sanded), if necessary.
4. Stock fasteners may be used and may include, but are not limited to:
 - a. Nuts
 - b. Washers
 - c. Screws
 - d. Wing nuts
 - e. Other fasteners that can be attached with the tools in the tool box

SEMIFINAL ROUND

A. Sales pitch:

1. Using leadership and/or 21st century skills, participants present a two (2)-minute "sales pitch" about their promotional product.
2. Participants explain the production cost per unit, the materials used to make the product, and price breaks of units based on purchase.
3. No electronic devices may be used in the sales pitch.
4. A promotional flyer or brochure may be given to judges as part of the sales pitch; the brochure size is limited to one double-sided page on 8½" x 11" paper.

B. Failure to meet the guidelines:

1. A 20% deduction of the total possible points is made for failure to meet one (1) qualification.
2. If an entry fails to meet two (2) qualification regulations, it is removed from competition.
3. The coordinator may stop a demonstration if a safety issue becomes evident.

EVALUATION

PRELIMINARY ROUND

- A. The documentation portfolio
- B. The component analysis

SEMIFINAL ROUND

- A. The sales pitch/demonstration

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Commercial and industrial designer
- Engineer
- Mechanical engineer
- CNC programmer or operator

COMPUTER INTEGRATED MANUFACTURING (CIM)

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Sample product is present
- ☐ Manufactured parts are present
- ☐ Documentation portfolio is present
- ☐ ENTRY NOT EVALUATED

DOCUMENTATION PORTFOLIO (100 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	The portfolio is unorganized and three (3) or more components or sections are missing.	The portfolio is generally well organized and may be missing only one or two (1-2) components or sections.	The portfolio is exceptionally well organized and contains all required components or sections.	
Bill of Materials (X1)	Bill of Materials is included, but more than one (1) material is missing.	A Bill of Materials is included, with one (1) material missing; Bill of Materials is generally organized.	All components of the Bill of Materials is included and highly organized.	
Isometric Assembly Drawing (X1)	The isometric assembly drawing is not complete, with many of the required elements missing.	The isometric assembly drawing is present, but it is missing several required key elements.	The isometric assembly drawing is complete and correct, with all required elements included.	
Detail Drawings (X2)	The detail drawings are not complete, with many of the required elements missing.	The detail drawings are present but may be missing several required key elements.	The detail drawings are complete and correct, with all required elements included.	
Design Photographs (X1)	Only one (1) photograph of designs tested is included.	Two (2) photographs of designs tested are included.	More than two (2) photographs of designs tested are included.	
Descriptions/ Product Testing (X2)	There is little description of the design testing process and analysis.	One description of design testing and analysis is included.	Several descriptions of design testing and analysis are included.	
Plan of Work Log (X1)	The Plan of Work log is not complete.	The Plan of Work log is included and mostly complete.	The Plan of Work log is complete and fully documents project work.	
Theme (X1)	The effort is basic, with only a loose association to the product theme.	The effort adequately addresses the product theme.	The effort to address the product theme exceeds expectations.	
DOCUMENTATION PORTFOLIO SUBTOTAL (100 points)				

COMPONENT ANALYSIS (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Additive or Subtractive Manufactured Product (X3)	The overall dimensions are .25(¼) inches greater or less than the size specified on the layout drawing.	The overall dimensions are .125(⅛) inches greater or less than the size specified on the layout drawing.	The overall dimensions are the correct size, as specified on the layout drawing.	
Product Cost Sheet (X1)	The product cost sheet has few parts of the finished product broken down individually.	The product cost sheet has most parts of the finished product broken down individually.	The product cost sheet has each part of the finished product broken down individually with material amount and the amount used.	
COMPONENT ANALYSIS SUBTOTAL (40 points)				

<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>	
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PRELIMINARY SUBTOTAL (140 points)	
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SEMIFINAL QUALIFICATION REGULATIONS				
Place an x in the noncompliant or compliant box, as appropriate for each regulation. If one regulation is noncompliant, a deduction of 20% of the total possible points will apply (see rules violations box).				
Regulation	Noncompliant		Compliant	
Team of Two	Only one (1) team member is present.		At least two (2) team members are present.	

SEMIFINAL SALES PITCH (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	Participants seem unorganized and unprepared for the sales pitch/demonstration; illogical explanation of the project is presented.	Participants are generally prepared for the sales pitch/demonstration; explanation of the project is communicated and generally organized.	The sales pitch/demonstration is logical, well organized, and easy to follow; the project concept is communicated in a concise manner.	
Knowledge (X1)	Participants seem to have 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 concepts in their project.	

SEMIFINAL SALES PITCH (50 points) – continued				
Articulation (X1)	Communication of the project is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the project is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the project is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Delivery (X1)	The sales pitch is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	The sales pitch is somewhat logical, easy-to-follow, and/or there is sufficient information provided describing the project.	The sales pitch is clear, concise, and there is ample information provided describing the project.	
Team Participation (X1)	The majority of the delivery is made by one (1) member of the team; the partners may be disengaged from the sales pitch.	Team members are generally engaged in the process, though one member may take on more responsibility than the others.	Team members are actively involved in the sales pitch and responses to interview questions; there is shared responsibility on the part of team members.	
SEMIFINAL SALES PITCH SUBTOTAL (50 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
SEMIFINAL SUBTOTAL (50 points)				
To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.				
TOTAL (190 points)				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

COMPUTER INTEGRATED MANUFACTURING (CIM)

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more
- C. Timekeeper, one (1)
- D. Assistants at check-in, two (2) or more

MATERIALS

- A. Coordinator's packet, containing
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Results envelope
 - 6. Stopwatch
- B. Tables and chairs for check-in assistants, the timer, judges, and the event coordinator
- C. Tables for display of entries; chairs for each team member

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time and place stated in the conference program.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Each entry must include the team's identification number in the upper right-hand corner of the entry.
- F. Instruct participants to position the entries for viewing.
- G. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. Judges independently assess the entries.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges and CRC manager must initial either of these actions on the rating form
- C. Judges determine the twelve (12) semifinalists.
- D. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- E. Create semifinalist sign-up sheet for the sales pitch presentations.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign-up for a sales pitch presentations.
- B. Participants report at the assigned time and place for the presentation.
- C. Manage the sales pitch presentation sessions.
- D. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.
- F. Submit the finalist results and all related forms in the results envelope to the CRC room.
- G. If necessary, manage security and the removal of materials from the event area.

OVERVIEW

Applying leadership and 21st century skills, participants respond to a cybersecurity challenge by identifying a breach in computer security via "Capture the Flag" games. Areas of challenge might include exploit development, digital puzzles, cryptography, reverse engineering, binary analysis, mobile security, etc. Participants must accurately address a series of on-site problems within a specified, limited amount of time.

ELIGIBILITY

Two (2) teams per chapter may participate.

TIME LIMITS

- A. Participants are required to attend the orientation meeting prior to receiving access to the challenges.
- B. Forty-eight (48) hours, beginning at the event orientation meeting, are allowed to complete the online preliminary challenge.

PROCEDURE

PRE-CONFERENCE

- A. Prior to registration, chapter advisors collect an executed TSA Student and Parent Consent Release Form for all participants participating in Internet-based competitions and will verify having done so upon affiliation. A link to the form can be found on the [TSA website](#).
- B. The release form must be completed for every participant in order for the participant to compete in this event. Chapter advisors keep copies of the executed forms and may be asked to produce them if needed.
- C. Once registered and Student/Parent Consent forms are in possession of the chapter advisor, instructions to create teams on the Cybersecurity platform will be communicated to the chapter advisor.

ON-SITE CHALLENGE

- A. Participants report to the event area at the time and place stated in the conference program to attend the mandatory orientation session.
- B. Participants receive information pertaining to the event specifics.
- C. Participants provide their own computer hardware, including applicable software to solve challenges (e.g. NetCat or Putty).
- D. Teams have forty-eight (48) hours from the designated start time announced during the informational session to complete the online challenge.
- E. Teams that do not attend the informational session will not receive additional time and will need to meet with the CRC Manager of the event in order to participate.
- F. For website support, teams shall contact the CRC coordinator or manager.
- G. Solutions are scored in real-time and results are posted on an online scoreboard. The URL is provided on-site.
- H. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Participants who have not properly set-up their teams on the cybersecurity platform online prior to conference are NOT permitted to participate at the National Conference. Teams are not permitted to set-up their teams on-site.
- B. Participants should concentrate their efforts prior to the competition on researching, understanding, and practicing all aspects of cybersecurity. Please refer to the sample challenge topics listed below and the resources on the [TSA website](#).

C. Materials:

1. Teams are responsible for providing:
 - a. computer(s), including applicable software to solve challenges
 - b. one (1) or two (2) auxiliary monitors, optional
 - c. one (1) Power strip, optional
 - d. Internet access
- D. Teams may receive online hints on the platform throughout the competition but are not given the solution by organizers.
- E. Teams are not to share solutions between teams, but they may communicate with their own team members. The sharing of information between teams will result in automatic disqualification.

SAMPLE CHALLENGE TOPICS

This list serves only as an *example* of challenge categories.

A. Web Security

1. The Web Security category often features custom developed web applications which include some web security flaw that must be identified and exploited. Very often SQL injection, command injection, directory traversal, and XSS vulnerabilities are introduced and exploited in these categories.
2. Examples:
 - a. Exploiting poor security controls in a website as a regular user to gain higher level access.
 - b. Exploiting poor security practices in a website in order to read arbitrary data from the vulnerable server.
 - c. Exploiting a SQL injection vulnerability to extract the content of an intentionally vulnerable server.

B. Forensics

1. The Forensics category often features memory dumps, hidden files, or encrypted data which must be analyzed for information about underlying information.

2. Examples:

- a. Extracting hidden files from an image of a hard drive.
- b. Extracting hidden files from a memory dump.
- c. Determining the flow of data in a packet capture to ascertain the origin or destination of data.

C. Cryptography

1. Cryptography is the reason we can use banking apps, transmit sensitive information over the web, and in general protect our privacy. However, a large part of CTFs is breaking widely used encryption schemes that are improperly implemented.
2. Examples:
 - a. Securing web traffic (passwords, communication, etc.).
 - b. Securing copyrighted software code.

D. Reverse Engineering

1. The Reverse Engineering category often features programs from all operating systems which must be reverse engineered to determine how the program operates. Typically, the goal is to get the application to reach a certain point or perform some action in order to achieve a solution.
2. Examples:
 - a. Determining what input causes a program to return True.
 - b. Disassembling a game to find a hidden Easter egg not normally accessible or a cheat code to make it easier to win the game.
 - c. Optimizing a program to make it run to completion.
 - d. Exploiting a buffer overflow with some security mitigations in place to gain a command shell and read a file.
 - e. Exploiting a format string vulnerability to gain a command shell and read a file.

ADVANCED SAMPLE TOPICS

This list serves only as an *example* of challenge categories.

A. Binary Exploitation

1. The Binary Exploitation category often features compiled programs that have a vulnerability allowing a competitor to gain a command shell on the server running the vulnerable program. This often requires reverse engineering skills.
2. Examples:
 - a. Exploiting a buffer overflow to gain a command shell and read a file.
 - b. Exploiting a buffer overflow with some security mitigations in place to gain a command shell and read a file.
 - c. Exploiting a format string vulnerability to gain a command shell and read a file.

EVALUATION

- A. The successful completion of the problems, including the time in which it takes teams to complete each challenge.

Refer to the official rating form for more information.

STEM INTEGRATION

Depending upon the subject of the problem, this event may align with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Vulnerability Assessor
- Chief Information Security Officer
- Forensic Expert
- Security Architect
- Security Director
- Incident Responder
- Security Manager
- Security Auditor
- Cryptographer
- Security Engineer
- Security Analyst

Participant/Team ID# _____

CYBERSECURITY

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ Computer hardware is present

☐ ENTRY NOT EVALUATED

CYBERSECURITY CHALLENGE (100 points)

Record the completed score and time for the online preliminary problem.

Team A Score:		Team B Score:		
Time (Needed for tie breaker):		Time (Needed for tie breaker):		
SUBTOTAL (100 points)				

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, 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.

JUDGE

Printed name: _____ Signature: _____

CYBERSECURITY

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistants for set-up and clean-up, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator
 - 2. TSA Event Coordinator Report
 - 3. List of assistants
- B. Tables and chairs for participant orientation session
- C. A copy protocol for the online management materials/ on-site equipment as needed
- D. Adequate conditions, tools, materials, monitoring, and testing devices for the problem

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough evaluators and assistants have been scheduled.
- D. 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.
- E. One (1) hour before the semifinal event is to begin, meet with evaluators to review time limits, procedures, regulations, evaluation, and any other details pertaining to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.

ON-SITE CHALLENGE

- A. Begin the event at the scheduled time by closing the doors and checking the entry list.
- B. All participants and evaluators should be in the room at this time.
- C. Participants not present for the orientation must have approval of the CRC in order to participate.
- D. Once teams are seated and general announcements have been given, distribute and review the procedure.
- E. Check and post the online progress throughout the preliminary event via the scoreboard.
- F. After the designated time of forty-eight (48) hours has elapsed, the challenge site becomes unavailable.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.

SUPPORT

For competition support, organizers shall contact the CRC competitions manager.

OVERVIEW

Applying leadership and 21st century skills, participants collect data, conduct an analysis of the data, and make predictions about the outcomes. Participants document their research and summarize their findings in a scientific poster. Semifinalists participate in a twenty-four hour semifinal challenge visually representing their data.

ELIGIBILITY

Three (3) teams of two (2) individuals per state may participate; individual entries are permitted.

TIME LIMITS

- A. The documentation portfolio and scientific poster components of the chapter's entry must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.
- C. Preliminary round participant(s) must participate in an on-site presentation of their scientific poster, which will last no more than ten (10) minutes, broken down as follows:
 - 1. Two (2) minutes to set-up
 - 2. Six (6) minutes to present
 - 3. Two (2) minutes to remove materials
- D. Semifinalists participate in a twenty-four (24)-hour on-site challenge submitted online.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants identify a societal issue and collect or compile data from various sources.
- B. Participants create their documentation and scientific poster according to the regulations.

- C. The documentation portfolio and scientific poster components of the chapter's entry must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.
- D. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. Judges evaluate entries based on the following criteria:
 - 1. Judges review and score the Documentation Portfolio criteria to determine the top twenty-four (24) entries.
- B. The list of twenty-four (24) teams/individuals will be posted on-site on the first full day of conference.
- C. The twenty-four (24) preliminary round contestants report at the time and place stated in the conference program to sign-up for a presentation time.
- D. Participants report at the assigned time and place with their scientific poster.
- E. Participants are allowed ten (10) minutes to present their scientific poster and respond to questions.
- F. A list of twelve (12) semifinalists (in random order) is posted along with instructions for the on-site challenge.

SEMIFINAL ROUND

- A. Participants have twenty-four (24) hours to collaborate on a visual representation of their data, which must be completed on-site within the specified time frame (for an example, see [Kantar's Data Visualization](#)).
- B. Semifinalist teams submit the following online as a multi-page PDF:
 - 1. A visual representation
 - 2. A brief synopsis of their entry
- C. Judges evaluate the entries with neither students nor advisors present.
- D. Ten (10) finalists are announced during the conference awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE

- A. Participants must understand the fundamental concepts and principles of the contemporary issue researched. Research about the issue shall focus on:
 1. Analysis of the collected data.
 2. Representation of that data in various forms.
 3. Synthesis of the collected data in terms of factors influencing the issue, societal impacts, and ethical considerations.
- B. Documentation Portfolio:
 1. The documentation portfolio must be saved as a multi-page PDF document with the pages presented in the following order:
 - a. Title page with the event title, the conference city and state, the year, and the team ID number; one (1) page
 - b. Table of contents; pages as needed
 - c. Introduction
 - d. Purpose- an explanation of the importance of the issue including problems and possible solutions (if applicable); one (1) page
 - e. Methods – the methods used to obtain your data; one (1) page
 - f. Results; pages as needed:
 - i. analysis of the data collected
 - ii. support materials such as graphs and any pertinent data collected
 - g. Conclusions – synthesis of the data collected; pages as needed
 - h. Next Steps – next steps to further analyze the data, collect more data, or minimize the impact of the issue; one (1) page
 2. Bibliography/references - A list of references and credible resources in MLA format; a minimum of three (3) different types of resources must be used; work must be original or cited; pages as needed
- C. Scientific Poster:
 1. Participants must use the scientific poster template in this guide. An editable, downloadable document is available on the [TSA website](#) under Competitions/Forms
 2. Participants shall incorporate visuals to the scientific poster.
 3. Copyright:
 - a. Citation of 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). Clip art must be documented; failure to do so results in disqualification.
 - b. Written permission for all copyrighted material must be included (See Student Copyright Checklist in the Forms Appendix of the [TSA website](#).)
 - c. If the entry contains images of people, proof of consent must be included as a separate PDF file and submitted with the other required documentation. Images of minors require parental consent (See Photo/Film/Video Consent and Release in the Forms Appendix of the [TSA website](#)).

SEMIFINAL ROUND

- A. Participants must have the following computer hardware:
 1. One (1) laptop
 2. Extra charged laptop battery or extra charged laptop as backup
 3. One (1) computer mouse, optional
 4. Internet; TSA will not provide internet for this event. Participants are responsible for securing their own internet access.

- B. Semifinalists have twenty-four (24) hours to create their visual representation and write a brief synopsis of no more than five hundred (500) words.
- C. All work must be completed at the conference during the time specified for the event.
- D. Any entries that are started prior to the conference will result in disqualification.
- E. Participants save their visualization and supporting documentation as a multi-page PDF document and submit the entry online by the designated deadline, following the instructions provided on-site.

EVALUATION

PRELIMINARY ROUND

- A. The documentation portfolio
- B. The scientific poster
- C. The presentation

SEMIFINAL ROUND

- A. The visual representation and synopsis

Refer to the official rating form for more information.

STEM INTEGRATION

This event has connections with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Data scientist
- Data analyst
- Actuary
- Economist
- Epidemiologist
- Forensic accountant
- Market researcher
- Meteorologist
- Operations research analyst
- Quality engineer

DATA SCIENCE AND ANALYTICS

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Documentation portfolio was submitted pre-conference and scored
- ☐ Scientific poster is present
- ☐ Computer hardware is present
- ☐ ENTRY NOT EVALUATED

DOCUMENTATION PORTFOLIO (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio (X1)	Portfolio is unorganized and/or missing three (3) or more components.	Portfolio has most components and it is somewhat organized.	One (1) or no components are missing in the portfolio; content and organization are clearly evident.	
Definition and Explanation of Issue (X1)	Definition and explanation of the issue are unclear and is unrelated to the theme.	Issue is somewhat defined and explained and addresses the theme/topic.	Clear and concise definition and explanation of the issue are evident and addresses the theme/topic.	
Research Base (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.	
Support Materials (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.	
Data Charts and Graphs (X2)	The data is not represented in charts and graphs.	The data is represented in charts and graphs and somewhat supports the analysis of the team.	The data is represented in charts and graphs and supports the analysis of the team.	
Quality, Effectiveness, and Mechanics (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.	
DOCUMENTATION PORTFOLIO SUBTOTAL (70 points)				

SCIENTIFIC POSTER PRESENTATION (90 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Definition and Explanation of the Issue (X1)	An unclear definition and explanation of the issue is presented.	Issue is defined and explained adequately.	The portfolio is clearly organized and has either one or no missing components.	
Explanation of Impacts (X1)	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.	
Supporting Information (X2)	Support information is not represented in graphs/charts and does not help to clarify documentation, and/or it is of little significance to the issue.	Support information is represented in graphs/charts, is somewhat appropriate and helps supplement the documentation by providing some clarity to the issue.	Support information is represented in graphs/charts, is highly effective and of excellent quality.	
Research, References, and Resources (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.	
Communication of the project (X2)	It is difficult to understand the project being communicated; an illogical explanation presented; leadership and/or 21 st century skills are not evident.	The project is communicated to some degree although some illogical inconsistencies exist; leadership and/or 21 st century skills are somewhat evident.	The issue is communicated in an organized, clear, and concise manner; leadership and/or 21 st century skills are evident.	
Creativity (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.	
Aesthetics and Artisanry (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.	
SCIENTIFIC POSTER PRESENTATION SUBTOTAL (90 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
PRELIMINARY SUBTOTAL (160 points)				

VISUALIZATION (80 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Conceptualization (X2)	It is difficult to understand the concept being communicated in the visualization.	The concept is somewhat communicated, but many aspects remain unclear.	The concept is communicated in an organized, clear, and concise manner.	
Creativity (X2)	The visualization lacks creativity; no, or very few, design principles are integrated in the visualization.	Some elements of creativity are expressed, with most design principles integrated.	The visualization exudes creativity; essential design principles and elements are integrated.	
Aesthetics and Artisanship (X1)	Unorganized, sloppy work is evident; the visualization seems to be an afterthought and/or thrown together.	A largely organized presentation of layout and design principles is evident.	An exemplary use of layout and design principles to logically communicate important data is evident.	
Graphical Representations (X2)	Graphical representations do not help to clarify visualization, or they are of little significance to the project.	Graphical representations are appropriate and help supplement the visualization by providing clarity to the project.	Graphical representations are of excellent quality; and clarify abstract concepts.	
Originality (X1)	The visualization lacks imagination, originality, and artistic detail.	The visualization is somewhat effective, inventive, and inspiring.	The visualization is inspiring, inventive, resourceful, and motivating.	
VISUALIZATION SUBTOTAL (80 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (80 points)				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p> <p>TOTAL (240 points)</p>				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

DATA SCIENCE & ANALYTICS

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 1. Preliminary round, two (2) or more (documentation)
 2. Preliminary Round: Two (2) or more (presentation)
 3. Semifinal Round: Two (2) or more (preferably the same judges from the preliminary round)

MATERIALS

- A. Coordinator's packet, containing:
 1. Event guidelines, one (1) copy for the coordinator and for each judge
 2. TSA Event Coordinator Report
 3. List of judges/assistants
 4. Stick-on labels for identifying entries (only 1 set)
 5. Results envelope with coordinator forms
- B. Table and chairs for event coordinator and judges
- C. Clear tape or a standing board with clips to hold the scientific posters in place.

RESPONSIBILITIES

PRE-CONFERENCE/PRELIMINARY ROUND

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participant(s). The results will be shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Judges determine the twenty-four (24) preliminary contestants for the on-site challenge, and discuss and break any ties.

AT THE CONFERENCE

- A. Attend the mandatory event coordinator's meeting at the designated time and location.
- B. Report to the CRC room and obtain the contents of the coordinator's packet; check the contents.
- C. Review the event guidelines and check to see that enough judges have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

PRELIMINARY ROUND

- A. A list of twenty-four (24) preliminary round participants will be posted on the first full day of conference.
- B. Preliminary round presentation participants report to the event area at the time and place stated in the conference program to sign-up for a presentation time.
- C. Participants report at the assigned time and place with a printed copy of the scientific poster for their presentation.
- D. Manage the on-site presentations/interviews.
- E. Judges assess the entries and may ask questions.
- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 1. To deduct twenty percent (20%) of the total possible points in this round or
 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

- G. Judges determine the twelve (12) semifinalists.
- H. Submit the semifinalist results and all required forms in the results envelope to the CRC room.

SEMIFINAL ROUND

- A. Post submission link instructions and any additional rules along with the semifinal list.
- B. Make available the semifinal online submission form.
- C. Semifinal participant(s) have twenty-four (24) hours from the time the list is posted to submit their entries online.
- D. Close the semifinal online submission link after twenty-four (24) hours has elapsed.
- E. Judges use the same official rating form for both the preliminary and semifinal round of evaluation.
- F. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- G. Judges determine the ten (10) finalists.
- H. Submit the finalist results and all required forms in the results envelope to the CRC room.

DEBATING TECHNOLOGICAL ISSUES



OVERVIEW

Applying leadership and 21st century skills, team members collaborate to prepare for a debate against a team from another chapter. The teams are instructed to take either the Pro or Con side of a selected subtopic.

The theme and subtopics for this event will be posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

Three (3) teams of two (2) individuals per state may participate.

TIME LIMITS

Refer to Preliminary Round Procedure for time limits.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the annual theme and subtopics posted on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants research all subtopics and should be prepared to debate any of the subtopics from both Pro and Con views.
- C. All participants are assigned the same subtopic.

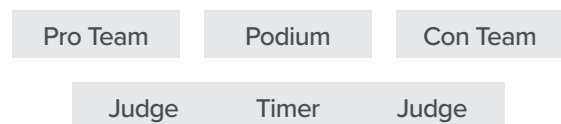
CHECK-IN

- A. Participants report to the event area at the time and place stated in the conference program to:
 1. Sign up for a time to receive the subtopic.
 2. Sign up for a debate time.
 3. Receive general information and directions.

PRELIMINARY ROUND

- A. Participants report to the preparation room fifteen (15) minutes before the scheduled debate time.
- B. One (1) minute before teams are instructed to report to the presentation room, each team is informed of the view (Pro or Con) of the issue they present to the judges.
- C. Once the teams are informed of the view they are to take, they are escorted to the debate room.
- D. Order of debate format:
 1. Pro Speaker (maximum of 2 minutes)
 2. Con Speaker (maximum of 2 minutes)
 3. Break (1 minute)
 4. Pro Cross Examination of Con (maximum of 2 minutes)
 5. Con Cross Examination of Pro (maximum of 2 minutes)
 6. Break (1 minute)
 7. Pro Rebuttal (maximum of 2 minutes)
 8. Con Rebuttal (maximum of 2 minutes)
- E. The escort introduces the Pro team by identification number and the team is instructed to sit to the left side of the podium.
 1. The first speaker should sit next to the podium.
 2. At this time, participants present their schedule card and reference summary to the judges.
- F. The Con team is introduced by identification number and instructed to sit to the right side of the podium.
 1. The first speaker should sit next to the podium.
 2. At this time, participants present their schedule card and reference summary to the judges.
- G. When the judges and teams are ready, the Pro speaker is instructed to move to the podium and begin.
 1. Timing starts when the speaker begins.
 2. After one (1) minute and forty-five (45) seconds, the timer holds up a 4" x 6" card that reads "15 seconds."
 3. Penalty points are deducted if a speaker exceeds the allotted time.

- H. When the Pro speaker is finished and has been seated, the Con speaker moves to the podium and begins, according to the same procedure noted above.
- I. When the Con speaker is finished and has been seated, the timer announces a one (1)-minute conference period in which both teams may prepare their questions for cross examination.
- J. During cross-examination, the team answering the questions remains seated.
- K. At the conclusion of the one (1)-minute conference period, the timer announces that the conference period is over and the Pro questioning speaker approaches the podium.
 - 1. Timing starts when the speaker begins.
 - 2. After one (1) minute and forty-five (45) seconds, the timer holds up a 4" x 6" card that reads "15 seconds."
 - 3. If the con team is in the process of answering a question, the team may finish its answer, provided it does not exceed an additional 15 seconds beyond the allotted two (2) minutes. At this time, the team is cut off by the timer.
- L. When the Pro questioning speaker is seated, the Con questioning speaker approaches the podium.
 - 1. Timing starts when the speaker begins.
 - 2. After one (1) minute and forty-five (45) seconds, the timer holds up a 4" x 6" card that reads "15 seconds."
 - 3. If the pro team is in the process of answering a question, the team may finish its answer, provided it does not exceed an additional 15 seconds beyond the allotted two (2) minutes. At this time, the team is cut off by the timer.
- M. At the conclusion of the cross examination, the teams are given a one (1) minute conference break to prepare their rebuttals.
- N. The timer announces the end of the conference break and the Pro rebuttal speaker approaches the podium.
 - 1. Timing starts when the speaker begins.
 - 2. After one (1) minute and forty-five (45) seconds the timer holds up a 4" x 6" card that reads "15 seconds."
 - 3. Penalty points are deducted if a speaker exceeds the allotted time.
- O. When the Pro rebuttal speaker is finished and has been seated, the Con rebuttal speaker moves to the podium and begins, according to the same procedure noted above in Procedure N.
- P. When the Con rebuttal speaker is finished and has been seated, the timer announces to both teams that they may leave the debate room.
- Q. If there is an odd number of teams entered in the event, one team debates twice, based on a random drawing for teams that wish to go twice. (Note that the coordinator may not force a team to go twice if it does not wish to do so.)
- R. If a team debates twice, it may or may not have the same side of the debate.
 - 1. The team also is required to provide an additional copy of the Resource List (see Regulation P) to the judges.
 - 2. The highest score of the twice-debating team is used as its score.
- S. Procedures D-R are followed to determine the twelve (12) semifinalists.
- T. Room set-up:



REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

SEMIFINAL ROUND

- A. Participants report to the event area at the time and place stated in the conference program to receive an assigned debate time and general information from the judging team.
- B. A different subtopic from the preliminary round may or may not be used.
- C. Participants report to the preparation room at the assigned time.
- D. Preliminary round procedures 4-18 are repeated to determine the ten (10) finalists.
- E. Pre-written notes may be used. Notes must be written on 3" x 5" notecards.
- F. Handwritten notes may be taken during the debate.
- G. A three (3)-ring binder of reference materials, as noted on the summary provided to the judges, may be used during the debate.
- H. No audio-visual materials of any type may be used.
- I. Participants are not allowed to hear the debates of other teams, aside from the team they are debating.
- J. Participants may use their own stopwatches to time themselves. These may only be traditional stopwatches; cell phone stop watches are NOT ALLOWED.
- K. No observers or assistants are allowed in the preparation room.
- L. Teams are penalized five (5) points for speaking over the allotted time.
- M. Participants must both present at different times during the debate. Only one (1) speaker per side is allowed at the podium at any time.
- N. Cross examination (questioning) of the opposing team is to remain civil. Any aggressive behavior, belittling of opponents, or shouting results in immediate disqualification of the offending team.
- O. Each team is required to submit a summary of references (used to prepare for the event) on an 8½" x 11" sheet of paper; both sides of the paper may be used.
 1. The event title, the event's yearly topic, and a line for the entry number must be printed at the top of the front side of the paper.
 2. The reference summary must be typewritten (handwritten is not acceptable).
 3. Font size must not be less than 10 point.
 4. MLA format must be used to cite sources.
 5. References for all three (3) subtopics are to be submitted on one (1) sheet of paper, not a separate sheet for each subtopic.
 6. The summary of references must be given to the judges; failure to submit the summary of references results in a disqualification.
- P. If observers are allowed in the debate room during the debates, the following shall be observed:
 1. No audio or visual recording devices are allowed.
 2. No talking or gesturing is permitted.
 3. Observers are not allowed to enter or leave during a debate.
 4. There is no applause until the debate is completed.

Please refer to the conference page of the TSA website or the Spectator Events page of the conference program for additional information.

EVALUATION

- A. The debate

Note: Scores are reset for the semifinal round and are not added to the preliminary scores.

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Broadcast media specialist
- Lawyer
- Motivational speaker
- Public relations executive

DEBATING TECHNOLOGICAL ISSUES

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Two (2) team members are present
- ☐ References list is present for each round
- ☐ ENTRY NOT EVALUATED

DEBATE (110 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Points of Argument (X1)	Team does not get the attention of the audience, and/or does not outline points clearly.	Team makes an effort to grab the attention of the audience; previewing points are somewhat organized in a logical manner.	Introduction uses an attention getter, clearly states the thesis, and previews main points of the argument; the team is cognizant of the audience.	
Organization (X1)	The main idea may not be focused or developed; the introduction is undeveloped; transitions may be needed.	The main idea is adequately presented, but the organizational structure may need to be strengthened; ideas are generally developed and flow smoothly.	The main idea is clearly presented, well-developed, and firmly supported.	
Topic Knowledge (X2)	The team does not have a grasp of the information; inaccurate, generalized, or inappropriate supporting material is used; there is an over-dependence on notes.	The team has a partial grasp of the information; supporting material is adequate and the team is at ease.	The team has a clear grasp of information; citations are introduced and attributed accurately; the team demonstrates full knowledge, with explanations and elaboration, of the subject area.	
Delivery (X2)	Delivery detracts from the message; eye contact may be very limited; presenter may tend to look at the floor, mumble, speak inaudibly, fidget, or read from notecards; gestures and movements may be jerky or excessive.	Delivery generally seems effective, however, use of volume, eye contact, vocal control, etc., may not be consistent; some hesitancy may be observed; vocal tone, facial expressions, and/or other nonverbal expressions do not detract from the message.	Delivery is extemporaneous, natural, confident, and enhances the message; posture, eye contact, smooth gestures, facial expressions, volume, pace, etc., indicate confidence, a commitment to the topic, and a willingness to communicate.	
Cross Examination (X1)	Questions posed to the opposing team show a minimal knowledge of the subtopic and do not leave much room for discussion.	Questions posed to the opposing team show an adequate knowledge of the subtopic and prompt reasonable discussion.	Questions posed to the opposing team show excellent knowledge of the subtopic and prompt eloquent discussion.	
Question Responses (X1)	The team's responses are minimally sourced and do not fully answer the questions posed.	The team's responses are moderately sourced and mostly answer the questions posed.	The team's responses are fully sourced and completely answer the questions posed.	

DEBATE (110 points) – continued			
Rebuttal (X1)	Rebuttal is unorganized, unclear, and/or incoherent; rebuttal includes no counter to points made from the opposing team.	Rebuttal is somewhat organized, and it creates a mostly logical counter to the opposing team's points.	Rebuttal is logical, concise, and creative; counter arguments from the opposing team are incorporated in the rebuttal in a unique and interesting way.
Voice and Language (X1)	Language choices may be limited, peppered with slang or jargon, too complex, or too dull; language is questionable or inappropriate for the audience.	Language used is mostly appropriate, respectful, or inoffensive; word choices are adequate.	Language is familiar to the audience, appropriate for the setting, and free of bias; word choices are vivid and precise.
Group Member Participation (X1)	One team member speaks for the initial, cross examination, question responses, and the rebuttal; the other team member is disengaged; leadership and/or 21 st century skills are not evident.	Each team member speaks in the debate—one for the initial portion and the other for the rebuttal; during questioning, both team members have adequate knowledge of the topic and subtopic and share ownership equally; leadership and/or 21 st century skills are somewhat evident.	Each team member speaks eloquently in the debate—one for the initial portion of the debate and the other for the rebuttal; during questioning, both team members show clear understanding, knowledge, and ownership of the topic and subtopic; leadership and/or 21 st century skills are clearly evident.
DEBATE SUBTOTAL (110 points)			
<p>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.</p> <p>Indicate the rule violated: _____</p>			
<p>Time violation (a deduction of five [5] points total will be incurred for exceeding the debate time limit). Record the deduction in the space to the right.</p>			
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p>			<p>TOTAL (110 points)</p>

Comments:

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

JUDGE

Printed name: _____ Signature: _____

DEBATING TECHNOLOGICAL ISSUES

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more
- C. Timekeeper/Announcers
 - 1. One (1) timekeeper/announcer per heat room; timekeepers may serve as judges
- D. Escorts for moving teams from preparation room to debate room
 - 1. One (1) per heat room; escorts may not serve as judges

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Signs that read "DEBATE in PROGRESS" for all rooms, as needed
 - 5. One (1) stopwatch for each debate room
 - 6. A 4" x 6" card with the message "15 seconds" written on the card, one (1) card for each debate room
 - 7. Two (2) 3" x 5" cards with "Pro" written on the card; two (2) 3" x 5" cards with "Con" written on the card; and one (1) 3" x 5" card with "2 minutes" written on it for each debate room
 - 8. Copies of schedule cards
 - 9. Results envelope
- B. Podium for each debate room
- C. One (1) table and two (2) chairs for the Pro side and one (1) table and two (2) chairs for the Con side for each debate room

- D. One (1) table and three (3) chairs for judges and timekeeper/announcer for each debate room; one (1) chair in the back of the room for the escort
- E. Chairs for observers during the debate, if applicable
- F. Three (3) tables and three (3) chairs in the preparation room for event personnel and participants

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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. Develop a heat schedule, taking into consideration the number of preparation and debate rooms, the number of entries, and the time allotted for the event. Twenty (20) minutes should be allowed for each debate.
- F. From the list of subtopics, choose one subtopic to be used for each round. The subtopic chosen must apply for all teams.
- G. At least one (1) hour before the event is scheduled to begin, meet with judges/assistants to review time limits, procedures, regulations, evaluation, and any other details pertaining to the event. If questions arise that cannot be answered, speak to the event manager before the event begins.

EVENT CHECK-IN

- A. Create the following sign-up sheets:
 - 1. To receive the sub-topic
 - 2. Debate time

- B. Post a sign-up sheet for participants to:
 - 1. Sign up for a time to receive the subtopic.
 - 2. Sign up for a debate time.
 - 3. Receive general information and directions.
 - 4. Submit a hard copy of the References List (refer to Regulation P of this guide for specific information).

PRELIMINARY ROUND

- A. Begin the event by checking in the participants when they arrive at the preparation room at their scheduled time.
- B. When two (2) teams and a debate room are available, have one (1) team draw one (1) or two (2) schedule cards (one [1] card has Pro written on it and the other card has Con written on it).
 - 1. The view a team selects applies for the entire event.
 - 2. Each team, with the coordinator's assistance, completes the remaining information on the card.
 - 3. This card, along with a team's reference summary, is given to the judges once a team has entered the debate room.
- C. Record the view each team is presenting on the scheduling sheet.
- D. Have the escort take the teams to the debate room.
- E. The escort announces to the judges the identification number of the Pro team first and then the Con team.
 - 1. Each team then sits on a designated side of the podium.
 - 2. The judges need to record each team's identification number on the judge's evaluation sheet.
- F. The escort should remain in the debate room until the end of the debate, when s/he escorts each team from the room. This process of escorting teams into and then out of the debate room for competition takes place until all teams have participated.
- G. If there is an odd number of teams entered in this event, teams are randomly selected to determine the team that debate twice. If a team debates twice, its highest score is used to determine placement.
- H. When the timekeeper/announcer has confirmed that the teams and judges are ready to begin, s/he instructs the Pro speaker to approach the podium and begin.
- I. The timing of each debate starts when the speaker begins; however, if there are any unreasonable delays, the speaker is warned by the timer and timing begins.
- J. Timing of the conference break starts once the Con speaker has completed the presentation. The timekeeper informs the teams that they are in the conference break and also informs the teams when the period is over.
- K. Once the conference break is over, the Pro cross examination speaker approaches the podium and begins, followed by the Con cross examination speaker.
- L. Timing of the second conference break begins once the Con cross examination speaker is seated.
- M. Once the second conference break is over, the Pro rebuttal speaker approaches the podium and begins, followed by the Con rebuttal speaker.
- N. When the Con rebuttal speaker is finished, s/he should return to his/her seat. The timekeeper collects the summary of references from both teams. When the evaluators are ready, the timekeeper announces to the teams that they are to leave the room and they are escorted out by the escort.
- O. The judges inform the escort when they are ready for a new set of teams so that the escort may return to the preparation room.
- P. Following the last team's presentation, the judges complete the scoring, making adjustments for time penalties.
- Q. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- R. Following the preliminary heats, judges determine twelve (12) semifinalist teams and submit the results to the CRC for posting.

SEMIFINAL ROUND

- A. Assign semifinalists a debate time.
- B. At the time and place stated in the conference program, meet with semifinalists to review scheduling and procedures.
- C. Follow preliminary round procedures for the semifinal round of debates.
- D. All communication related to judges and participants during the debate should be handled by the timekeeper.
- E. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- F. Judges determine the ten (10) finalists and discuss and break any ties.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.
- H. If necessary, manage security and the removal of materials from the event area.

DIGITAL VIDEO PRODUCTION



OVERVIEW

Applying leadership and 21st century skills, participants use digital video skills, tools, and processes to communicate, entertain, inform, analyze, or illustrate the annual theme on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

Three (3) teams or three (3) individuals per state may participate.

TIME LIMITS

PRELIMINARY ROUND

- A. 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. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.
- C. The digital video must not exceed three (3) minutes in length.
- D. A deduction of five (5) points total will be incurred for entries over the three (3) minute maximum length.
- E. The timing starts with the first sound and continues until the last sound ends.

SEMIFINAL ROUND

- A. Up to five (5) minutes are allowed for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants access the annual theme on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants concentrate their efforts on the design of an original digital video, while observing the regulations and requirements.

- C. Participants record their processes in a documentation portfolio.
- D. Participants submit the entry by 11:59 p.m. ET on May 15th.
- E. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. Entries are evaluated by the judges with neither students nor advisors present based on the following criteria:
 1. Judges score the Digital Video criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.
- B. A list of twelve (12) semifinalists (in random order) is posted on the first full day of conference.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for an interview time.
- B. Semifinalists report at the assigned time and place for the interview.
- C. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE/PRELIMINARY ROUND

- A. The Video:
 1. Participants may choose any video hosting site (such as an UNLISTED YouTube URL), or a shareable link in cloud storage, as long as the video is located online and accessible for evaluation.

2. If a URL is provided, the URL must point directly to the participant's entry. Entries that require a software download or a request that access be granted will not be judged.
 3. The video entry must be submitted in a common video format suitable for viewing with VLC Player, utilizing a Microsoft Windows operating system.
 4. Entries received, or changes made to submitted entries after the deadline will not be judged.
 5. All video footage, graphics, special effects, and audio clips must be originally created/filmed by the participants.
 6. All ideas, text, images, and sound from other sources must be properly cited.
 7. If copyrighted material is used, proper written permission must be included. NOTE: The video production product will not be judged if copyright procedures are not followed.
- B. The documentation portfolio must be submitted with the video URL address in the form of a multi-page PDF attachment in the following order:
1. Title page with the event title, the title of the video, the conference city and state, and the year; one (1) page
 2. Table of contents; pages as needed
 3. Purpose and description of the video; one (1) page
 4. Team's self-evaluation of the video, using criteria from the official rating form; one (1) page
 5. Hand sketched storyboard; pages as needed
 6. Digital video script; pages as needed
 7. List of hardware and software used in the development of the video; one (1) page
 8. List of references that includes sources for materials (copyrighted and non-copyrighted); pages as needed
 9. Permission letters for copyrighted material (including clips and images); pages as needed
 10. Student Copyright Checklist (see Forms Appendix)
 11. Signed consent forms for all video participants (see Forms Appendix)
 12. Plan of Work log (see Forms Appendix); one (1) page.

EVALUATION

PRELIMINARY ROUND

- A. The digital video
- B. The documentation portfolio

SEMIFINAL ROUND

- A. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Audio/video operator or technician
- Cinematographer
- Film/video editor
- Screen editor

DIGITAL VIDEO PRODUCTION

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Video is located online and accessible
- ☐ PDF of the documentation portfolio was submitted and scored
- ☐ Required forms are present
- ☐ ENTRY NOT EVALUATED

VIDEO PRODUCTION (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Video (X1)	The video shots have obvious problems with focus, steadiness, and framing.	The video shots are somewhat focused and framed and there is a limited use of close-ups.	The video is enhanced by steady, creative shots and incorporates excellent use of close-ups.	
Audio (X1)	The audio quality is poor, a result of primary use of the on-camera microphone for recording.	The audio quality is clear with good levels, and reflects the correct use of microphones and audio techniques.	The audio quality is excellent, with use of additional audio clips/cues that enhance the video production.	
Lighting (X1)	The video reflects poor ambient lighting choices and/or the use of heavy back-lighting.	The video reflects adequate lighting on subjects and the proper use of lighting techniques.	The video reflects an excellent and creative use of lighting, which propels the story emotionally.	
Continuity and Pacing (X1)	The sequencing is confusing or incomprehensible; shots are left on too long, and edit points/transitions are "glitchy."	The pace and timing are generally structured; the shots move along, helping to tell the story, and there is some use of transitions.	The shots are logically paced and move the story along in an interesting way, with excellent and purposeful use of transitions.	
Creativity and Originality (X1)	There is little original thought or creativity in the design and production, resulting in what appears to be a simple piecing together of events.	The video reflects some original and creative elements.	Originality and creativity are at the forefront of the video, with thematic elements incorporated in a highly authentic way.	
Video Effectiveness (X2)	The work does not meet the project goals, has an unclear message, and reflects sloppy work.	The topic is presented with some insight, and the video meets most project goals.	The video is focused, with a clear message and a rich variety of supporting material.	
VIDEO PRODUCTION SUBTOTAL (70 points)				
Time violation (a deduction of five (5) points total will be incurred for exceeding the three (3)-minute limit for the length of the video). Record the deduction in the space to the right.				

DOCUMENTATION PORTFOLIO (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	The portfolio is completely unorganized and/or is missing three (3) or more components.	The portfolio is missing two (2) components and/or is loosely organized.	The portfolio is clearly organized and has either one (1) or no missing components.	
Purpose and Description (X1)	The purpose and description of the video are unclear and hard to visualize.	The purpose and description of the video are somewhat clear.	The documentation provides a clear and concisely written purpose and description that interests the reader.	
Storyboard (X1)	The hand-sketched storyboard and script are sloppy, appear to be thrown together as an after-thought, and/or do not correlate with the video.	The storyboard and script are drawn appropriately and generally correlate with the completed video.	The storyboard and script are of exceptional aesthetic and artistic quality, and they clearly correlate with the video.	
DOCUMENTATION PORTFOLIO SUBTOTAL (30 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
PRELIMINARY SUBTOTAL (100 points)				

SEMIFINAL INTERVIEW (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Interview (X2)	The participant(s) demonstrates limited knowledge and has difficulty articulating video production or the design process; there are signs of lack of involvement in the video production or processes; leadership and/or 21 st century skills are not evident.	The participant(s) demonstrates adequate knowledge of the video production and design processes; leadership and/or 21 st century skills are somewhat evident.	The participant(s) demonstrate competence and knowledge related to the design and production of the video and able to articulate the "reasoning" behind the decisions made; leadership and/or 21 st century skills are clearly evident.	
SEMIFINAL INTERVIEW SUBTOTAL (20 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
SEMIFINAL SUBTOTAL (20 points)				
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.

JUDGE

Printed name: _____ Signature: _____

DIGITAL VIDEO PRODUCTION

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. One (1) stopwatch per team of judges
 - 5. Stick-on labels for entries, as needed
 - 6. Results envelope
- B. Tables and chairs for judges
- C. Computers capable of reading a USB, as needed
- D. Extension cords (25' minimum length), as needed
- E. Power bars with surge protection, as needed

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants by June 10th. The results are shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and Pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Judges determine the twelve (12) semifinalists and discuss and break any ties.
- E. At least five (5) days prior to the National TSA Conference, make accessible the online storage utility link for the entries.

- F. Collect completed rating forms electronically and bring them to the conference on a flash drive.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

PRELIMINARY ROUND

- A. Judges independently assess the entries using the following procedure:
 - 1. Judges score the Digital Video Criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.
- B. On the first full day of the conference, post a list of the twelve (12) semifinalists in random order.

SEMIFINAL ROUND

- A. At least one (1) hour before the event is scheduled to begin, meet with judges and review the time limits, procedures, and regulations.
- B. Semifinalist(s) report at the time and place stated in the conference program to sign up for an interview time.
- C. Semifinalist(s) report at the assigned time and place for the interview.

- D. Distribute the guidelines for the interview.
- E. Manage the on-site interviews.
- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- G. Judges determine the ten (10) finalists and discuss and break any ties.
- H. Submit the finalist results and all related forms in the results envelope to the CRC room.

DRAGSTER DESIGN



OVERVIEW

Applying leadership and 21st century skills, participants design, produce a working drawing for, and build a CO₂-powered dragster according to stated specifications, using only certain materials.

ELIGIBILITY

Two (2) individuals per chapter may participate.

TIME LIMITS

The top sixteen (16)-qualifying dragster builders participate in a five (5)-minute car builder interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants prepare their documentation and Dragster model according to the regulations.

PRELIMINARY ROUND

- A. Participants report to the time and place stated in the conference program to check in:
 - 1. the dragster
 - 2. the drawings
- B. Entries are reviewed by judges to determine safety on the track.
- C. Safe dragsters race for qualifying time on the same lane of the raceway.
- D. The top sixteen (16) qualifying entries, based on the time trials, are evaluated against the criteria for this event.
- E. Dragsters that do not meet event regulations are disqualified and lower qualifying cars are moved up until sixteen (16) dragsters that meet specifications are determined.

SEMINFINAL ROUND

- A. The top sixteen (16) dragster builders report to the track at the posted time for a five (5)-minute interview.
- B. The top sixteen (16) entries race in a double-elimination format to earn points for the race portion of the event.
- C. Drawing, design, and body finish points are combined with race points to determine the final standings.
- D. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Participants must check the “Special Design Challenge Requirements” section for the current year’s design challenge specifications.
- B. Drawings:
 - 1. The two (2)-view (top and side) drawing with metric dimensions is made on drawing paper no larger than 11" x 17" in size.
 - 2. Drawings are developed using standard engineering practices and procedures.
 - 3. The drawing may be produced using traditional drafting methods or CAD.
 - 4. The title block includes only the participant’s identification number, which is assigned at registration time and is placed on the entry and drawing during check-in.
- C. Dragsters that do not meet the below specifications/tolerances are disqualified from the race.

Special Design Challenge Requirements

(2021) Car body design must include at least one vertical fin on the front and rear of the body

(2022) All four wheels must be completely exposed from the body. Use modern NHRA Top Fuel Dragsters as inspiration.

Dragster body

	MINIMUM	MAXIMUM
1. One (1)-piece, all-wood construction; any type of lamination results in disqualification. 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. Two (2) or more like or unlike pieces of wood glued together are not considered one (1)-piece, all-wood construction.		
2. Body length	(2021) 235mm (2022) 280mm	(2021) 245mm (2022) 290mm
3. Body height with wheels		75mm
4. Body mass (completed car without CO ₂)	(2021) 100g (2021) 80g	N/A
5. Body width at the point the axles pass through the body, front and back	35mm	42mm
6. Vehicle total width (including wheels).		90mm

Axles/axle holes/wheelbase

	MINIMUM	MAXIMUM
1. Dragsters must have two (2) axles per car, no more.		
2. Bottom of axle hole or bearing above bottom of car body. (NOTE: This will be only be measured at the side surfaces of the wood car body at the axle hole.)	5mm	10mm
3. Axle hole from front and rear of car	15mm	100mm
4. Minimum wheelbase (axle distance apart at farthest points)	105mm	N/A
5. Bearings, bushings and lubricants may be used.		
6. Glue may be used to secure bearings to body.		

Spacer washers/clips

	MINIMUM	MAXIMUM
1. Spacer washers		8
2. Axle clips		8
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 (CO₂ cartridge hole)

	MINIMUM	MAXIMUM
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 ₂ cartridge. A minimum of 3mm thickness around the entire power plant hole must be maintained on the dragster for safety. The inside of the power plant hole must not be intentionally painted.		
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

Screw eyes

	MINIMUM	MAXIMUM
1. Dragsters must have two (2) screw eyes (no more) per car that meet tolerances. Screw eyes must not make contact with the racing surface. The track string must pass through both screw eyelets, which are located on the center line of the bottom of the car. Glue may be used to reinforce the screw eyes. It is the responsibility of the car designer/engineer to see that the screw eye 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. Minimum distance apart (at farthest points)	150mm	N/A

Wheels

	MINIMUM	MAXIMUM
1. A dragster must have four (4) wheels, no more. <ul style="list-style-type: none"> a. Two (2) wheels must meet the requirements in #2 and #3 below. b. The other two (2) wheels must meet the requirements in #4 and #5 below. c. All four (4) wheels must touch the racing surface at the same time. d. All wheels must roll. e. Wheels must be made entirely from plastic. f. Dimensions must be consistent for the full circumference of each wheel. g. Measurement represents the FULL surface contact point where wheel makes contact with the track. 		
2. Front diameter	32mm	37mm
3. Front width (at surface contact point)	1.5mm	5mm
4. Rear diameter	35mm	40mm
5. Rear width (at full, unbroken, surface contact point)	12mm	18mm

SEMINFINAL ROUND**A. The Race:**

1. The official distance between the start line and the finish line on the race track is twenty (20) meters.
2. No repair or maintenance is allowed after the entries have been registered.
3. Any entry damaged during the race is evaluated by the event coordinator to determine whether or not the vehicle is allowed to race again.
4. In the event that the vehicle is damaged by conference personnel, the event coordinator rules as to whether or not 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.
5. Cars that lose wheels, bearings, screw-eyes will not continue to race.
6. Damaged wheels may not be replaced.
7. All CO₂ cartridges for the race are provided by national TSA.

EVALUATION

- A. The dragster
- B. The drawings
- C. Placement in the double elimination on-site race
- D. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

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

DRAGSTER DESIGN

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Car is present
- ☐ Technical drawing is present
- ☐ Car is safe to race
- ☐ ENTRY NOT EVALUATED

DRAGSTER CONSTRUCTION (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Dragster Body Production Quality (X1)	Dragster exhibits poor production quality, with a crude and rough surface and little or no attention to detail.	Dragster shows evidence of proper production techniques; it is adequate but may need improvement.	Dragster displays excellent production techniques, with obvious attention to detail and quality.	
Body Paint/Finish (X1)	Surface preparation is inadequate; the body is unprimed, with poorly applied final finish.	Dragster body is painted and finished adequately.	Dragster body finish is exemplary; body is smooth, shiny, and exhibits quality.	
Vehicle Assembly (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 adequately meets standards.	Dragster is properly assembled, with obvious evidence of attention to detail.	
Drawing Scale and Dimensioning (X1)	The drawing is present, but is not to scale; dimensions are missing, or dimensioning is poorly done.	The drawing is acceptable and to scale; it is a close representation of the vehicle, but some dimensions may be missing.	The drawing is exemplary, exact, and includes all pertinent dimensions.	
Drawing Completion and Quality (X1)	The drawing is sloppy, missing parts, and lacking quality.	The drawing is complete, and the quality is adequate.	The drawing is complete and precise, and of exceptional quality.	
DRAGSTER CONSTRUCTION SUBTOTAL (50 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
PRELIMINARY SUBTOTAL (50 points)				

SEMIFINAL INTERVIEW (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Car Builder Interview (X2)	The participant demonstrates limited knowledge and has difficulty articulating the design process; there are signs of lack of involvement in the video production or processes; leadership and/or 21 st century skills are not evident.	The participant demonstrates adequate knowledge of the production and design processes; leadership and/or 21 st century skills are somewhat evident.	The participant demonstrates competence and knowledge related to the design and production of the dragster and articulates the "reasoning" behind the decisions made; leadership and/or 21 st century skills are clearly evident.	
SEMIFINAL INTERVIEW 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	15 Points	
RACE SUBTOTAL (55 points)								

Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, 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 (125 points)	
--	---------------------------	--

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

DRAGSTER DESIGN

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

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

MATERIALS

- A. Coordinator's packet and box, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Time trial record sheet
 - 5. Qualifier interview time slot sheet
 - 6. Double elimination bracket chart
 - 7. Stick-on labels for entries, as needed
 - 8. Results envelope
- B. CO₂ cartridges
- C. Metric scientific scales (triple beam balance or digital)
- D. Mono-filament fishing line (suggest between 30 and 50 pound); four (4) pre-tied: two (2) on track and two (2) reserve, for the track
- E. Race track set, including a starting gate and a finish gate, with a digital timer and winning lane indicator
- F. Padding for the finish gate
- G. Extra vehicles to test and demonstrate the track
- H. Race brackets for placement of the semifinalists
- 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 timekeeper
- M. When using a computer controlled track, provide the proper computer for the software being used, all necessary connections, and a printer. This equipment is placed on the official timekeeper's table.
- N. Provide for a display of time trials and race brackets.
- O. Ultraviolet ink and light to mark cars and check for cars that have been previously entered.

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Participants report to the time and place stated in the conference program and check in:
 - 1. The dragster entry
 - 2. Full-size metric drawing of the completed vehicle
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have approval of the CRC.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Check to see that each entry drawing includes the participant's identification number in the upper right-hand corner of the paper.
- F. Position each entry (dragster and drawing) for evaluation and viewing.
- G. Secure the entries in the designated area.

PRELIMINARY ROUND

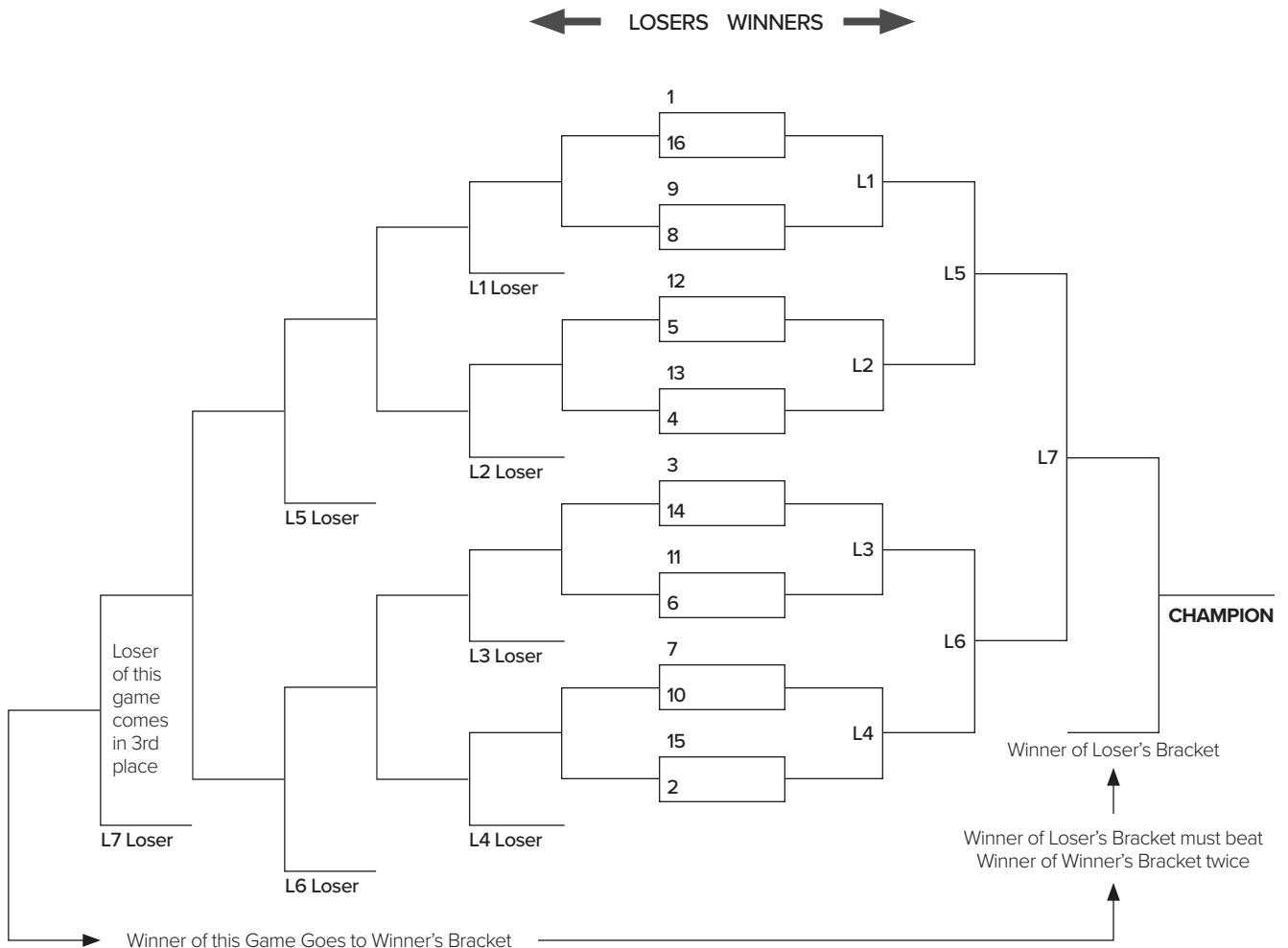
- A. Assist judges with evaluation of the design, drawing, and construction categories.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Begin the time trials at the scheduled time.
 - 1. Every race-worthy car should be tested.
 - 2. Students do not have to be present.
 - 3. Public viewing is allowed.
 - 4. Each car is timed in the same lane.
 - 5. Cars are timed only once.
 - 6. It is important that each car be positioned as well as possible in the starting gate.
- D. Position a judge at the starting gate to ensure that all cars are positioned in the starting gate correctly.
- E. Position another judge at the finish line.
- F. 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.
- G. Record preliminary times on a time trial record sheet.
- H. Place each car in the double elimination race bracket (see sample) according to the rank of its qualifying time.
- I. Judges verify that the top sixteen (16) qualifying cars meet Regulation C specifications.
- J. Entries that do not meet specifications are removed.
- K. Cars that are damaged or broken during the qualifying round are deemed non-raceable and also are removed.
- L. Only raceable cars, as determined by the judges, are allowed to compete for the semifinalist category.
- M. Lower qualifying cars are moved up until there are sixteen (16) legal semifinalists.
- N. Review and submit the semifinalist results and all related forms in the results envelope to the CRC room.

SEMIFINAL ROUND

- A. Post the top sixteen (16) cars with interviews times.
- B. Car builders report to the track at the posted time for a five (5)-minute car builder interview.
- C. Conduct interviews with the qualifying top sixteen (16) car builders.
- D. Begin the semifinals at the scheduled time.
- E. Run the semifinalist race. A sample double-elimination bracket follows.
- F. Only the sixteen (16) qualifying cars are raced.
- G. Students do not have to be present.
- H. Public viewing is allowed.
- I. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- J. Judges use qualifying times to break any ties among the sixteen (16) qualifying cars.
- K. Submit the finalist results and all related forms in the results envelope to the CRC room.
- L. If necessary, manage the security and removal of materials from the event area.

RACE BRACKET FOR 16-CAR DOUBLE ELIMINATION



OVERVIEW

In 2008, the National Academy of Engineering tasked an international group of leading technological thinkers to identify the [Grand Challenges for Engineering \(GCE\) in the 21st century](#). Fourteen (14) game-changing goals for improving life on the planet were identified and grouped into the themes of sustainability, health, security, and joy of living. Applying leadership and 21st century skills in conjunction with the engineering design process, teams develop a solution to one of the grand challenges based on the annual theme posted on the [TSA website](#) under Competition Themes/Problems.

ELIGIBILITY

Three (3) teams of three (3) or more individuals per state may participate.

TIME LIMITS

- A. Ten (10) minutes are allowed for the presentation.
- B. Five (5) minutes are allowed for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants access the annual theme posted on the [TSA website](#) under Competition Themes/Problems.
- B. Participants concentrate their efforts conducting research on engineering practices and brainstorming a solution.
- C. Participants create and test a prototype/model of their solution.
- D. Participants prepare their documentation and display according to the regulations.

PRELIMINARY ROUND

- A. No more than two (2) team members report to the event area at the time and place stated in the conference program to check in:
 - 1. the portfolio in PDF format on two [2] USB flash drives
 - 2. a free-standing display
 - 3. a prototype/model of the solution
- B. Entries are evaluated by the judges with neither students nor advisors present.
- C. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Participants report at the assigned time and place for the presentation/interview.
- C. Semifinalist teams present in front of their display and model/prototype, which may be used as a reference.
- D. Judges evaluate the entries.
- E. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Students prepare an electronic portfolio that includes each step of the engineering design process when developing a solution to their selected grand engineering challenge based on the annual theme.

B. Documentation Portfolio:

1. Documentation materials (comprising “a portfolio”) are required and must be submitted on two (2) USB flash drives in PDF format, with the following pages in this order:
 - a. Title page with the challenge listed, event title, the conference city and state, and the year; one (1) page
 - b. Table of contents; pages as needed
 - c. Identification and definition of problem; one (1) page
 - d. Information gathering that explains the importance of developing a solution to the grand engineering challenge and how a solution would impact the lives of people. A concise historical perspective of the challenge must also be included; one (1) page
 - e. The identification and explanation of three (3) possible solutions to the challenge must be included. For each possible solution presented, a concise narrative must be included that supports the plausibility of each solution based on a specific scientific, technical, and/or engineering concept; one (1) page per solution, three (3) pages total
 - f. Of the three (3) possible solutions, select the most plausible solution and create a prototype/ model. Provide an appropriate, specific, and descriptive, visual representation of the solution (ex. engineering drawings, schematic, flowchart, etc.); pages as needed.
 - g. A written summary of the of the iteration process in the design of the prototype and the results of each test; pages as needed. At a minimum, four (4) pages describing the below points are required:
 - i. If a solution is not working or cannot be evaluated/tested, a narrative for a means of testing the chosen solution.

- ii. Refinements of the prototype based on evaluation/testing conducted. If a solution cannot be evaluated/tested, write in narrative form a reflection of possible refinements that could be made to the chosen solution based on the testing means developed.
- iii. A reflection of the effectiveness of the selected solution and the testing means developed (i.e. did or would the tests developed actually prove that the solution is plausible?).
- iv. Describe any other issues found during the iteration process.
- h. Plan of Work log; pages as needed
- i. References and resources page in Modern Language Association (MLA) style; pages as needed

C. The Display:

1. A free-standing display must be used and the dimensions of the display may not exceed 15" deep x 3' wide x 4' high.
2. A tangible prototype/model must be included with the display and must physically fit within the display board dimensions.
3. If the display and/or prototype/model requires power, they must be powered by dry-cell batteries or photo-voltaic cells.
 - a. The power supply must physically fit within the display board dimensions.
 - b. All power must be switched off once the team has completed set-up.
 - c. If teams want judges to activate any electronic device in their model/display, complete instructions must be provided to judges on how to power up the model/display.
4. No harmful or illegal substances are permitted. No viruses, live plants, or animals are permitted. No dangerous processes, experiments, and/or physical models may be displayed/demonstrated.

EVALUATION

PRELIMINARY ROUND

- A. The displays
- B. The prototype/model
- C. The documentation portfolio

SEMIFINAL ROUND

- A. The presentation/interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Engineer
- Environmental scientist
- Health and safety specialist
- Manufacturing consultant
- Mechanical engineer

ENGINEERING DESIGN

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Documentation portfolio is on two [2] USB flash drives)
- ☐ Display meets the size constraints and is free-standing
- ☐ Prototype/model is present and meets size constraints
- ☐ ENTRY NOT EVALUATED

DISPLAY AND MODEL (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Aesthetics (X1)	The display design is unattractive in appearance and shows a lack of understanding of graphic design principles.	The display design is somewhat attractive and shows an adequate understanding of the use of graphic design principles.	The display is of professional quality with an exemplary use of graphic design principles.	
Prototype/Model (X1)	Models are confusing and do not represent and/or support the proposed problem solution.	Models provide adequate representation and support of the proposed problem solution.	Models provide excellent representation and support of the proposed problem solution.	
Overall Impact (X2)	The display information and models do not detail or enhance the essential components of the team's problem identification and solution.	The display information and models somewhat detail and enhance the essential components of the team's problem identification and solution.	The display information and models greatly detail and enhance the essential components of the team's problem identification and solution.	
DISPLAY SUBTOTAL (40 points)				

DOCUMENTATION PORTFOLIO (110 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	Portfolio is unorganized and/or is missing three (3) or more components.	Portfolio has most components and is generally organized.	Portfolio has all required components and is well organized.	
Identification and Problem Definition (X1)	The problem is not clearly defined or communicated and does not fall within the grand challenge selected.	The problem is somewhat defined and communicated.	The problem is clearly written, concise, and well defined; the problem falls within the grand challenge selected.	

DOCUMENTATION PORTFOLIO (110 points) – continued				
Information Gathering (X1)	There is little evidence of research; there is a lack of understanding of the issues cited.	There is some evidence of research; an adequate understanding of the issues is present.	Thorough research is clearly evident with a firm understanding of the issues established.	
Possible Solutions (X1)	A very brief explanation of the final solution is presented; there is a lack of creativity; descriptions are weak.	An adequate description of the solution is presented and supported by some amount of research and evidence; the solution is somewhat creative.	The solution is supported by the research gathered and scientific and engineering evidence; the solution is plausible and creative.	
Selected Solution (X2)	Solution conveys a sloppy design, and/or does not incorporate key elements in the engineering challenge; visual representations of the solutions are not appropriate or accurate and do not follow established conventions.	Solution incorporates most elements laid out in the engineering challenge; visual representations of the solutions are somewhat appropriate, accurate and loosely follow established conventions.	Solution exudes creativity and addresses all engineering challenge elements; visual representations of the solutions are appropriate, accurate and follow established conventions.	
Evaluation and Testing (X1)	Method of evaluation is impractical and/or does not adequately represent a means to test the solution for real-life application.	Method of evaluation loosely provides a means for the solution to be evaluated under real-life application.	Method of evaluation for solution is replicable, concise, and able to be performed in real-life conditions/ applications.	
Refinements (X1)	Little or no correlation to selected solution based on prior solutions; refinements are not concise and/or organized.	Refinements are somewhat understood and based on prior solutions and refinements are organized in a logical start to finish manner.	Refinements depicted clearly illustrate rational thought and progress in a logical sequence from start to finish.	
Communication of Solution (X1)	The solution is difficult to understand as communicated and is presented in an illogical manner.	The solution is communicated adequately, and thoughts are somewhat organized and/or concise.	The solution is communicated in an organized, clear, and concise manner.	
Plan of Work Log (X1)	The log is poorly organized and/or incomplete.	The log is adequately detailed, organized, and contains most of the required components.	The log is detailed and contains all the required components.	
References and Resources (X1)	There are few references listed, and/or references listed show little relevance to the project's goal.	There are a sufficient number of credible references listed.	Many credible references are listed, reflecting research in the areas covered.	
DOCUMENTATION PORTFOLIO SUBTOTAL (110 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
PRELIMINARY SUBTOTAL (150 points)				

SEMIFINAL PRESENTATION/INTERVIEW (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	Team seems unprepared and unorganized for the presentation/ interview, with an illogical explanation of the project.	Team is prepared for the interview and is somewhat organized in its presentation to judges; team's presentation thesis is, for the most part, logical and/or clear.	Team's presentation/interview with judges is well organized; the interview is concise and logical, with a clear explanation of the development of the project.	
Knowledge (X1)	Team members seem to have little understanding of the concepts in their project; vague interview answers are provided.	Team members have a generalized understanding of the concepts discussed and answer questions adequately.	Evidence is clear that team members have a thorough understanding of the concepts discussed; they answer questions thoroughly.	
Articulation (X1)	Communication of the solution is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	The interview provides a clear, concise, and easy-to-follow analysis of the solution; leadership and/or 21 st century skills are clearly evident.	
Delivery (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.	
Team Participation (X1)	Only one person in the group communicates with judges; there is little or no participation from other team members.	Team members all participate to some extent and generally seem to understand the concepts.	Team members seem to fully understand the concepts and share an equal role in the interview.	
SEMIFINAL PRESENTATION/INTERVIEW SUBTOTAL (50 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.				
Indicate the rule violated: _____				

SEMIFINAL SUBTOTAL (50 points)		
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To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.	TOTAL (200 points)	
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Comments:

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

JUDGE

Printed name: _____ Signature: _____

ENGINEERING DESIGN EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) for each thirty (30) entries
 - 2. Semifinal round, two (2)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. Stick on labels for entries
 - 4. Envelopes for portfolio flash drives
 - 5. List of judge/assistants
 - 6. One (1) stopwatch per team of judge
 - 7. Results envelope
- B. Table and chairs for semifinalist presentation

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time stated in the conference program.
- B. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Place an entry number on each USB storage drive, display, and prototype/model.
- F. Instruct participants to position displays for viewing.
- G. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. Judges independently assess all displays, prototypes/ models, and documentation portfolios to determine the twelve (12) semifinalists.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

- C. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- D. Create semifinalist sign-up sheet for each team's final presentation.

SEMIFINAL ROUND

- A. Semifinalist teams report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Semifinalist teams report at the assigned time and place for the presentation/interview.
- C. Manage the completion of the on-site presentations and interviews.

- D. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.
- F. Submit the finalist results and all related forms in the results envelope to the CRC room.
- G. If necessary, manage security and the removal of materials from the event area.

ESSAYS ON TECHNOLOGY



OVERVIEW

Applying leadership and 21st century skills, participants write a research-based essay, using two (2) or more sources provided on-site, that makes insightful connections about a current technological topic.

ELIGIBILITY

Three (3) individuals per state are allowed to participate.

TIME LIMITS

Two (2) hours are allotted for the on-site challenge.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

ON-SITE CHALLENGE

- A. Participants report to the event area at the time and place stated in the conference program.
 - B. Participants receive the writing prompt, two (2) or more articles on a current technological topic, and instructions for the on-site challenge.
 - C. Time begins after participants have received all materials.
 - D. Participants prepare essays using a laptop computer (provided by participants).
 - E. After two (2) hours, participants stop writing. Each participant turns in an essay not exceeding three (3) typed pages, and one (1) works-cited page.
 - F. Essays are submitted in PDF format on a clean (unused) USB flash drive, provided by the participant.
 - G. Entries are reviewed by judges with neither students nor advisors present.
 - H. A list of ten (10) finalists are announced at the awards ceremony.
- ### REGULATIONS AND REQUIREMENTS
- Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.
- A. Participants are responsible for bringing a fully-charged laptop computer complete with the software necessary. Participants who report without a laptop will not be permitted to compete.
 - B. National TSA will NOT provide access to the Internet. Using a hotspot for this event is not allowed.
 - C. No power sources are provided for participants. The laptop computer must be capable of being used for the entire two (2) hour time frame of the event, without needing a power source.
 - D. Participants are responsible for bringing a clean (unused) USB flash drive to the event room.
 - 1. Flash drives must not contain any other documents, images, etc.
 - 2. Flash drives will not be returned to participants.
 - 3. Participants who report without a flash drive will not be permitted to compete.
 - 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 re-enter the event room.
 - F. Each entry must have only the participant identification number noted and centered directly below the title of the essay.
 - G. The length of the essay is limited to three (3) typed pages, single-spaced. The list of references is not included in the three (3) pages.
 - H. All essays must adhere to the following criteria:
 - 1. 12pt Times New Roman
 - 2. One inch (1") margins on all sides
 - 3. Single (normal) spacing

- I. With the essay, participants must turn in a one (1)-page typed bibliography, using proper MLA bibliography format.
- J. Essays must be submitted with a bibliography and in PDF format. Entries not following these guidelines will not be scored.
- K. All essays and USB drives become the property of TSA and will not be returned.

EVALUATION

- A. The essay criteria

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM educational standards of Science, Technology, Engineering, and Mathematics.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Research technician
- Scientist
- Writer

ESSAYS ON TECHNOLOGY

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Computer hardware is present and fully charged
- ☐ USB flash drive is present
- ☐ The entry is submitted in PDF format with a bibliography
- ☐ ENTRY NOT EVALUATED

ESSAY (110 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Thesis (X1)	The thesis is not a complete thought and/or is inappropriate for the essay; the title and thesis do not correlate with one another, or the thesis lacks creativity.	The thesis is evident and the idea behind it is somewhat concise and fairly creative; the essay title correlates with the thesis.	The thesis is well structured, concise, positioned appropriately, and creative; the essay title is authentic and correlates well with the thesis.	
Introductory Paragraph (X1)	The introduction explains the background but may lack detail; it does not help to establish the writer's position.	The introduction creates interest and generally states the position.	A well-developed introduction engages the reader and creates interest; the introduction states a significant and compelling position.	
Supporting Paragraphs (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, with adequate supporting details and a fairly developed narrative.	Paragraphs provide well-developed main points directly related to the thesis; supporting examples are concrete and detailed; the narrative presents a consistent and effective point of view.	
Concluding Paragraph (X1)	The conclusion is recognizable, but it does not effectively summarize the topic.	The conclusion generally summarizes the topic and restates the thesis.	The conclusion wraps up the point of the essay and creatively restates the thesis.	
Organization (X1)	There is no discernible organization; transitions are not present.	A logical progression of ideas is evident; 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.	
Style (X1)	The style is confusing and hard to follow; it contains fragments and/or run-on sentences; word choice is simple, ordinary, and/or unconvincing.	The style is clear, sentences are somewhat expressive, and 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.	
Mechanics (X2)	The essay contains distracting errors in punctuation, grammar, and spelling.	Punctuation, spelling, and grammar are generally correct, with few errors.	Punctuation, spelling, and grammar are correct with no errors evident.	

ESSAY (110 points) – continued				
Research Base (X1)	The essay lacks an adequate research base and/or uses minimal support from articles; leadership and/or 21 st century skills are not evident.	The research base is adequate, with support from articles; leadership and/or 21 st century skills are somewhat evident.	The essay conveys a detailed research base that includes comprehensive support from articles; leadership and/or 21 st century skills are clearly evident.	
Works Cited (X1)	Bibliography is not in the proper MLA format.	Bibliography is in the proper MLA format, but contains minor errors.	Bibliography is in proper MLA format, with no errors.	
ESSAY TOTAL (110 points)				
<p>Rules violations (a deduction of 20% of the total possible points in the semifinalist section) must be initialed by the evaluator, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p>				TOTAL (110 points)

Comments:

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

JUDGE

Printed name: _____ Signature: _____

ESSAYS ON TECHNOLOGY

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Two (2) judges per heat.
 - 2. Two new judges to evaluate the top ten (10) from each heat.

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stopwatch
 - 5. Envelopes for each USB flash drive
 - 6. Results envelope
- B. Tables and chairs for judges
- C. Tables and chairs for participants
- D. Securable room (preferable) for the duration of the event
- E. Two (2) or more articles on a current technological topic; one (1) set per participant and one (1) set per judge

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is scheduled to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the contestants at the time stated in the conference program.
- B. Ensure that computer hardware is present and fully charged.
- C. Place an entry number on each USB flash drive.

ON-SITE CHALLENGE

- A. Begin the event at the scheduled time by closing the doors and checking the entry list.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by circumstances beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have approval of the CRC.
- D. All participants should be in the room at this time. Participants registered but not present may be disqualified.
- E. Remind participants to:
 - 1. not use any identifying information other than the identification number, which must be centered directly below the title of the essay.
 - 2. leave a one inch (1") margin on all sides of the essay.
 - 3. single space their work using an 12pt Times New Roman font.
 - 4. submit only three (3) essay pages, plus a single page for references.
 - 5. save their work in a PDF format on a flash drive.
- F. Distribute both the prompt and the articles on a current technological topic to all participants. The prompt indicates the topic and instructions for composing an essay related to the articles.

- G. Instruct participants that those who finish before time is called must submit their work (on the flash drive) and leave quietly.
- H. Five (5) minutes before the two (2) hours is up, make an announcement that participants have five (5) minutes to complete their essay.
- I. Exactly two (2) hours after beginning, call time and collect the flash drives from participants.
- J. Supervise and assist the judges during the reading of the essays. Each entry must be read and evaluated independently.
- K. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- L. Judges determine the ten (10) finalists and 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.

EXTEMPORANEOUS SPEECH



OVERVIEW

Applying leadership and/or 21st century skills, participants verbally communicate their knowledge of technology or TSA subjects. Participants give a three-to-five (3-5) minute speech fifteen (15) minutes after having drawn a card on which a technology or TSA topic is written.

ELIGIBILITY

Three (3) individuals per state may participate.

TIME LIMITS

- A. Each speech must be between three and five (3-5) minutes.
- B. Participants are penalized one (1) point per ten (10) seconds for speaking over five (5) minutes or under three (3) minutes.
- C. Time commences when the speaker begins talking and concludes at the end of the speech.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

ON-SITE CHALLENGE

- A. Participants report at the time and place stated in the conference program to sign up for an on-site challenge time.
- B. Participants report at the assigned time and place for the on-site challenge.
- C. Each participant draws three (3) cards, each containing one (1) topic, from a box and selects one (1) topic from the three (3) on which to speak. The cards with the unused topics are returned to the box.
- D. Preparation:
 - 1. After having selected a topic, the first participant enters a preparation room separate from the speech delivery room and is given fifteen (15) minutes to prepare a speech.

- 2. Seven (7) minutes after the first participant enters the preparation room, the second participant enters the preparation room, goes to a different section, and begins his/her speech preparation, again with fifteen (15) minutes to prepare a speech.
- 3. Each participant, in turn, is allowed to enter the preparation room at seven (7)-minute intervals, thus enabling a consistent flow of participants to speak before the judges in a timely fashion. (This allows for one [1] minute to enter the room and announce the entry number, up to five [5] minutes for the presentation, and one [1] minute to exit the room.)
- E. The event coordinator introduces each participant (using the participant identification number only) according to the order in which participants appear on the sign-up sheet.
- F. The timekeeper visually notifies the speaker of the time remaining by using six (6) separate cards. Each of the six (6) 5" x 7" notecards has a "time remaining in minutes" number on it (4, 3, 2, 1, ½, and 0), and each is shown in descending order to the participant by the timekeeper during the speech.
- G. After speaking, the participant returns the topic card to the judges so that it can be returned to the topic box.
- H. Judges independently evaluate each speech.
- I. Ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Participants deliver a speech addressing the assigned topic while observing the regulations:
 - 1. No reference is to be made concerning the name of the participant or his/her school. Name tags provided by National TSA do not violate this rule.

2. Each speech must be the result of the participant's own effort.
 3. No reference materials or devices may be used or brought to the preparation room.
 4. Any notes for speaking must be written during the fifteen (15)-minute preparation period.
 5. Each participant is provided a maximum of three (3) 3" x 5" blank notecards.
 6. Although participants are permitted to use notes when speaking, it should be noted that deductions in scoring could be made for this practice if the use of notes detracts from the effectiveness of the speech.
 7. Participants are penalized by each judge one (1) point per ten (10) seconds for speaking over five (5) minutes or under three (3) minutes.
- B. If observers are allowed in the room during the event, the following shall be observed:
1. No audio or visual recording devices are allowed.
 2. No talking or gesturing is permitted.
 3. Observers are not allowed to enter or leave during a speech.
 4. There is no applause until the speech is completed.

Please refer to the conference page of the TSA website or the Spectator Events page of the conference program for additional information.

EVALUATION

- A. The speech
- B. The degree to which the content addresses the selected topic
- C. Adherence to the time limits

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Advertising executive
- Public speaker
- Politician
- Sales and marketing executive
- Teacher

EXTEMPORANEOUS SPEECH

2021 & 2022 OFFICIAL RATING FORM HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ ENTRY NOT EVALUATED

SPEECH (80 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	The speech is unorganized and difficult to follow or understand.	The speech is somewhat organized and generally can be followed and understood.	The speech is well organized and easy to follow; the delivery is exceptional.	
Knowledge (X2)	Minimal knowledge of the subject is evident in the speech; the participant does not convey an understanding of the topic.	Adequate knowledge of the subject is evident, and the speaker conveys a general understanding of the topic.	Complete knowledge and understanding of the topic and the development of a theme are conveyed through content of the speech.	
Voice and Articulation (X1)	The presenter conveys an inconsistent use of proper grammar, word pronunciation, and acceptable tone and pitch.	The presenter generally uses proper grammar and pronunciation, and varies the use of tone and pitch.	Smooth and effective articulation, proper grammar, correct pronunciation, and varied tone and pitch are evident throughout the speech.	
Stage Presence (X1)	The presenter's appearance is unprofessional, sloppy, and inappropriate.	The presenter's appearance is adequate, appropriate, and somewhat professional.	The presenter's appearance is appropriate, professional, and polished.	
Impact (X3)	The speech is unconvincing, uninteresting, and lacks compelling and attention-holding details; leadership and/or 21 st century skills are not evident	The speech is somewhat convincing and emphasizes several details; it adequately holds the attention of the audience and remains interesting; leadership and/or 21 st century skills are somewhat evident.	The speech is completely convincing, full of emphasis, and holds the attention and interest of the audience; leadership and/or 21 st century skills are clearly evident.	
SPEECH SUBTOTAL (80 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				

EXTEMPORANEOUS SPEECH

TIME DEDUCTIONS		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 speech. Time commences when the participant begins speaking		
Presentation Delivery Time		
TOTAL TIME DEDUCTION		
SUBTOTAL (80 points)		
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.

JUDGE

Printed name: _____ Signature: _____

EXTEMPORANEOUS SPEECH

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges, two (2) or more per heat/event room
- C. Timekeepers, one (1) per heat/event room
- D. Monitors, one (1) per event room

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope
- B. Speaker's stand/podium, one (1) per heat/event room
- C. Stopwatch, one (1) per heat/event room and two (2) per preparation room
- D. 5" x 7" notecards for "time remaining in minutes" numbers (see Procedure E), six (6) per heat/event room
- E. Table and chairs for judges and the timekeeper
- F. Chairs for audience (if applicable)
- G. 3" x 5" blank notecards, three (3) per participant
- H. 3" x 5" topic cards—a minimum of fifteen (15) different topics from which to select
- I. Tables and chairs in the preparation room

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.

- D. Inspect the areas in which the heats are conducted for appropriate set-up including sufficient number and size of tables.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Participants report at the time and place stated in the conference program to sign up for a presentation time.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.

ON-SITE CHALLENGE

- A. Manage the smooth flow of participants according to these procedures:
 - 1. After having selected a topic, the first participant enters a preparation room that is separate from the speech delivery room and is given fifteen (15) minutes to prepare a speech.
 - 2. Seven (7) minutes after the first participant enters the preparation room, the second participant enters the preparation room, goes to a different section, and is given fifteen (15) minutes to prepare a speech.
 - 3. Each participant, in turn, is allowed to enter the preparation room at seven (7)-minute intervals, thus enabling a consistent flow of participants to speak before the judges in a timely fashion. (This allows for one [1] minute to enter the room and announce the entry number, up to five [5] minutes for the presentation, and one [1] minute to exit the room.)

EXTEMPORANEOUS SPEECH

- B. When the participants have finished, each judge records the scores, consulting the timekeeper's record. The timekeepers notify judges of any time under three (3) minutes or over five (5) minutes for which deductions should be made.
- C. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- D. Judges determine the ten (10) finalists and discuss and break 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.

OVERVIEW

Applying leadership and 21st century skills, participants demonstrate an expertise in fashion design principles by creating a wearable design that reflects the annual theme. Semifinalist teams participate in an on-site presentation/interview in which they present their garment designs and discuss the design process.

The theme for the current year is published on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

Five (5) teams of two to four (2-4) individuals per state may participate.

TIME LIMITS

- A. Ten (10) minutes are allowed for the presentation/interview.
- B. A deduction of five (5) points will be incurred for exceeding the presentation/interview time limit.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants access the annual theme on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants concentrate their efforts on designing a wearable prototype with technological elements.
- C. Participants prepare their documentation portfolio according to the regulations.

PRELIMINARY ROUND

- A. Participants check in the following at the time and place stated in the conference program:
 - 1. The wearable prototype
 - 2. The documentation portfolio

- B. Entries are reviewed by judges with neither students nor advisors are present based on the following criteria:

- 1. Judges score the Quality of the Garment and Pattern criteria to determine the top twenty-four (24) preliminary round contestants, which will not be posted.
- 2. Judges score the Documentation Portfolio criteria of those top twenty-four (24) contestants to determine the top twelve (12) finalists.

- C. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Participants report at the assigned time and place for the presentation/interview.
- C. Semifinalists present their designs and answer questions from the judges.
- D. Models are present and wearing the prototypes designed by the team.
- E. Participants are allowed ten (10) minutes to complete the presentation/interview broken down as follows:
 - 1. two [2] minutes for set-up
 - 2. three [3] minutes for the presentation
 - 3. three [3] minutes for the interview
 - 4. two [2] minutes for removal of itemsPoints will be deducted from a team's score for exceeding the ten (10)-minute time frame allowed for the semifinal round.
- F. Final evaluation by judges takes place immediately following the completion of the presentation.
- G. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Participants use a 32-quart plastic storage box to submit their portfolio, patterns, and any prototypes that are not placed on hangers or on mannequins
- B. The portfolio, patterns, and prototype **MUST** be submitted together.
- C. ALL components of the entry (patterns, prototypes, etc.) must be the original work of the participants.
- D. Prototypes (garments):
 1. Any type of prototype (garment) that is typical of responsible clothing design and creation is considered appropriate.
 2. The purchase/use of special textiles (water/fireproof materials, etc.) is not required.
 3. Information about textiles must be used in the research/design portfolio, but the prototype does not have to be constructed using these materials.
 4. Prototypes for preliminary judging must be put on hangers (if applicable), or on dressmaker mannequins.
 5. If the prototype is not a garment that can be placed on a hanger or mannequin, then it must be placed in the container with the portfolio and patterns.
 6. The prototypes must be presentation quality.
 7. All designs and prototypes/garments should be appropriate for viewing at the National TSA Conference.
- E. Any portfolio or garment that depicts inappropriate or unacceptable designs is disqualified.
- F. Only the required number of prototypes (garments) are to be submitted for evaluation. Additional items, including accessories and other garments, may be used only in the semifinalist presentation and may not be submitted for preliminary judging.
- G. Patterns:
 1. Full-sized student-made pattern(s) must be included.
 2. Patterns must be made of appropriate lightweight vellum paper.
 3. Patterns must **NOT** be purchased.
- H. Documentation Portfolio:
 1. Documentation materials (comprising “a portfolio”) are required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, the conference city and state, and the year; one (1) page
 - b. Table of contents; one (1) page
 - c. Literature research summary; two (2) pages
 - d. Interpretation of theme; two (2) pages
 - e. Explanation of the design and construction of the prototypes, textiles used, notions needed, sewing/construction techniques used, etc.; two (2) pages
 - f. Design process sketches (hand-drawn); five (5) pages
 - g. Computer-drawn final design print-outs; five (5) pages
 - h. References/resources; two (2) pages

SEMIFINAL ROUND

- A. Each semifinalist team must have access to student TSA member models and the team-created prototypes in order to compete in the semifinals. Models must be members of the team’s TSA chapter.
- B. Spectators are not permitted during the semifinal challenge.

EVALUATION

PRELIMINARY ROUND:

- A. The prototype (wearable garments)
- B. The patterns
- C. The documentation portfolio

SEMIIFINAL ROUND

- A. The presentation/interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Fashion Layout Editor
- Fashion Magazine Editor
- Fashion Merchandiser
- Model
- Tailor

FASHION DESIGN AND TECHNOLOGY

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Documentation portfolio is present
- ☐ Patterns are present
- ☐ Prototypes are present
- ☐ ENTRY NOT EVALUATED

QUALITY OF GARMENTS (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Proper Sewing/ Construction Techniques Used/ Evident (X2)	Prototype construction fails to meet accepted standards and/or techniques of construction.	Prototype construction meets acceptable standards and construction techniques.	Prototype construction is of high quality and indicates use of a variety of appropriate techniques.	
Use of Notions (buttons, zippers, snaps, embroidery, embellishments, etc) (X1)	Little or no use of notions is evident in the garments.	An adequate choice and variety of notions are used in the garments; notions are somewhat appropriate.	An excellent choice and variety of notions are used that enhance the overall appearance and quality of the garments.	
Creativity, Originality, and Difficulty of Garment Creation (X1)	Patterns lack creativity, and/or originality, and/or difficulty in execution.	Patterns are of decent quality and demonstrate some degree of difficulty and originality.	Patterns are of industry standard; they clearly demonstrate originality, creativity, and skill.	
Integration of Technology (X1)	Little or no use of technology is evident in the garments.	Technology is somewhat integrated, but it does not contribute to the overall design.	Technology is integrated successfully and adds value to the overall design of the garment.	
QUALITY OF GARMENTS SUBTOTAL (50 points)				

PATTERNS (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Two or More Hand-Made Garment Patterns (X2)	Patterns are poorly constructed, and/or are missing key components.	Patterns are generally well constructed; some key attributes and designs are included.	Patterns are designed to detail standards and are of production quality.	
PATTERNS SUBTOTAL (20 points)				

DOCUMENTATION PORTFOLIO (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	Some parts of the portfolio are missing; the portfolio is unorganized, messy, and lacks quality.	Most components of the portfolio are present, organized, and adequate in quality.	All components of the portfolio are included; strong effort and quality of work are evident.	
Summary of Research (X1)	The summary is too brief and/or lacks the appropriate details expected for the event.	The summary of the research is sufficient; most of the key details are included.	The summary is organized, clear, and concise, with appropriate and necessary details included.	
Interpretation of Theme (X1)	The interpretation of the theme is very weak and unconvincing.	The interpretation of the theme is somewhat convincing, with some appropriate justification.	The interpretation of the theme is clear, concise, and thorough, with convincing justification.	
Explanation of Garment Prototypes (X1)	The explanation is unclear, poorly organized, and/or does not accurately describe the garment prototypes.	The explanation is loosely organized, with adequate attempts to describe the garment prototypes and their production.	The explanation is clear, concise, and/or demonstrates extensive knowledge of garment prototypes and production.	
Design Process Sketches (X1)	Sketches are poorly executed and/or lack necessary details in the design process.	Sketches are complete as drawn and include most notations and references to the design process.	Sketches are well executed, organized, and clearly represent the design process.	
Computer Drawings for Final Design (X1)	Computer drawings fail to accurately portray the final design; there are major omissions of important details.	Computer drawings somewhat illustrate the final design, with many important details included.	Computer drawings of the final design are clear, accurate, and effectively portray the final product.	
Resources/References (X1)	Research is inadequate, with very few credible resources and references provided and/or documented.	Research is adequate with most important resources and references adequately documented; references are somewhat credible.	Research is comprehensive, and all resources and references are properly documented and credible.	
DOCUMENTATION PORTFOLIO SUBTOTAL (70 points)				

<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>	
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PRELIMINARY SUBTOTAL (140 points)	
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SEMIFINAL PRESENTATION (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	Participants seem unorganized and unprepared for the presentation.	Participants are generally prepared for the presentation.	The presentation is logical, well organized, and easy to follow.	
Knowledge (X2)	Participants seem to have little understanding of the concepts in their project; answers to questions may be vague.	Participants exhibit an adequate understanding of the concepts in their project.	Participants show clear evidence of a thorough understanding of the project.	
Articulation (X1)	Presentation of the project is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Presentation of the project is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Presentation of the project is clear, concise, and easy-to-follow; leadership and/or 21 st century skills are clearly evident.	
Delivery (X1)	The team is verbose and/or uncertain in its presentation/ interview; participants' posture, gestures, and lack of eye contact diminish the interview.	The team is somewhat well-spoken and distinct 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 interview.	
Quality of Prototype on Model (X2)	The prototype does not appear to fit and/or is inappropriate for the person modeling (color, style, textures, etc).	The prototype is generally well-made for the person modeling.	The prototype clearly is made and designed for the model - fitting nicely, with appropriate style, colors, textures, etc.	
SEMIFINAL PRESENTATION SUBTOTAL (70 points)				

TIME DEDUCTIONS	
Time violation (a deduction of five (5) points total will be incurred for exceeding the semifinalist presentation time limit). Record the deduction in the space to the right.	
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____	
SEMIFINAL SUBTOTAL (70 points)	

To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.	TOTAL (210 points)
--	---------------------------

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

FASHION DESIGN AND TECHNOLOGY

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judge:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more
 - 3. Timekeeper

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Stopwatch, one (1)
 - 6. Results envelope
 - 7. Racks for hanging garments
 - 8. Tables for entries
- B. Tables and chairs for judges
- C. Chairs for audience
- D. One (1) table, approximately six feet (6') long, for judges

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time and place stated in the conference program.
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have CRC approval.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Each entry must include the team's identification number in the upper right-hand corner of the entry.

PRELIMINARY ROUND

- A. Judges independently evaluate each entry.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Entries are reviewed by judges with neither students nor advisors are present based on the following criteria:
 - 1. Judges score the Quality of the Garment criteria to determine the top twenty-four (24) preliminary round contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four (24) contestants to determine the top twelve (12) finalists.

- D. Judges determine twelve (12) semifinalists.
- E. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- F. Create and post a semifinalist sign-up sheet for each team's presentation.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Participants report at the assigned time and place for the presentation/interview.
- C. Manage semifinalist presentations.
- D. Allow the first team to enter the event room, and provide two (2) minutes for set-up of materials.
- E. The event coordinator or assistant introduces the team by entry number only.
- F. No nametags or clothing that give any indication of the hometown, school, or chapter are allowed.
- G. Each team is allowed three (3) minutes for the presentation and three (3) minutes to answer interview questions.
- H. Each team is allowed two (2) minutes to remove all materials.
- I. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- J. Judges 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.

FLIGHT ENDURANCE



OVERVIEW

Participants apply leadership and/or 21st century skills during the design iteration process in which participants build, fly, and adjust (trim) a rubber-band powered model aircraft to make long endurance flights inside a contained airspace. Models must be of fixed-wing design and comply with all event specifications.

ELIGIBILITY

Two (2) individuals per chapter may participate.

TIME LIMITS

Thirty (30) minutes is allowed to trim flights.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

ON-SITE TESTING OF PRE-BUILT AND TRIMMED AIRCRAFTS

- A. Participants check in the following at the time and place stated in the conference program:
 - 1. The completed aircraft
 - 2. The portfolio
 - 3. Safety glasses

ON-SITE TESTING

- A. Participants arrive at the competition site for trim flying during the time designated for their heat.
- B. Time allotted for the trim portion of the event may be extended according to the number of participants and site scheduling.
- C. Participants have two (2) opportunities to fly their models for official times.
- D. Participants attend a pilot's meeting to review the sequence for making official flights.

OFFICIAL FLIGHT TEST

- A. In an orderly fashion, participants proceed to a group timer for permission to fly.
- B. Participants place their models on the floor and wait for the release signal from the timer. Timing begins when the model rises off the ground.
- C. Flight time ends when models hit the floor/ground or when they come to rest on an obstruction.
- D. The timekeeper records two (2) official flight times for each participant.
- E. Immediately following the second flight, the participant hands his/her motor to the judge for weighing.

SCORING

- A. Judges begin with the top flight times and evaluate models, portfolios, and flight boxes until the top ten (10) finalists have been determined.
- B. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Flight Endurance is an individual event.
 - 1. No one may assist the participant in any way during either trim or official flights.
 - 2. Violation of this regulation will result in disqualification.
- B. Documentation Portfolio:
 - 1. Documentation materials (comprising "a portfolio") are required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, the conference city and state, and the year; one (1) page

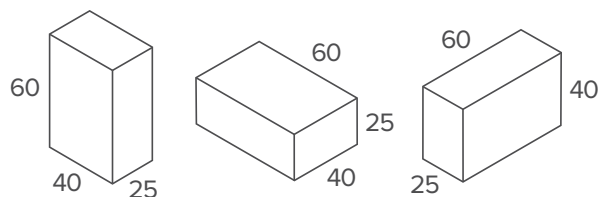
Flight Log:

Participant ID#:			Dates:		
Flight #	# of winds	Time aloft	Flight pattern	Trim adjustment	Advisor sign off
#1					
#2					
#3					
#4					
#5					
#6					
#7					
#8					
#9					
#10					

- A flight log (see official sample above), with the previous ten (10) flights signed off by the chapter advisor.
- The technical attributes of the design and a description and identification of parts; pages as needed
- An analysis of the modifications and an explanation of why each was made must be included; pages as needed
- A technical review of the flight log that explains the trim adjustments and modifications required to improve endurance. Experts from the Academy of Model Aeronautics (AMA) and the National Free Flight Society (NFFS) may scrutinize this information for validity; one (1) page

- Assembly drawing of plane; pages as needed.
- Scaled engineered drawings of all structural parts of the plane; pages as needed

- C. The model and its parts must be contained in a flight box that does not exceed 25cm x 40cm x 60cm. Flight box hardware, such as hinges, handles, and wheels, are not measured.



- D. Models that violate any part of Regulation C will be disqualified.

E. Models:

1. Models are to be made of any materials that are typically found in model construction. This includes, but is not limited to: wood, foam, foam board, and plastics.
 - a. Hardeners are permitted but are not required.
 - b. **The use of any materials that are deemed unsafe will not be tested and will be disqualified.**
2. Models must use a fixed-pitch propeller with a minimum of 140mm to a maximum of 170mm in diameter.
 - a. Propellers may be trimmed, shaped, balanced, or re-pitched, but must remain fixed in pitch.
 - b. Variable-pitch propellers and/or mechanisms are NOT permitted.
3. Rotary-wing aircrafts and aerostat (lighter than air) aircrafts are NOT permitted.
4. Fuselage dimension: minimum of 315mm in length, measured with prop assembly attached.
5. Wingspan: maximum of 45cm horizontally projected, wing chord 9cm projected.
6. Rubber motor: maximum weight of motor is 1.50 grams, including the O-rings.
 - a. No length measurement is made.
 - b. Spare motors are allowed during the official flights.
 - c. Two (2) rubber O-rings may be used on the rubber motor loop for easier handling of wound motors.
7. Model weight: minimum of 7.0 grams, maximum of 21.0 grams.
 - a. Models are weighed without motors attached.
 - b. Clay is permitted for trim ballast.
 - c. Model is weighed with clay ballast.
8. Steel wire may be used only for the propeller shaft, motor hook, landing gear, and the connection between fuselage and tail. Small plastic tubes, such as coffee stirrers, may be used.

9. The two (2) wheels must be a minimum of 15mm in diameter, made of plastic or wood, and they must roll freely by the weight of the plane on a smooth surface.

F. Acceptable flight support equipment includes the following:

1. Mechanical rubber motor winders or battery-powered motor winders may be used. No AC-powered winders are allowed.
2. A winding stooage may be used to anchor the model while the motor is being wound. A person may not serve as a winding stooage.
3. A poster board launching platform is provided.

G. When at rest, the landing gear must support the model without the fuselage and/or propeller touching the floor or launching pad.

H. Only minor repairs are allowed during trim and time trials.

EVALUATION

A. Flight Duration

1. A bonus of ten (10) seconds is added to the flight time per flight if the model successfully lands on its wheels and comes to a rest on them.
2. Ties are broken by determining the longest single flight time.

B. The documentation portfolio

C. The flight log

Refer to the official rating form for more information.

NOTES

Two organizations—the Academy of Model Aeronautics (AMA) and the National Free Flight Society (NFFS)—welcome your inquiries and offer suggestions, help, and technical information concerning model aircraft and flight technology.

Contact the AMA: www.modelaircraft.org.

Contact NFFS: www.freeflight.org.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Aeronautical engineer
- Aircraft systems engineer
- Physics teacher

FLIGHT ENDURANCE

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

-
- ☐ Documentation portfolio is present
☐ Model is present
☐ Flight box is present
☐ ENTRY NOT EVALUATED

DOCUMENTATION PORTFOLIO (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	Portfolio is unorganized and/or missing three (3) or more components.	Portfolio is organized adequately, with most components present.	No components are missing in the portfolio, and content and organization are clearly evident.	
Technical Attributes (X1)	Attributes of the design reflect no knowledge of flight design.	Attributes of the design are included and adequately reflect basic knowledge of flight design.	Clear and precise attributes of the design are given; an in-depth knowledge of flight design is exhibited.	
Description and Identification of Parts (X1)	The majority of the parts are not described, sourced, or identified accurately; scaled engineered drawings are incomplete or missing.	Most parts are described and sourced accurately; scaled engineered drawings include most details.	All parts are described and sourced completely and accurately; engineering drawings are complete.	
Modifications and Technical Review of Flight Log (X1)	Only one (1) modification is noted, and/or an explanation of why the modification was made is missing; leadership and/or 21 st century skills are not evident.	Modifications are given with adequate explanations for how they improved flight endurance; leadership and/or 21 st century skills are somewhat evident.	Modifications and an explanation of why they were made are provided; a clear and precise explanation for how they improved the flight endurance is provided; leadership and/or 21 st century skills are clearly evident.	
Assembly Drawing (X1)	Assembly drawing is unclear; the majority of the design principles are not addressed or are missing; pictures are missing.	Assembly drawing is partially clear; most of the design principles are addressed and/or present; some pictures are missing.	Assembly drawing is clear, accurate, and executed well; all design principles are addressed; no pictures are missing.	
Flight Log (X1)	The flight log is incomplete; the advisor's signature is not included.	The flight log is generally complete; the advisor's signature is present.	The flight log is complete, with the advisor's signature; a thorough understanding of the flight log's purpose is evident.	
DOCUMENTATION PORTFOLIO SUBTOTAL (60 points)				

FLIGHT ENDURANCE

FLIGHT TIMES (60 points)							
Flight times recorded to the nearest tenth (.1) of a second.							
Duration of Flight #1						Seconds	
Duration of Flight #2						Seconds	
Landing Bonus – add ten (10) seconds for each successful landing						Seconds	
Total Flight Scores (combine flight #1, flight #2, and bonus for landing/s)						Seconds	
1st	2nd	3rd	4th	5th & 6th	7th & 8th	9th-12th	13th – 16th
60 Points	55 Points	50 Points	45 Points	40 Points	35 Points	30 Points	20 Points
SUBTOTAL FLIGHT SCORE (60 points)							
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initiated by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>							
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.

JUDGE

Printed name: _____ Signature: _____

FLIGHT ENDURANCE

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

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

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope
- B. Marking pens (felt tip, fine point)
- C. Two (2) metric tape measures
- D. Two (2) rolls of caution tape
- E. 125 zip lock bags
- F. Three (3) launch pads (poster board, 30" x 40")
- G. Signs for door(s) reading Do Not Open, Flight in Progress, Knock for Entry
- H. Three (3) helium balloons
- I. One (1) fishing reel with line
- J. Stopwatches, three (3)
- K. Electronic gram scale (to .01 gram)

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough judges and assistants have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in participants and evaluate models for special compliance during the scheduled trim session (completed flight log is inspected).
- B. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. Secure models in the holding area so that they remain safe until the scheduled time for the official flights.

ON-SITE CHALLENGE

- A. Distribute a list of entrants assigned to each designated judge/timer.
- B. Each flight is recorded to the nearest one-tenth (.1) of a second.
- C. After the second flight, the times are added together.
- D. Up to three (3) groups may fly simultaneously in the assigned area for the event, with consideration for the safety of the models and participants.
- E. Models and flight boxes of all participants are checked again. Models showing deviations may be disqualified.
- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. to deduct twenty percent (20%) of the total possible points in this round or
 - 2. to disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

FLIGHT ENDURANCE

- G. Judges determine the ten (10) finalists and discuss and break any ties.
- 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.

OVERVIEW

Participants take a test of basic forensic science theory to qualify as semifinalists. Applying leadership and 21st century skills, semifinalists examine a mock crime scene and demonstrate their knowledge of forensic science and crime scene analysis. Participants are expected to survey the scene and use proper techniques to collect evidence from the mock crime scene. Teams then collect their data and perform a detailed written analysis of the crime scene.

ELIGIBILITY

One (1) team of two (2) individuals per chapter may participate.

TIME LIMITS

PRELIMINARY ROUND

- A. One (1) hour is allotted to complete the test.

SEMIFINAL ROUND

- A. Twenty (20) minutes are allowed to review the crime scene and gather evidence.
- B. Time commences when all participants are in the crime scene room and concludes after twenty (20) minutes.
- C. An additional twenty (20) minutes are allowed for semifinalist teams to write their analysis.
- D. Time begins when a team enters the analysis room and concludes at the end of twenty (20) minutes.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRELIMINARY ROUND

- A. Participants report for the test at the time and place stated in the conference program.
- B. The forensic science test is administered to all team members at the same time.

- C. Tests scores are averaged.
- D. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for an on-site challenge time.
- B. Participants report at the assigned time and place for the on-site challenge.
- C. Each team is given a copy of the on-site problem to solve and is required to:
 - 1. Demonstrate three to four (3-4) techniques/procedures for evidence collection using their toolkits.
 - 2. Write an analysis of the crime scene (see Mock Crime Scene Analysis form).
- D. The top ten (10) finalists are announced during the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Team members take the test individually.
- B. Tests may be administered online or via a scan-type answer sheet. Please review the Competition Updates page on the [TSA website](#).
- C. Participants are responsible for bringing two (2) sharpened No.2 pencils to the test site.
- D. These same two (2) team members compete in the semifinal round, should the team qualify.

SEMIFINAL ROUND

- A. No reference may be made concerning the name of the team, the team members, or their school.

- B. 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.
- D. No reference materials may be used during this event.
- E. No observers are allowed in the event or preparation rooms during the event.
- F. Teams are required to bring their own toolkit comprised of:
 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
 11. duster and dust (for fingerprinting)
 12. fingerprint lifting tape (or clear packing tape, NOT Scotch tape)
 13. glovesRecommended optional tools:
 14. Clipboard(s)
 15. Blank sheets of paper (for note taking)
- G. Participants analyze a crime scene and synthesize their findings in a written report/analysis.
- H. Participants must be able to complete (at a minimum) the following:
 1. Collection of fingerprints
 2. Collection of trace evidence
 3. Creation of a proportional drawing that accurately represents the crime scene. Note: The crime scene template in the toolkit may be used to create the drawing, but the drawing does not need to be to scale.

EVALUATION

PRELIMINARY ROUND

- A. The averaged test scores

SEMIFINAL ROUND

- A. Performance on the on-site challenge

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

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

Participant/Team ID# _____

HIGH SCHOOL FORENSIC SCIENCE

MOCK CRIME SCENE ANALYSIS

Use the space below to record/describe the processes/techniques used to collect evidence from the mock crime scene and any applicable conclusions.

[illegible]

Submitted by:

FORENSIC SCIENCE

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Toolkit is present
☐ ENTRY NOT EVALUATED

TEST SCORE (50 points)

Average of the two (2) team member's test scores.

TEST SCORE SUBTOTAL (50 points)

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

Indicate the rule violated: _____

PRELIMINARY SUBTOTAL (50 points)

ANALYSIS OF CRIME SCENE (70 points)

CRITERIA	Minimal performance	Adequate performance	Exemplary performance	Record scores in the column spaces below.
	1-4 points	5-8 points	9-10 points	
Primary Survey/ Walkthrough (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.	
Processing the Scene (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.	
Evidence Collection (X2)	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.	

ANALYSIS OF CRIME SCENE (70 points) – continued

Technique (X1)	Little to 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.	
Crime Scene Analysis (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; leadership and/or 21 st century skills are not evident.	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; leadership and/or 21 st century skills are somewhat evident.	Written analysis is strong and does not contain personal theories or conclusions; analysis clearly provides a detailed summary; leadership and/or 21 st century skills are clearly evident.	
ANALYSIS OF CRIME SCENE SUBTOTAL (70 points)				

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

Indicate the rule violated: _____

SEMIFINAL SUBTOTAL (70 points)

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.

JUDGE

Printed name: _____ Signature: _____

FORENSIC SCIENCE

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more
- C. Timekeepers for recording start/stop times, one (1) per event room
- D. Monitors, one (1) per event room

MATERIALS

- A. Coordinator's packet containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/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. Copies 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

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

- E. At least one (1) hour before the event is to begin, meet with judges 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.

PRELIMINARY ROUND

- A. Begin the event at the scheduled time by closing the doors and checking the entry list.
- B. All participants and judges should be in the room at this time.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have CRC approval.
- E. Review any procedures and regulations.
- F. Monitor the one (1)-hour test.
- G. Determine team scores.
- H. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- I. Judges determine the twelve (12) semifinalists.
- J. Submit semifinalist results and all related forms in the results envelope to the CRC for posting.

SEMIFINAL ROUND

- A. Set up the mock crime scene in the designated room one (1) hour prior to the semifinalist sign-up time.
- B. Facilitate semifinalist sign-up times at the designated location.
 - 1. This may be the same room used for teams to write their analysis.
 - 2. Sign-ups should not take place in the same room that is prepared for the crime scene.

- C. When each team enters the crime scene room, distribute the problem.
- D. Time begins when the problem is handed to each team.
- E. Allow twenty (20) minutes for each team to review the crime scene in order to collect items, data, and/or other information necessary for preparing an analysis.
- F. At the end of the twenty (20)-minute period, escort each team to the room designated for writing the analysis.
- G. Provide twenty (20) minutes for each team to complete the written crime scene analysis.
- H. Collect all materials, including any notes, prior to dismissing the participants.
- I. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- J. Judges 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. Manage security and removal of all materials from the crime scene area.

FUTURE TECHNOLOGY AND ENGINEERING TEACHER



OVERVIEW

As the need for student proficiency in technology (as one area of STEM) is increasing, so is the need for qualified technology education teachers. Technology is moving at a rapid rate and those expected to teach are also expected to adopt this technology as fast as it's developed. Applying leadership and 21st century skills, participants create a screencast webinar that teachers can reference in order to learn a new technology that can be used in a lesson. Semifinalists communicate their design process through participation in a semifinal interview.

ELIGIBILITY

Three (3) individuals per chapter may participate.

TIME LIMITS

PRE-CONFERENCE/PRELIMINARY ROUND

- A. All components of the chapter's entry must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.
- C. The video cannot exceed a duration of more than eight (8) minutes.
- D. A deduction of five (5) points will be applied to videos exceeding the time limit.
- E. There is no minimum length restriction.
- F. The video is timed from the first sound or picture to the final sound or picture.

SEMIFINAL ROUND

- A. Semifinalists present a lesson plan video to the judges on a USB thumb drive, demonstrating how to use the application, which lasts no more than five (5) minutes.
- B. Semifinalists have ten (10) minutes for the presentation broken down as follows:
 - 1. Two (2) minutes for the judge to access the USB and start the video

- 2. Five (5) minutes or less for the video demonstration
- 3. Three (3) minutes to answer questions from the judges
- C. One (1) point will be deducted for each ten (10)-second interval over the allotted time for the semifinal presentation.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE/PRELIMINARY ROUND

- A. In preparation for this event, participants thoroughly research and select one (1) developed application that teachers can use in a classroom lesson.
- B. Participants create a screencast instructional video demonstrating the functionality of the product and discussing how it can be used in a classroom lesson. The focus of the video is to introduce a teacher to the technology and its functionality.
- C. Participants submit the video by 11:59 p.m. ET on May 15th.
- D. Submission information is provided on the [TSA website](#) under Competition Updates.
- E. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. In preparation for the semifinal round, participants create a five (5) minute lesson plan video demonstrating their lesson plan/activity.
- B. Participants report at the time and place stated in the conference program to sign up for a scheduled time to present the video of his/her lesson plan/activity.
- C. Participants report at the assigned time and place for the presentation/interview.
- D. Participants respond to questions pertaining to their entry.

- E. Participants have ten (10) minutes for the presentation broken down as follows:
 - 1. Two (2) minutes for the judge to access the USB and start the video
 - 2. Five (5) minutes or less for the video demonstration
 - 3. Three (3) minutes to answer questions from the judges
- F. The top ten (10) finalists are announced during the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE/PRELIMINARY ROUND

A. Instructional Video:

1. Participants design a video with the following in mind: The purpose of the instructional video is to introduce teachers to a new technology tool that can be used in the classroom.
2. Identification of any kind may not be used in the video with the exception of the chapter's identification number.
3. Timing:
 - a. The video cannot exceed eight (8) minutes.
 - b. A deduction of five (5) points will be applied to videos exceeding the time limit.
 - c. There is no minimum length restriction.
 - d. The video is timed from the first sound or picture to the final sound or picture.
4. Copyright:
 - a. If the entry contains images of people that are not part of the application, proof of consent must be provided for each person in the video.
 - i. Minors require parental consent.

- ii. Use the Photo/Film/Video Consent and Release form (see Forms Appendix) for any individuals included in the video footage.
- iii. Participants must scan each completed consent form and save it as one mutlipage PDF file to be submitted pre-conference.
- iv. The screencast instructional video must state the application being used and cite the application in the credits or the introduction.

5. Submission:

- a. Participants may choose any video hosting site (such as an UNLISTED YouTube URL), or a shareable link in cloud storage, as long as the video is located online and accessible for evaluation.
 - b. If a URL is provided, the URL must point directly to the participant's entry. Entries that require a software download or request that access be granted will not be judged.
 - c. The video entry must be submitted in a common video format suitable for viewing with VLC Player, utilizing a Microsoft Windows operating system.
 - d. Entries received, or changes made to submitted entries after the deadline will not be judged.
6. Entries must be the result of the participant's own efforts and not purchased or open source material.

SEMIFINAL ROUND

A. Lesson Plan Video

1. Participants design and create a lesson plan video demonstrating the use of the instructional technology chosen.
2. Participants describe the rationale, goals and objectives, standards correlation, and a description of the lesson and activity, including the assessment, as an introduction in the lesson plan video, or as handouts, materials, and resources to be distributed to the judges (copies for each judge are required).

3. The ITEEA Standards for Technological Literacy must be used.
 4. The lesson plan must acknowledge the grade level for which it is intended.
 5. Timing:
 - a. The video cannot exceed five (5) minutes.
 - b. A deduction of five (5) points will be applied to videos exceeding the time limit.
 - c. There is no minimum length restriction.
 - d. The video is timed from the first sound or picture to the final sound or picture.
 6. Copyright:
 - a. If the entry contains images of people that are not part of the application, proof of consent must be provided for each person in the video.
 - i. Minors require parental consent.
 - ii. Use the Photo/Film/Video Consent and Release form (see Forms Appendix) for any individuals included in the video footage.
 - iii. Participants must scan each completed consent form and save it as a PDF file to be submitted with the entry in the USB.
 - b. The lesson plan video must state the application being used and cite the application in the credits or the introduction.
 7. Submission:
 - a. The lesson plan video must be saved on a USB thumb drive in a small envelope labeled with the team number.
 - b. The USB flash drive becomes the property of TSA and will not be returned.
- B. Entries must be the result of the participant's own efforts and not purchased or open source material.
- C. Five (5) points will be deducted for videos exceeding the time limit.
- D. One (1) point will be deducted for each ten (10)-second interval over the allotted presentation time.

EVALUATION

PRELIMINARY ROUND

- A. The instructional video

SEMIFINAL ROUND

- A. The video of the lesson
B. The presentation/interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Technology education teacher
- STEM teacher
- University professor
- Professional development trainer

FUTURE TECHNOLOGY AND ENGINEERING TEACHER

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Video entry was submitted Pre-conference and judged
- ☐ Video of lesson plan or activity on a USB (semifinalists only)
- ☐ ENTRY NOT EVALUATED

INSTRUCTIONAL VIDEO (80 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Introduction (X1)	The introduction is weak, with little effort made to emphasize the topic and/or to generate interest and enthusiasm for the topic.	Sufficient effort is evident in the introduction, which somewhat creates a level of interest.	The introduction is effective, stimulating, and creates interest on the part of observers.	
Camera (X1)	Problems are evident with camera angle, focus, steadiness, and framing.	Camera work is somewhat focused and framed.	Steady and creative shots that enhance the video are evident in the camera work; there is good use of close-ups if applicable.	
Continuity and Pacing (X1)	Sequencing in the video is incomprehensible and does not flow with the instructions; shots are left too long; edit points have glitches.	Pace and timing of the video are somewhat structured and flow with the instructions; clips move appropriately; moderate use of transitions is evident.	Shots logically pace the instructional video in an interesting and effective way; excellent and purposeful use of transitions is evident.	
Application Instructions (X1)	Instructions on how to use the application are unclear.	Instructions on how to use the application are somewhat clear.	Instructions on how to use the application are very clear and easy to follow.	
Application Relevance (X1)	The chosen application is not appropriate for teaching.	The chosen application is somewhat appropriate for teaching.	The chosen application is applicable to teaching and appropriate for students.	
Lesson Plan (X1)	Participant makes no mention about how the application can be used in a lesson.	Participant mentions how the application can be used in a lesson during the instructional video.	Participant briefly discusses several ways that the lesson can be used during instruction.	
Creativity (X1)	The instructional video lacks creativity; participant does not generate excitement for the product.	The instructional video is somewhat creative and generates some excitement for the product.	The instructional video is very creative and generates excitement for the product.	
Voice/Language (X1)	The participant conveys an inconsistent use of proper grammar, word pronunciation, and acceptable pitch and tone.	The participant generally uses proper grammar and pronunciation, and varies the use of tone and pitch.	The participant uses smooth and effective articulation, proper grammar, correct pronunciation, and varied tone and pitch throughout the presentation.	

INSTRUCTIONAL VIDEO SUBTOTAL (80 points)

TIME DEDUCTIONS

A five (5) point deduction will be incurred for videos exceeding the time limit.

Total time for presentation

Presentation deduction

TOTAL TIME DEDUCTION

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

Indicate the rule violated: _____

PRELIMINARY SUBTOTAL (80 points)

SEMIFINAL LESSON PLAN VIDEO PRESENTATION (100 points)

CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Organization (X1)	The presentation lacks organization; it is difficult to follow or understand.	The presentation is somewhat organized.	The presentation is clearly organized and easy to follow; it flows smoothly to the conclusion.
Lesson Plan Components (X2)	The lesson plan is missing several of the stated components, including the standards correlation and/or instructional design focus; it is not creative or unique.	The lesson plan includes all of the stated components, and it is adequately organized, with an instructional design focus; it has some unique and creative aspects.	The lesson plan includes all of the stated components; it is well organized and has an instructional design focus; it is creative and unique.
Introduction (X1)	The introduction is weak, with little effort made to emphasize the topic and/or to generate interest and enthusiasm for the topic.	Sufficient effort is evident in the introduction, which creates some level of interest.	The introduction is effective, stimulating, and creates interest on the part of observers.
Instructional Competence (X2)	The presenter's delivery of content lacks confidence; leadership and/or 21 st century skills are not evident.	The presenter's delivery of content is generally professional and enthusiastic; leadership and/or 21 st century skills are somewhat evident.	The presenter's delivery of content is professional, enthusiastic, confident, and full of personality; leadership and/or 21 st century skills are clearly evident.
Voice/Language (X1)	The participant conveys an inconsistent use of proper grammar, word pronunciation, and acceptable pitch and tone.	The participant generally uses proper grammar and pronunciation, and varies the use of tone and pitch.	The participant uses smooth and effective articulation, proper grammar, correct pronunciation, and varied tone and pitch throughout the presentation.
Innovation/Creativity (X1)	The presentation fails to convey innovation or originality.	The presentation is somewhat original and innovative in its delivery and topic development.	The presentation is imaginative and innovative in its delivery and topic development.

Record scores in the column spaces below.

SEMIFINAL LESSON PLAN VIDEO PRESENTATION (100 points) – continued					
Knowledge (X1)	Minimal knowledge of the subject is evident in the presentation; the content does not relate to the topic, and/or the participant does not convey an understanding of the topic.	Knowledge of the subject is evident, and the presenter relates and conveys a somewhat clear understanding of the topic.	Complete knowledge and understanding of the subject and relationship to the topic are conveyed throughout the introduction.		
Video Technique (X1)	Video footage detracts from the lesson; participant was not thoughtful in structuring their presentation.	Video is clear and does not detract from the lesson.	Video is thoughtful and the adds to the lesson demonstration; participant is thoughtful in his/her video design and implementation.		
SEMIFINAL LESSON PLAN VIDEO PRESENTATION SUBTOTAL (100 points)					

TIME DEDUCTIONS			
Five (5) points will be deducted to videos exceeding the time limit.			
	Total time		
	Video deduction		
One (1) point will be deducted for each ten (1)-second interval over the allotted time for the semifinal presentation.			
	Total time		
	Presentation deduction		
TOTAL TIME DEDUCTION			

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

SEMIFINAL SUBTOTAL (100 points)	
--	--

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

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

FUTURE TECHNOLOGY AND ENGINEERING TEACHER EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more (preferably the same judges as the preliminary round)
- C. Assistants, two (2)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stopwatch
 - 5. Laptop with adequate sound and USB capabilities
 - 6. Projector
 - 7. White board or wall for projecting the video, if available
 - 8. Results envelope
- B. Tables and chairs for participants and judges
- C. Copy of ITEEA publication *Standards for Technological Literacy*

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants. The results are shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Collect completed rating forms electronically and bring them to the conference on a flash drive.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is scheduled to begin, meet with judges 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.

PRELIMINARY ROUND

- A. On the first full day of competition, post a list of the twelve (12) semifinalists in random order.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Participants report at the assigned time to the place stated, with the USB and hard copies of the handouts/resources (if applicable), for the presentation/interview.
- C. Manage completion of the on-site video presentation and interviews.
- D. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.

- F. Submit the finalist results and all related forms in the results envelope to the CRC room.
- G. If necessary, manage security and the removal of materials from the event area.

OVERVIEW

Applying leadership and 21st century skills, participants interpret geospatial data in multiple formats and formulate projections about the area of interest based on an annual theme posted on the [TSA website](#) under Competitions/Themes and Problems. Participants develop a digital portfolio containing maps, data, and pertinent documentation, which is submitted pre-conference. Preliminary round participants summarize their findings in a visual infographic map to be submitted on-site. Semifinalists defend their projections in a presentation.

ELIGIBILITY

One (1) team of no more than three (3) individuals per chapter may participate.

TIME LIMITS

PRELIMINARY ROUND

- A. All portfolio components of the chapter's entry must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.

SEMIFINAL ROUND

- A. No more than ten (10) minutes is allowed for the defense presentation, broken down as follows:
 - 1. One (1) minute to set-up
 - 2. Up to five (5) minutes to present
 - 3. Up to four (4) minutes to respond to questions.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the annual challenge found on the [TSA website](#) under Competitions/Themes and Problems.

- B. Participants concentrate their efforts on researching the issue, collecting, analyzing, and synthesizing various types of Geospatial data, and making predictions.
- C. Participants prepare their documentation portfolio and visual infographic according to the regulations.
- D. Participants submit the digital portfolio as a multi-page PDF document online by 11:59 p.m. ET on May 15th.
- E. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. Pre-conference submission entries are reviewed by evaluators with neither students nor advisors present based on the following criteria:
 - 1. Judges review and score the Documentation Portfolio criteria to determine the top twenty-four (24) preliminary contestants.
- B. The list of twenty-four (24) teams is posted on-site on the first full day of conference.
- C. The twenty-four (24) teams selected to compete in the preliminary round report at the time and place stated in the conference program to submit their visual infographic map entries.
- D. Judges review and score the Visual Infographic criteria to determine the top twelve (12) semifinalist teams.
- E. A list of twelve (12) semifinalist teams (in random order) is posted.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for a presentation/interview time.
- B. Semifinalists report at the designated time and place for the presentation/interview.
- C. Semifinalists participate in a defense presentation that lasts no more than ten (10) minutes, broken down as follows:
 - 1. One (1) minute to set-up
 - 2. Five (5) minutes to present
 - 3. Up to four (4) minutes to respond to questions.
- D. Ten (10) finalists are announced during the conference awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE

- A. Participants must understand the fundamental concepts and principles of the issue researched. Research about the issue shall focus on:
 1. Analysis of the collected geospatial data, which may include but is not limited to: imagery, boundaries and places, demographics and lifestyles, basemaps, transportation, earth observations, urban systems, or historical maps
 2. Representation of the data using any online platform (e.g. ArcGIS)
 3. Synthesis of the prediction(s).
- B. Documentation portfolio:
 1. The finished portfolio must be saved as a multi-page PDF document with the pages presented in the following order:
 - a. Title page with the event title, the conference city and state, the year, and the team ID number; one (1) page
 - b. Table of contents
 - c. Collected geospatial data; pages as needed.
 - d. Analysis of collected geospatial data; pages as needed.
 - e. Reflection project journal; pages as needed:
 - i. Description of activities and timeline of work
 - ii. Description of location factors for the project
 - f. Written explanation of the team's prediction; two pages maximum
 - g. Resource page, including citations and copyright letters if applicable; pages as needed
 2. The portfolio must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.

3. Entries received or changes made to the submitted entries after this deadline will not be judged.
4. The submission must point directly to the team's portfolio. Entries that require a request for access be granted will not be judged.

PRELIMINARY ROUND

- A. Visual infographic map:
 1. Must have the team identification number clearly labeled in the upper right-hand corner of the submission.
 2. May not reveal the school, chapter name, or city.
 3. Cannot exceed dimensions of 15" deep x 3' wide x 4' high.
 4. Must focus on the predicted outcomes/findings from the analyzed data
 5. All ideas, text, images, and sound from other sources must be cited.
 6. If copyrighted material is used, written permission must be included (See the Student Copyright Checklist in the Forms Appendix).

EVALUATION

PRELIMINARY ROUND

- A. The documentation portfolio
- B. The visual infographic map

SEMIFINAL ROUND

- A. The defense presentation

Refer to the official rating form for more information.

STEM INTEGRATION

Depending upon the subject of the problem, this event may align with one or more STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Geographic Information Systems (GIS) Analyst
- Geospatial Programmer
- Cartographer
- Photogrammetrist
- Land Surveyor
- Surveying Technician
- Mapping Technician
- Logistics planning manager
- Transportation systems technician
- Infrastructure planning manager

GEOSPATIAL TECHNOLOGY

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ PDF of the documentation portfolio was submitted and scored
- ☐ Visual infographic map is present
- ☐ ENTRY NOT EVALUATED

DOCUMENTATION PORTFOLIO (100 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio (X1)	Portfolio is unorganized and/or missing three (3) or more components.	Portfolio has most components and is generally organized.	One (1) or no components are missing in the portfolio, and content and organization are clearly evident.	
Explanation of Predicted Outcomes (X2)	The predicted outcome is missing or unclear.	The prediction is somewhat clear and generally supported.	A clear and concise prediction is made and supported strongly by the data.	
Maps (X1)	Maps provided are not appropriate, and/or they are missing a number of parts; the maps do not contribute to the overall impact of the project.	Maps have most needed parts; information is adequate; the maps align with the intended purpose.	Maps provided contain all or nearly all needed parts, with information that is clear and appropriately supports the purpose of the project.	
Project Journal and Descriptions (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.	
Data (X2)	Data is inconsistent and disorganized and does not contribute to the impact of the project.	Information is organized in a format that contributes to the impact of the project, but some data supports are missing, or do not align with the intended purpose.	All required forms of information are present in a format that greatly contributes to the purpose of the project.	
Analysis Documents (X2)	Few documents are provided that explain the data and their relationship to the prediction.	Most documents show the correlation between the data and the prediction.	The data is thoroughly analyzed and well represented.	
References (X1)	References are missing or incomplete.	Most references are present, but are not accurately recorded.	A fully organized and well-documented reference sheet is included.	
DOCUMENTATION PORTFOLIO SUBTOTAL (100 points)				

THE VISUAL INFOGRAPHIC MAP (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Predicted Outcome (X2)	The predicted outcome of the data analysis is inconsistent with the data findings or is missing from the visual presentation.	The predicted outcome based on the data analysis is logical, but it is not represented clearly in the visual presentation; some ideas are confusing.	The predicted outcome demonstrates an original and innovative use of data and is represented in the visual presentation; the prediction is logical and easy to follow.	
Use of Data (X1)	Little or no use of data is included.	Some data is used and adequately represented.	The use of data is included and complete and in an appropriate format; the data clearly supports the prediction.	
Aesthetics and Creativity (X1)	The visual design is confusing, disorganized, and lacking creativity.	The visual design has some appealing and interesting elements, but the elements detract from the ideas or message.	The visual design is appealing, interesting, and contributes greatly to the overall idea or message.	
Content Design (X1)	The content seems disconnected and unorganized.	The content displays some cohesion between ideas, but some content is not relevant to the overall idea.	The content demonstrates connections between ideas that results in an interesting infographic.	
THE VISUAL INFOGRAPHIC MAP SUBTOTAL (50 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				

PRELIMINARY SUBTOTAL (150 points)	
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SEMIFINAL DEFENSE PRESENTATION/INTERVIEW (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	Participants seem unorganized and unprepared for the interview; illogical explanation of problem and prediction is presented.	Participants are generally prepared for the interview; explanation of problem and prediction are generally communicated.	Interview is logical and easy to follow; the problem and prediction are communicated in a concise manner.	
Presentation (X1)	Presentation is full of illogical thoughts that lack clarity, and/or there is insufficient information provided describing the project.	Presentation is somewhat logical, easy-to-follow, and/or there is sufficient information provided describing the project.	Presentation is clear, concise, and there is ample information provided describing the project.	
Confidence (X1)	Majority of the delivery is made by one (1) member of the team; partner(s) may be disengaged from the presentation.	Team members are engaged in the process, though one (1) 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.	

SEMIFINAL DEFENSE PRESENTATION/INTERVIEW (60 points) – continued				
Knowledge (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.	
Articulation (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
SEMIFINAL DEFENSE PRESENTATION/INTERVIEW SUBTOTAL (60 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (60 points)				
<p>To arrive at the TOTAL score, add the PRELIMINARY SUBTOTAL and the SEMIFINAL SUBTOTAL.</p>				TOTAL (210 points)

Comments: _____

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

JUDGE

Printed name: _____ Signature: _____

GEOSPATIAL TECHNOLOGY

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more (documentation)
Preliminary round, two (2) or more (map)
 - 2. Semifinal round, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge.
 - 2. TSA Event Coordinator Report
 - 3. List of evaluators/assistants
 - 4. Results envelope with coordinator forms
- B. Stick-on labels for identifying entries
- C. Tables and chairs for event coordinator and evaluators
- D. Tape or a board with clips to hold the visual infographic maps in place

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants. The results are shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and Pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Judges determine the twenty-four (24) preliminary contestants for the on-site challenge, and discuss and break any ties. Results are posted on-site at the national conference on the first full day of conference.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough evaluators and assistants have been scheduled.
- D. Inspect the area(s) in which the event is being held for appropriate set-up, including room size, tables, chairs, etc. Notify the event manager of any potential problems.
- E. One (1) hour before the semifinal event is to begin, meet with evaluators 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.

PRELIMINARY ROUND

- A. On the first full day of conference, post a list of the twenty-four (24) preliminary round participants.
- B. Participants report to the time and place stated in the conference program to submit their visual infographic maps.
- C. Late participants and/or entries are considered on a case-by-case basis and only when lateness is caused by events beyond the participant's control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Judges evaluate the entries with neither students nor advisors present.
- F. Judges use the same official rating form for both the preliminary and semifinal round of judging.
- G. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

- H. Judges determine the twelve (12) semifinalists and discuss and break any ties.
- I. Submit the semifinalist 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.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for a presentation/ interview time.
- B. Semifinalists report at the designated time and place for the presentation/interview.
- C. Semifinalists locate and set-up their visual infographic maps in the event space.
- D. Semifinalists participate in a defense presentation that lasts no more than ten (10) minutes, broken down as follows:
 - 1. One (1) minute to set-up
 - 2. Up to five (5) minutes to present
 - 3. Up to four (4) minutes to respond to questions.
- E. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- F. Judges determine the ten (10) finalists and discuss and break any ties.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.
- H. If necessary, manage security and the removal of materials from the event area.

MUSIC PRODUCTION



OVERVIEW

Applying leadership and 21st century skills, participants produce an original musical piece that is designed to be played during the National TSA Conference closing general session. The musical piece should be energizing, interesting, and of a spirit consistent with the Technology Student Association.

ELIGIBILITY

Three (3) teams per state may participate. Teamwork is strongly encouraged, but an individual may participate solo in this team event.

TIME LIMITS

PRELIMINARY ROUND

- A. 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. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.
- C. The musical piece must be more than one (1) minute and less than three (3) minutes in length.
- D. A deduction of five (5) points total will be incurred for each fifteen (15) seconds under the one (1) minute minimum and for each fifteen (15) seconds over the three (3) minute maximum length.
- E. The timing starts with the first sound and continues until the last sound ends.

SEMIFINAL ROUND

- A. Up to ten (10) minutes is allotted for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants design an original music piece.
- B. Participants record their design process within a documentation portfolio.
- C. Participants submit an MP3 audio and a multi-page PDF of the required documentation by 11:59 PM ET on May 15th.
- D. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. Judges independently assess the entries using the following procedure:
 - 1. Judges score the Music Piece criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.
- B. A list of the twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

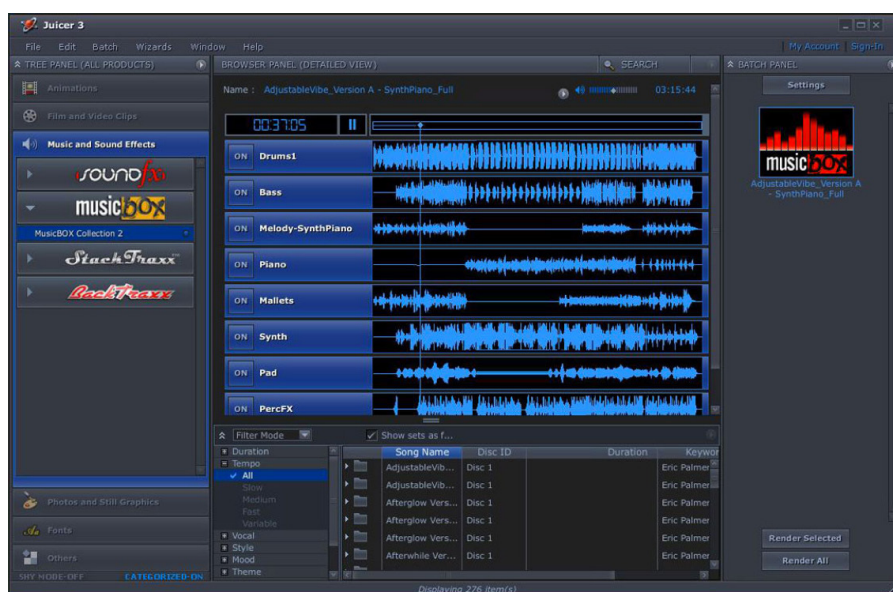
- A. Two (2) representatives from each semifinalist team report at the time and place stated in the conference program to sign up for an interview time.
- B. No more than two (2) representatives from each semifinalist team report at the assigned time and place for the interview.
- C. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE

- A. The musical piece and required documentation must be uploaded or located online and accessible for evaluation by the posted deadline.
- B. The entry must point directly to the team's entry. Entries that require a software download or a request that access be granted will not be judged.
- C. Entries received, or changes made to submitted entries after this deadline will not be judged.
- D. Musical Piece:
 1. All music pieces must be submitted as an MP3 file format. Failure to submit the music piece as an MP3 results in disqualification.
 2. Lyrics may accompany the musical piece but are not required.
 3. The musical piece must be greater than one (1) minute and less than three (3) minutes in length.
 4. There will be a five (5)-point deduction for:
 - a. each five (5) seconds under the one (1)-minute minimum
 - b. each 15 seconds over the three (3)-minute maximum length.
5. All musical pieces must be the original work of the team and must have been completed within the current school year.
6. Free, non-copyrighted sounds, loops, or other musical elements may be incorporated into musical pieces. The sources of these elements and the way in which they are used in the musical piece must be described in the portfolio, and the track list must illustrate these elements.
7. Each actual instrument, voice, and/or synthesized instrument track used in the final music piece must be illustrated in a timeline format in the portfolio.
8. Where applicable, all ideas, sounds, and loops from other sources must be cited. If copyrighted material is used, proper written permission must be included (see the Student Copyright Checklist in the Forms Appendix). NOTE: Failure to follow this procedure results in disqualification.
9. All entries become the property of TSA for non-profit promotional purposes and will not be returned after judging.



PRELIMINARY ROUND

A. Documentation Portfolio:

1. The documentation portfolio should be complete, well written, and professional in organization and appearance.
2. Documentation materials (comprising a "portfolio") are required and must be submitted as a multi-page PDF document with pages in this order:
 - a. Title page with the title of the musical piece, the event title, the conference city and state, and the year; one (1) page
 - b. Table of contents; pages as needed
 - c. Plan of Work Log (see Forms Appendix); one (1) page
 - d. Self-evaluation of the piece using criteria from the official rating form; one (1) page
 - e. Lyrics; pages as needed (not required)
 - f. Audio composition track list: Each actual instrument, voice, and/or synthesized instrument track used in the final music piece must be illustrated graphically using a timeline format similar to that shown in the graphic.
 - g. When musical elements are used that were NOT created by the team, the source, effects applied, the way each element was incorporated into the song, and how each element corresponds to the musical piece's track list must be included; pages as needed. Failure to include this section results in disqualification.
 - h. List of hardware, software, and instruments used in the development of the musical piece; one (1) page
 - i. List of references that includes sources for materials (non-copyrighted); pages as needed
 - j. Completed Student Copyright Checklist, as applicable (see Forms Appendix)

EVALUATION

PRELIMINARY ROUND

- A. The musical piece
- B. The documentation portfolio

SEMIFINAL ROUND

- A. The presentation/interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Artist
- Audio designer or engineer
- Audio operator or technician
- Broadcast technician
- Music composer

MUSIC PRODUCTION

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ PDF of the documentation portfolio was submitted and scored
- ☐ Audio composition was submitted in proper format and accessible
- ☐ The track timeline in proper format was included
- ☐ ENTRY NOT EVALUATED

MUSICAL PIECE (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Creativity and Uniqueness (X1)	The musical idea is overly familiar or is a cliché; no variety or exploration of musical elements (range, timbre, dynamics, tempo, rhythm, and melody) are evident.	The work involves some original aspects or manipulations of musical ideas; it explores and includes at least one (1) or more musical elements.	The piece includes highly original, unusual, or imaginative musical ideas; it explores and includes at least two (2) or more musical elements.	
Artisanship (X1)	The piece gives no sense of a completed musical idea; there is no clear beginning, middle, or end section; the form appears random, rather than organized.	One (1) musical element has been used to organize the musical ideas and overall form, which are somewhat coherent.	The piece presents at least one (1) complete musical idea; the piece has a coherent and organized form with a clear beginning, middle, and end; musical elements are used to organize the musical ideas and form.	
Energy and Style (X2)	The piece lacks liveliness, vitality, and vigor; there is no flair, elegance, or grace to the form.	The piece generates an initial level of energy that appeals to the listener; the style is somewhat distinctive.	The liveliness and forcefulness of the piece excite the listener; the style is truly unique and electrifying.	
Appropriateness (X1)	The musical idea or concept is not appropriate and acceptable for use in the event.	The musical idea or concept presented is acceptable and somewhat fitting.	The musical idea or concept presented is fitting and serves as an excellent example of the type of work expected.	
Overall Appeal (X2)	The work does not present an effective general impression; the musical ideas do not hold the listener's interest.	The work includes some interesting musical ideas; the general impression is pleasant and moderately effective.	There is strong, interesting, and effective audio appeal; the work is designed to be enjoyed by the listeners.	
MUSICAL PIECE SUBTOTAL (70 points)				

DOCUMENTATION PORTFOLIO (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	The portfolio is unorganized and/or missing three (3) or more components.	The portfolio is adequately organized and includes most components.	All components of the portfolio are included, and the organization of the content is clearly evident.	
Plan of Work Log and Self-Evaluation (X1)	The Plan of Work log and/or self-evaluation are incomplete, and/or missing key components.	The Plan of Work log and/or self-evaluation are somewhat complete and incorporate reflections and efforts of the team.	A complete and concisely written Plan of Work log and self-evaluation are provided and incorporate the efforts and reflections of the team.	
Track Timeline (X1)	The track timeline is incomplete and/or not created correctly; the timeline does not correlate with the actual music production.	The track timeline is largely complete and attempts to correlate with the actual music production.	The track timeline is of exemplary quality; it correlates completely with the music production and is easy to follow.	
DOCUMENTATION PORTFOLIO SUBTOTAL (30 points)				

TIME DEDUCTIONS					
There will be a five (5) point deduction for each fifteen (15) seconds under the minimum time or each fifteen (15) seconds over the maximum time allowed for the visualization.					
Total time under		Fifteen (15)-second intervals under		Under time deduction	
Total time over		Fifteen (15)-second intervals over		Over time deduction	
TOTAL TIME DEDUCTION					

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

PRELIMINARY SUBTOTAL (100 points)	
--	--

SEMIFINAL INTERVIEW (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	The team/individual seems unprepared and unorganized for the interview.	The team/individual is adequately prepared and organized for the interview.	The interview with judges is logically organized and impressive.	
Knowledge (X1)	The team/individual seems to have very little understanding of the concepts and gives vague interview answers.	The team/individual has a generalized understanding of the concepts discussed and answers questions well.	There is clear evidence of a thorough understanding of the concepts discussed.	
Articulation (X1)	Communication of the design concept is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design concept is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design concept is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Delivery (X1)	The team/individual is verbose and/or uncertain in the interview; posture, gestures, and lack of eye contact diminish the delivery.	The team/individual is somewhat well-spoken and clear in the interview; posture, gestures, and eye contact result in an acceptable delivery.	The team/individual is well-spoken and distinct in the interview; posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
SEMIFINAL INTERVIEW SUBTOTAL (40 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
SEMIFINAL SUBTOTAL (40 points)				
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.

JUDGE

Printed name: _____ Signature: _____

MUSIC PRODUCTION EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) for each forty (40) entries
 - 2. Semifinal round, two (2)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. One (1) stopwatch per group of judges
 - 6. Results envelope
- B. Tables and chairs for judges
- C. Extension cords (25' minimum length), as needed
- D. Power bar with surge protection, as needed

RESPONSIBILITIES

PRE-CONFERENCE/PRELIMINARY ROUND

- A. National TSA will collect entries until 11:59 pm ET on May 15th and send out receipt confirmations to participants by June 10th. The submissions are shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Judges determine the twelve (12) semifinalists and discuss and break any ties.
- E. At least five (5) days prior to the National TSA Conference, make accessible the online storage utility link for the entries.

- F. Collect completed rating forms electronically and bring them to the conference on a flash drive.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is set to begin, meet with judges/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.

PRELIMINARY ROUND

- A. On the first full day of competition, post a list of the twelve (12) semifinalists in random order.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for an interview time.
- B. Semifinalists report at the time and place stated in the conference program for the interview.
- C. Manage the interviews.
- D. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- E. Judges determine the ten (10) finalists and discuss and break any ties.
- F. Submit the finalist results and all related forms in the results envelope to the CRC room.
- G. If necessary, manage security and the removal of materials from the event area.

ON DEMAND VIDEO



OVERVIEW

Applying leadership and 21st century skills, participants showcase video skills, tools, and processes to communicate, entertain, inform, analyze and/or illustrate a topic, idea, subject, or concept through a film produced on-site at the National TSA Conference. Required criteria, such as props and a line of dialogue, make the competition more challenging and will be revealed at the event orientation meeting.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

- A. The video must be no longer than sixty (60) seconds in length. A deduction of five (5) points will be incurred for exceeding the time limit.
- B. Participants have thirty-six (36) hours, beginning at the event orientation meeting, to complete the entire production.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

ON-SITE CHALLENGE

- A. Participants report to the event area at the time and place stated in the conference program to receive the on-site challenge information.
- B. The event coordinator distributes the materials, information, directions, and deadlines to each team.
- C. Each team supplies its own video production and editing equipment to complete its entry.
- D. Teams are responsible for submitting a HYPERLINK of their video solution, and the Student Copyright Checklist to the designated submission form at conference.
- E. Entries are reviewed by judges with neither students nor advisors are present at this time.
 1. This event is judged in heats with two (2) judges per every forty (40) entries.
 2. Judges review the top ten (10) scores from each heat to determine the top ten (10) finalists.
- F. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Participants produce a video while observing the following:
 1. Participants film their footage, which must be appropriate for the TSA community, only at officially sanctioned conference locations, as described by the event coordinator.
 - a. Teams are not allowed to film in sleeping rooms, restrooms, restaurants, or elevators/escalators.
 - b. Participants may not disturb any event in progress, enter a restricted evaluation area, interrupt a conference function, or participate in behavior unbecoming of a conference participant.
 - c. At the event meeting, the event coordinator explains any further filming restrictions on the specific property.
 - d. Failure to follow these instructions will result in disqualification.
 2. All entries become the property of TSA and will not be returned after judging.
 3. Teams may use no more than one (1) video camera for the video production.
 4. Teams must edit their projects on a nonlinear editing system or their camera. Teams are responsible for providing their own editing equipment.
 5. All video footage must be the original work of the team and must have been completed during the event timeline.

6. Where applicable, all ideas, test images and sound from other sources must be cited. Copyrighted materials may NOT be used. NOTE: Failure to follow this procedure results in disqualification.

B. On-site Submission Information:

1. Participants may choose any video hosting site (such as an UNLISTED YouTube URL), or a shareable link in cloud storage, as long as the video is located online and accessible for evaluation.
2. The URL must point directly to the participant's entry. Entries that require a software download or a request that access be granted will not be judged.
3. Entries received, or changes made to submitted entries after the deadline will not be judged.
4. Participants must complete the Student Copyright Checklist (see Forms Appendix) and save it as a multi-page PDF to be submitted electronically with the entry online. Failure to include the Student Copyright Checklist will result in disqualification.
5. The submission form will have a separate link for the documentation portfolios.
6. If the entry contains images of people, proof of consent must be provided for each person in the video.
7. Minors require parental consent. Use the Photo/Film/Video Consent and Release form (see Forms Appendix) for any individuals included in the video footage.
8. National TSA will NOT provide wireless Internet.

EVALUATION

- A. The completed video production.

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Actor
- Audio/video operator or technician
- Cinematographer
- Film/video editor
- Screen editor
- Script writer

ON DEMAND VIDEO

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ The video is submitted and accessible
- ☐ A PDF of the Student Copyright Checklist is uploaded
- ☐ ENTRY NOT EVALUATED

PRODUCTION (100 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Camera Handling (X1)	Serious problems with focus, steadiness, and framing are evident.	Most shots are focused and framed, with adequate close-ups included.	Steady and creative shots that enhance the video are utilized, and excellent close-ups are included.	
Lighting (X1)	Numerous shots are improperly lit; bleaching, shadows, or unbalanced conditions may be evident in some shots; there is no evidence of an attempt to correct problems.	Most shots are properly lit, either through ambient lighting or the use of techniques to correct poor lighting conditions.	All shots are well lit, either through ambient lighting or the use of techniques to correct poor lighting conditions.	
Audio (X1)	Audio may be unclear, distorted, or washed out from poor signal-to-noise ratio; there is evidence of the use of a built-in camera microphone that detracts from the message.	The audio is clear, with consideration given to a good signal-to-noise ratio; background or ambient noise may occasionally be a distraction.	The audio is clear and recorded with good signal-to-noise ratio, displaying skillful microphone choice, placement, and technique.	
Continuity and Pacing (X2)	The story sequencing is confusing; shots are too long or "clipped," with edit points appearing "glitchy."	The pace and timing are well structured; clips move along and tell the story, with moderate use of transitions.	Shots logically pace the story along in an interesting way, with an excellent and purposeful use of transitions.	
Video Effectiveness (X2)	The video does not meet project goals, presents an unclear message, and/or is sloppy overall; leadership and/or 21 st century skills are not evident.	The video topic is presented with insights; the video adequately meets the objective; leadership and/or 21 st century skills are somewhat evident.	The video is clearly focused, with a rich variety of supporting material; leadership and/or 21 st century skills are clearly evident.	
Aesthetics and Artisanry (X1)	The work is unorganized and sloppy.	The work provides an organized and logical presentation of essential issues.	The work provides an exemplary use of layout and design principles to logically communicate important data.	
Use of Required Props (X1)	Props incorporated in the video appear as an afterthought.	Props incorporated in the video add some artistic value and tend to further the plot.	Props are integral to the production's plot and artistic value.	
Use of Required Dialogue (X1)	The line of dialogue is not well incorporated in the production, and/or the dialogue is not in sync with the plot.	The line of dialogue is adequately incorporated and somewhat essential to the production's plot.	The line of dialogue is communicated effectively and is integral to the production's plot.	

PRODUCTION SUBTOTAL (100 points)		
A time violation (a deduction of five [5] points) will be incurred for exceeding the sixty (60)-second time limit for the length of the video. Record the deduction in the space to the right.		
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, 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.

JUDGE

Printed name: _____ Signature: _____

ON DEMAND VIDEO

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

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

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. One (1) stopwatch per group of judges
 - 5. Marking pens, three (3)
 - 6. Results envelope
- B. Tables and chairs for judges
- C. Computer installed with VLC Media Player software and capable of viewing PDF files is needed for each judge team in addition to the rubric/scoring computer
- D. Extension cords (25' minimum length), as needed

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Prior to the event meeting, the coordinator should tour the conference facilities and develop a list of restricted areas and/or specific restrictions for the event. This list should be shared with the event manager prior to the event meeting. The coordinator should mention at the event meeting that teams must be courteous to all guests in common areas or designated filming areas.
- B. Meet with all participants at the designated time and place to deliver the specific criteria, including required props and dialogue.
 - 1. Ensure that all participants understand regulations regarding equipment allowed, behavior, deadlines, and submission requirements.
 - 2. Share the online submission link with the participants.
 - 3. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
 - 4. In order to compete, participants must be on the entry list, or must have approval of the CRC.

SCORING

- A. Close the online submission link.
- B. Determine the heat procedures and communicate the requirements to the judges.
- C. Ensure the judges have access to the entries.
- D. Judges independently evaluate the entries.
- E. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct 20% of the total possible points or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- F. Each group of evaluators averages the scores to determine the top ten (10) entries from that group. The number of evaluator groups depends on the number of entries with two (2) or more evaluators for every forty (40) entries.

- G. Judges determine the ten (10) finalists and discuss and break any ties.
- 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.

OVERVIEW

Applying leadership and 21st century skills, participants demonstrate an expertise in using photographic and imaging technology processes to convey a message. Semifinalists communicate their logical processes through the on-site an interview and showcase their skills by capturing and editing photographs that are submitted online during the conference. The annual theme will be posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

One (1) individual per chapter may participate

TIME LIMITS

PRELIMINARY ROUND

- A. All components of the chapter's entry must be finished, submitted, and accessible via the Internet by 11:59 p.m. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th

SEMIFINAL ROUND

Rotation stations

- A. Thirty (30) minutes to set up and test equipment, and receive instructions.
- B. One (1) hour to rotate through stations, including taking photographs and participating in the on-site interview, which last no more than five (5) minutes.
- C. One (1) hour to edit photographs on-site.

Twenty-four (24) hour skills challenge

- A. Twenty-four (24) hours to take, edit, and upload photographs based on the instructions and regulations outlined during the semifinal instructional session.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants access the annual theme on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants produce a photographic portfolio while observing regulations.
- C. Participants submit the entry by 11:59 p.m. ET on May 15th.
- D. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. A list of twelve (12) semifinalists (in random order) is posted on-site at the National TSA Conference on the first full day.

SEMIFINAL ROUND

- A. Participants report at the place and time stated in the conference program to sign up for an on-site challenge time.
- B. Participants report at the assigned time and place, with all of the required equipment and software noted in the event Regulations, for the on-site challenge.
- C. Participants are allowed thirty (30) minutes to set up and test their equipment.
- D. At the end of the set-up time, the event coordinator reviews the on-site tasks and related procedures to the semifinalists in a brief informational session.
- E. During the first part of the on-site challenge, participants have one (1) hour to:
 - 1. rotate through two stations
 - 2. demonstrate their expertise for photographic design and technology in the five (5) minute on-site interview.
- F. Participants have one (1) hour to edit the photographs on-site and save the files on a USB thumb drive for judging.

- G. For the second part of the semifinalist challenge, participants have twenty-four (24) hours to independently take and edit photographs, working within the regulations and procedures outlined during the informational session.
- H. Judges independently assess the entries and interview responses.
- I. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Participants interpret the annual theme posted on the [TSA website](#) to unify the photographs included in the portfolio.
- B. Participants are solely responsible for all aspects of the competition, including taking the photographs, editing, and completing the portfolio. This includes images used in special effects photography.
- C. Photographic Portfolio:
 - 1. The finished album must be saved as a multi-page PDF document with the pages in the following order:
 - a. Title page – must include the event title, the conference city and state, the year, the participant's ID number.
 - b. Table of contents; pages as needed
 - c. Summary of the theme must follow the annual challenge, including a detailed description of how the theme was interpreted by the participant, why the particular subjects were chosen, as well as the challenges that were faced in the selection of the subjects, in taking the photos, and in selecting and editing the final images; pages as needed.
- D. The photographs:
 - i. The entry must contain five (5) separate images:
 - 1. two (2) must be color images
 - 2. two (2) must be black and white images
 - 3. one (1) may be of the participant's choice

Note: Sepia tones, blue tones, or coloring of any type, other than black and white, are counted as color images.
 - ii. Any image submitted that combines images must have the unaltered images included in the Resources/References section of the entry.
 - iii. One-half (1/2) page typewritten statements in 12-point Times New Roman font containing the following information must precede each image. Statements should NOT appear on the same page as the final image:
 - 1. Camera make (Nikon, Canon, Panasonic, Sony, etc.)
 - 2. Camera model (CoolPix, Rebel, 5D, etc.)
 - 3. F-stop at which the photograph was taken
 - 4. Exposure time
 - 5. ISO speed
 - 6. Focal length
 - 7. A brief description of the image, how the photographer interprets it to meet the challenge criteria, and what edits were made to the original image to arrive at the final product. Include detailed information about the process/special effects applied to the image.
- D. A references and resources page must include a list of resources used to complete the album, including camera, software, hardware, etc.

- E. Participants must complete the Student Copyright Checklist (see Forms Appendix) and save it as a multi-page PDF to be submitted electronically with the entry online:
 1. If the entry contains images of people, proof of consent must be provided for each person in the video.
 2. Minors require parental consent.
 3. Use the Photo/Film/Video Consent and Release (see Forms Appendix on the [TSA website](#)) for any individuals included in the album.
 4. Participants must scan each completed consent form as a PDF file.
 5. Failure to include the Student Copyright Checklist or consent forms will result in disqualification.
- F. All prints used in this event should be appropriate for viewing at the National TSA Conference. Any entry that includes images depicting inappropriate or unacceptable behavior will result in disqualification.

SEMIFINAL ROUND

- A. Semifinalists are required to provide their own equipment and any other related accessories (i.e. filters, reflectors, extra batteries, etc.) including:
 1. A tripod
 2. Portable, off-camera flash unit (e.g., a speedlight)
 3. Cameras must have a timer feature and/or remote trigger, off camera flash capability, and the ability to be mounted to a tripod.
 4. Cell phone cameras are not permitted.
 5. A computer (laptop is preferred) with graphic editing software installed.
 6. Two (2) USB flash drives for use in the first part of the on-site semifinal round challenge.
Note: USB flash drives become property of TSA and will not be returned to the participant.
- B. Participants use the graphic editing software (e.g., Lightbox, Photoshop, Fireworks, etc.), to edit their images.
- C. Each semifinalist must have a method to transfer the images to the computer for editing (such as a media reader).
- D. No internet access will be provided
- E. Participants be allowed to bring and/or use mobile hotspots to access the internet during the first part of the semifinal on-site competition.
- F. Examples of tasks that participants may be asked to perform include, but are not limited to:
 1. photographing a product for commercial us
 2. green screen shots
 3. macro photography
 4. portraiture
 5. staging a still life photo using provided materials.
- G. Where required by the on-site challenge, lighting kits (with the exception of off-camera flash units), backdrops, props and models will be provided by TSA.
- H. Portfolios for both sections of the semifinal round (the Photographic Station Challenge and the Independent Skills Challenge) MUST include the following information:
 1. Copy of the original, unedited image
 2. Camera make (Nikon, Canon, Panasonic, Sony, etc.)
 3. Camera model (CoolPix, Rebel, 5D, etc.)
 4. F-stop at which each photograph was taken
 5. Exposure time of each photograph
 6. ISO speed of each photograph
 7. Focal length of the lens for each photograph
 8. For each image presented, participants must also write a brief statement (one to two sentences in length) on how the photographer believes the image meets the challenge (e.g., "I chose a standard formal portrait style in black and white to focus attention on the subject's face.").
 - a. The statement must also include the edits made to the original image to arrive at the final image.

- b. This statement should NOT appear on the same page/slide as the image.
- c. The text should be in a 12-point Times New Roman font for easy readability.

9. Student Copyright Checklist

10. Consent forms (if applicable)

- a. ALL recognizable individuals (i.e., face is visible) selected and pictured in the images must give their written consent before the images can be used in this event.
- b. All consent forms must be included in the multi-page PDF documentation portfolio.

NOTE: If consent forms are missing, the entry will not be judged.

11. Resources and References (if applicable). Images used in special effects photos (composite images, ghosted images, etc.) are to be placed in this section and should note the associated photo; pages as needed.

12. The above portfolio regulations are in addition to any special requirements communicated during the semifinal round informational session.

- I. All prints used in this event should be appropriate for viewing at the National TSA Conference. Any entry that includes images depicting inappropriate or unacceptable behavior will result in disqualification.
- J. A PDF of the second round semifinal portfolio entries are submitted online to the designated submission file at the conference by the deadline.

EVALUATION

PRE-CONFERENCE/PRELIMINARY ROUND

- A. The photographic portfolio
- B. The documentation portfolio

SEMIFINAL ROUND

- A. The station challenge portfolio
- B. The interview
- C. The independent skills portfolio challenge

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Advertising or public relations executive
- Graphic designer
- Photographer

PHOTOGRAPHIC TECHNOLOGY

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ PDF of the photographic portfolio was submitted and scored
- ☐ Equipment for the on-site challenge is present
- ☐ ENTRY NOT EVALUATED

PHOTOGRAPHIC PORTFOLIO (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Principles and Elements of Design and Composition and Creativity (X1)	There is little or no evidence of an understanding or creative use of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	Images demonstrate some knowledge and creative use of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	Images clearly demonstrate excellent and creative use of a variety of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	
Technical Quality (X1)	Photos are out of focus; blurriness is unintentional and does not contribute to the overall composition; photos display incorrect exposure values, white balance, and/or range of tones; there is little or no consideration given to lighting and/or special effects.	Photos are in focus; photos display correct exposure values, white balance, and/or range of tones; images exhibit some attention to lighting and/or the use of special effects.	Photo subject(s) are in sharp focus; blurriness is used effectively to enhance the composition; photos display correct exposure values, white balance, and/or range of tones; images are enhanced by attention to lighting and/or the use of special effects.	
Impact and Theme (X1)	The images are flat and lack emotional depth; viewers are not drawn into the scene; images do not clearly convey the theme/challenge.	The images show some emotional depth; viewers make an emotional connection with the images/pictures and are drawn into the scene or learn something from the subject(s); images convey the competition theme/challenge.	The images show emotional depth; viewers make an instant emotional connection with the pictures and are drawn into the scene or learn something from the subject(s); images clearly convey the competition theme/challenge.	
Written Statements (X1)	A written statement may or may not accompany each photo, and/or the statement includes only some of the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length), and/or an explanation of the relevance of the image to the challenge is not present and/or is written poorly.	A written statement accompanies each photo; the statement includes most of the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length); an explanation of the relevance of the image to the challenge is included.	A written statement accompanies each photo; the statement includes the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length); an explanation of the relevance of the image to the challenge is presented in a clear and concise manner.	

PHOTOGRAPHIC PORTFOLIO (60 points) – continued				
Resources/ References (X2)	A reference list is present, but graphic and/or software packages used are not mentioned, and/or MLA format is not used, and/or the citations are inadequate.	A reference list is present and the primary software packages used are included; MLA format is used for an adequate number of resources.	Detailed and concise resources/ references are provided; all software packages used are included; MLA format is used for the citations.	
PHOTOGRAPHIC PORTFOLIO SUBTOTAL (60 points)				

<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>	
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PRELIMINARY SUBTOTAL (60 points)	
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PHOTOGRAPHIC STATION CHALLENGE (70 points)				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Principles and Elements of Design/ Composition and Creativity (X1)	There is little or no evidence of an understanding or creative use of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	Images demonstrate some knowledge and creative use of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	Images clearly demonstrate excellent and creative use of a variety of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/ rhythm and pattern/repetition).	Record scores in the column spaces below.
Technical Skill (X2)	Participants do not demonstrate knowledge of and understanding of how to utilize photographic equipment and techniques such as lighting equipment, and/or off-camera flash, or do not use it altogether in the on-site challenge; participants show little or no creativity in staging and photographing subjects.	Participants demonstrate some knowledge of and understanding of how to utilize photographic equipment and techniques such as lighting equipment, and/or off-camera flash, or use it only minimally in the on-site challenge; participants show some creativity in staging and photographing subjects.	Participants clearly demonstrate knowledge and understanding of how to utilize photographic equipment and techniques such as lighting equipment, and/or off-camera flash and use it creatively in the on-site challenge; participants show creativity in staging and photographing subjects; participants show a high level of skill in the use of the tools to create high quality images.	
Technical Quality (X1)	Photos are out of focus; blurriness is unintentional and does not contribute to the overall composition; photos display incorrect exposure values, white balance, and/or range of tones; there is little or no consideration given to lighting and/or special effects.	Photos are in focus; photos display correct exposure values, white balance, and/or range of tones; images exhibit some attention to lighting and/or the use of special effects.	Photo subject(s) are in sharp focus; blurriness is used effectively to enhance the composition; photos display correct exposure values, white balance, and/or range of tones; images are enhanced by attention to lighting and/or the use of special effects.	
Impact and Theme (X1)	The images are flat and lack emotional depth; viewers are not drawn into the scene; images do not clearly convey the theme/challenge.	The images show some emotional depth; viewers make an emotional connection with the images/pictures and are drawn into the scene or learn something from the subject(s); images convey the competition theme/challenge.	The images show emotional depth; viewers make an instant emotional connection with the pictures and are drawn into the scene or learn something from the subject(s); images clearly convey the competition theme/challenge.	

PHOTOGRAPHIC STATION CHALLENGE (70 points) – continued				
Portfolio (X1)	A written statement may or may not accompany each photo, and/or the statement includes only some of the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length), and/or an explanation of the relevance of the image to the challenge is not present and/or is written poorly.	A written statement accompanies each photo; the statement includes most of the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length); an explanation of the relevance of the image to the challenge is included.	A written statement accompanies each photo; the statement includes the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length); an explanation of the relevance of the image to the challenge is presented in a clear and concise manner.	
Articulation (X1)	Communication of the design process is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
PHOTOGRAPHIC STATIONS SUBTOTAL (70 points)				

TWENTY-FOUR HOUR INDEPENDENT SKILLS CHALLENGE (60 points)				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	Record scores in the column spaces below.
	1-4 points	5-8 points	9-10 points	
Principles and Elements of Design/Composition and Creativity (X1)	There is little or no evidence of an understanding or creative use of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	Images demonstrate some knowledge and creative use of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	Images clearly demonstrate excellent and creative use of a variety of compositional elements (line, shape, form, value, space, texture, color, framing, emphasis, balance, unity, contrast, movement/rhythm and pattern/repetition).	
Technical Skill (X2)	Participants do not demonstrate knowledge of and understanding of how to utilize photographic equipment and techniques such as lighting equipment, and/or off-camera flash, or do not use it altogether in the on-site challenge; participants show little or no creativity in staging and photographing subjects.	Participants demonstrate some knowledge of and understanding of how to utilize photographic equipment and techniques such as lighting equipment, and/or off-camera flash, or use it only minimally in the on-site challenge; participants show some creativity in staging and photographing subjects.	Participants clearly demonstrate knowledge and understanding of how to utilize photographic equipment and techniques such as lighting equipment, and/or off-camera flash and use it creatively in the on-site challenge; participants show creativity in staging and photographing subjects; participants show a high level of skill in the use of the tools to create high quality images.	
Technical Quality (X1)	Photos are out of focus; blurriness is unintentional and does not contribute to the overall composition; photos display incorrect exposure values, white balance, and/or range of tones; there is little or no consideration given to lighting and/or special effects.	Photos are in focus; photos display correct exposure values, white balance, and/or range of tones; images exhibit some attention to lighting and/or the use of special effects.	Photo subject(s) are in sharp focus; blurriness is used effectively to enhance the composition; photos display correct exposure values, white balance, and/or range of tones; images are enhanced by attention to lighting and/or the use of special effects.	
Impact and Theme (X1)	The images are flat and lack emotional depth; viewers are not drawn into the scene; images do not clearly convey the theme/challenge.	The images show some emotional depth; viewers make an emotional connection with the images/pictures and are drawn into the scene or learn something from the subject(s); images convey the competition theme/challenge.	The images show emotional depth; viewers make an instant emotional connection with the pictures and are drawn into the scene or learn something from the subject(s); images clearly convey the competition theme/challenge.	

TWENTY-FOUR HOUR INDEPENDENT SKILLS CHALLENGE (60 points) – continued				
Portfolio (X1)	A written statement may or may not accompany each photo, and/or the statement includes only some of the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length), and/or an explanation of the relevance of the image to the challenge is not present and/or is written poorly.	A written statement accompanies each photo; the statement includes most of the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length); an explanation of the relevance of the image to the challenge is included.	A written statement accompanies each photo; the statement includes the photo's meta data (camera make/model, f/stop, exposure time, ISO speed, focal length); an explanation of the relevance of the image to the challenge is presented in a clear and concise manner.	
TWENTY-FOUR HOUR INDEPENDENT SKILLS CHALLENGE SUBTOTAL (60 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (130 points)				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p> <p>TOTAL (190 points)</p>				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

PHOTOGRAPHIC TECHNOLOGY

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistants for check-in, two (2)
- C. Judges:
 - 1. Preliminary round for portfolios, two (2) or more
 - 2. Semifinal round:
 - a. two (2) or more for the station challenge
 - b. two (2) or more for the independent skills challenge

MATERIALS

- A. Coordinator's packet, containing
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for semifinal contestants, as needed
 - 5. Results envelope
- B. Tables for entries
- C. Tables and chairs for judges
- D. Semifinalist event information sheet
- E. Event time line and presentation schedule
- F. Lighting kits and any additional equipment (such as a green screen) for the semifinal station challenge
- G. LED projector and laptop with appropriate software to review semifinalist presentations

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants by June 10th. The results are shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.

- C. Manage communication and Pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Judges determine the twelve (12) semifinalists and discuss and break any ties.
- E. At least five (5) days prior to the National TSA Conference, make accessible the online storage utility link for the entries.
- F. Collect completed rating forms electronically and bring them to the conference on a flash drive.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and obtain the coordinator's packet; check the contents.
- C. Review the event guidelines and check to see that enough judges/assistants have been scheduled.
- D. 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.
- E. One (1) hour before the semifinal event is to begin, meet with evaluators 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.

PRELIMINARY ROUND

- A. On the first full day of the conference, post a list of the twelve (12) semifinalists in random order.
- B. Create and post a semifinalist sign-up sheet.

SEMIFINAL ROUND

- A. Perform basic set-up of equipment necessary for the completion of the semifinal station challenge. Stage the props as needed.
- B. At least one (1) hour before the event is scheduled to begin, meet with judges and review the time limits, procedures, regulations, evaluation, and all other details related to the event. Determine the procedure for breaking ties before the on-site competition begins.

- C. Semifinalist teams report to the event area at the assigned time and place with their equipment needed for the on-site challenge.
- D. Distribute the guidelines for both the station challenge and the twenty-four (24) hour skills challenge, including the submission procedures and the deadline.
- E. Manage the completion of the on-site rotations through each station, including the interview and editing process.
- F. Collect USB flash drives as participants rotate through the stages. Ensure that each is properly marked with the participant's identification number. Inform the contestants that the USB flash drives become the property of TSA and will not be returned.
- G. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct 20% of the total possible points or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- H. Judges determine the ten (10) finalists and discuss and break any ties.
- I. Review and submit the finalist results and all items/forms in the results envelope to the CRC room.
- J. If necessary, manage security and the removal of materials from the area.

PREPARED PRESENTATION



OVERVIEW

Applying leadership and 21st century skills, participants prepare to deliver an oral presentation, using a digital slide deck, on an assigned topic provided on-site.

ELIGIBILITY

Three (3) individuals per state may participate.

TIME LIMITS

- A. Each presentation must be no less than three (3) minutes and no more than five (5) minutes.
- B. A maximum of five (5) minutes is allowed for set-up.
- C. At the conclusion of a presentation, participants must have all equipment and be ready to exit the room within three (3) minutes.
- D. A time deduction as noted in the rubric will be incurred for not adhering to any time designations/restrictions.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

ON-SITE CHALLENGE

- A. Participants report to the event area at the time and place stated in the conference program to:
 - 1. receive a topic for presentation
 - 2. sign up for a presentation time; participants must be available to sign up for presentation times and may not send representatives.
- B. Participants report to the holding area, as stated in the conference program, fifteen (15) minutes prior to the assigned presentation time.
- C. The event coordinator introduces each participant by number and in order of scheduled times. The schedule allows time for set-up and removal of equipment.
- D. Judges independently assess each participant's presentation.
- E. The top ten (10) finalists is announced during the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. The topic for the event is given to participants when they sign up for a presentation time.
- B. The presentation must include the use of a digital slide deck of a minimum of five (5) slides.
- C. Participants are not allowed to hear other participants' presentations.
- D. It is the participant's responsibility to provide any audio/visual equipment needed for the presentation, including a laptop computer and projector. If a participant is using equipment that requires electricity, s/he must bring a 25' extension cord.
- E. Participants are not permitted to compete without equipment for the presentation.
- F. A table (approximately six feet [6'] long) and a projection screen are provided by national TSA for participant use, as needed.
- G. Participant scores are penalized one (1) point per ten (10)-second interval for speaking over or under the allotted time.
 - 1. The same penalty is used for set-up and take-down.
 - 2. Set-up time begins when the participant is called into the room and ends when the participant is ready to deliver the presentation.
 - 3. Take-down time begins when the presentation is concluded and ends when the participant has all devices ready to exit the room.
 - 4. The presentation time starts when the presentation begins and ends when the presentation is concluded.
- H. No observers are allowed in the event or preparation rooms. If observers are allowed in the presentation room during the presentations, the following must be observed:

1. No talking or gesturing is permitted.
2. Observers are NOT allowed to enter or leave during a presentation.
3. There is no applause until the presentation has concluded.
4. No form of visual recording (such as photographic or video) or audio recording by any observer (including family, friends, or advisors of the participants) is permitted.

Please refer to the conference page of the TSA website or the Spectator Events page of the conference program for additional information.

EVALUATION

- A. The quality of the presentation, including appropriate use of a slide deck.

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Broadcast media specialist
- Lawyer
- Management consultant
- Motivational speaker
- Public relations executive

PREPARED PRESENTATION

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

-
- ☐ A slide deck is present
☐ Computer hardware is present
☐ Participant signed-up for a presentation time
☐ ENTRY NOT EVALUATED

PRESENTATION (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Introduction (X1)	The introduction is weak, with little effort made to highlight and/or generate interest and enthusiasm for the topic.	The introduction is adequate and creates a general level of interest.	The introduction is effective, stimulating, and inspires observers.	
Body (X1)	The body of the presentation is poorly organized; the content does not properly cover or represent the topic theme.	The body of the presentation is somewhat clear and effective and creates an interesting premise.	The body of the presentation speech is clear, effective, and delivered in an exceptionally interesting manner; the presentation is memorable.	
Conclusion (X1)	The conclusion fails to summarize or clarify the information provided in the presentation.	The conclusion adequately summarizes the content and theme of the presentation topic.	The conclusion is effective, interesting, and memorable; it fully brings finality to the presentation.	
PRESENTATION SUBTOTAL (30 points)				

PREPARED PRESENTATION

STAGE PRESENCE (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Appearance (X1)	Participant's appearance is unprofessional, sloppy, and inappropriate.	Participant's appearance is adequate, appropriate, and somewhat professional.	Participant's appearance is exceptional, appropriate, and professional.	
Confidence (X1)	Participant appears nervous during presentation; poor posture, poor eye contact, and lack of confidence are evident.	Participant is generally poised, displays eye contact, and is confident, with some signs of nervousness.	Participant "commands" the room, and is exceptionally poised, confident, and positive.	
Articulation (X1)	Participant conveys an inconsistent use of proper grammar, word pronunciation, and acceptable pitch and tone.	Participant generally uses proper grammar and pronunciation, and varies the use of tone and pitch.	Smooth and effective articulation, proper grammar, correct pronunciation, and varied tone and pitch are used throughout the speech.	
STAGE PRESENCE SUBTOTAL (30 points)				

ORGANIZATION OF THE PRESENTATION (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Effectiveness and Quality of Presentation (X1)	The presentation is poorly prepared, not interesting, and not representative of the stated theme; leadership and/or 21 st century skills are not evident.	The presentation is adequate, and the observer generally understands the theme; leadership and/or 21 st century skills are somewhat evident.	The presentation is exceptional and memorable; the observer easily understands and relates to the theme; leadership and/or 21 st century skills are clearly evident.	
Organization (X1)	The presentation is difficult to follow or understand.	The presentation is adequately organized and delivered.	The presentation is organized and easy to follow; the delivery is exceptional.	
Quality of the Slide Deck (X1)	The presentation slide deck is of minimal quality; slides are unprofessional and/or inappropriate and do not enhance the content of the presentation; the participant does not have the minimum number of slides required.	The presentation slide deck is adequate; the slides generally relate to the theme of the presentation; the participant has used the minimum number of slides required.	The slide deck is exceptional and enhances the theme and content of the presentation without distracting the observers from the overall content of the presentation; the participant exceeds the minimum number of slides required.	
Use of the Slide Deck (X1)	The participant reads from the slide deck; the use of the slide deck detracts from the overall presentation; the participant struggles with transitions between slides while delivering the presentation.	The participant tends to rely on the slide deck for much of the presentation; the participant adequately handles transitions between slides while delivering the presentation.	The participant effectively uses the slide deck to enhance the overall presentation; transitions between slides are smooth, effective, and well-timed.	
ORGANIZATION OF THE PRESENTATION SUBTOTAL (40 points)				

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

Indicate the rule violated: _____

TIME DEDUCTIONS

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. The same one (1)-point per ten (10)-second interval penalty applies to more than five (5) minutes for set-up and three (3) minutes for take down. Presentation time commences when the presenter begins speaking.

Total time for presentation		Presentation deduction		
Total time for set-up		Set-up deduction		
Total time for take-down		Take-down deduction		
TOTAL TIME DEDUCTIONS				

SUBTOTAL (100 points)

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.
JUDGE

Printed name: _____ Signature: _____

PREPARED PRESENTATION EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges, two (2) or more per heat/event room
- C. Timekeeper, one (1) per heat/event room

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stopwatch, one (1) per event room
 - 5. Results envelope
- B. Prepared sign-up list indicating ten (10)-minute intervals for each heat to accommodate all registered participants
- C. Assigned theme (to be distributed when participants sign up for a presentation time), one (1) copy per participant and judge
- D. Tables and chairs for two (2) judges and one (1) timekeeper per heat/event room
- E. Chairs for audience (if applicable)
- F. Table for participant use, approximately 6' long, one (1) per heat/event room
- G. Projection screen, one (1) per heat/event room
- H. Podium, one (1) per heat/event room

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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. At least one (1) hour before the event is scheduled to begin, meet with judges/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.

EVENT CHECK-IN

- A. Begin the event at the scheduled time by closing the doors and checking the entry list.
- B. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- C. In order to compete, participants must be on the entry list or must have approval of the CRC.
- D. Participants sign up for heats according to the time provided in the conference program.
- E. Participants who do not report to sign up for heats in-person may be disqualified. Participants may not send representative on their behalf. Any exceptions must be approved by the CRC.
- F. Distribute the topic once the participant has signed up.

ON-SITE CHALLENGE

- A. Participants report at the assigned time to the place stated in the conference program for the presentation.
- B. At the scheduled time, take the first participant to the event room and allow five (5) minutes for set-up of equipment.
- C. The event coordinator or assistant introduces each participant by entry number only. No nametags that give any indication of the hometown, school, or chapter are allowed.
- D. Approximately every ten (10) minutes, the coordinator or designated assistant sends a participant to the event room.
- E. The participant is allowed three (3) minutes to remove all equipment.

- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct 20% of the total possible points or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- G. Judges determine the ten (10) finalists and discuss and break ties.
- 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.

PROMOTIONAL DESIGN



OVERVIEW

Applying leadership and 21st century skills, participants use computerized graphic communications layout and design skills in the production of a promotional resource.

The resource is based on the annual theme posted on the [TSA website](#) under Competitions/Themes and Problems. Semifinalists demonstrate competency through participation in an on-site technical design challenge.

ELIGIBILITY

Three (3) individuals per state may participate.

TIME LIMITS

- A. Thirty (30)-minute set-up time before the on-site semifinal challenge.
- B. Two (2) hours to complete the on-site problem.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants review the annual theme posted on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants prepare the promotional folder while observing the regulations.

PRELIMINARY ROUND

- A. Participants report at the time and place stated in the conference program to check in the standard 10" x 13" mailing envelope containing the entry and related documentation.
- B. Entries are independently reviewed by the judges with neither students nor advisors present.
- C. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. Participants report to the event area at the time and place stated in the conference program for the on-site component of the event.
- B. Participants are provided with an on-site publishing problem.
- C. A final color output of each semifinalist entry is saved as a PDF file and turned in on a USB flash drive.
- D. Judges independently assess the entries.
- E. The top ten (10) finalists are announced during the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Each entry must include a student-designed standard two-pocket folder which:
 - 1. may be produced by the participant or purchased from an office supply store.
 - 2. must be made of cardstock with a cover image (either printed directly to the cover or printed on a separate sheet of paper, then glued to it to simulate the look of the final project).
 - 3. must include two pockets, and a business card slit.
 - 4. must include at least four (4) printed promotional publication items (chosen by the designer). The folder is not included as one of these four (4) items, but must also contain design elements that unify the entry.
 - 5. is identified using only the participant's identification number. Entries should not include any other identifying information. The name of the chapter may only be identified when the challenge calls for promotion of the local chapter, as in fundraising.

- B. The entry, including the Promotional Folder with its contents as well as the accompanying documents, must be contained and submitted in a standard 10" x 13" mailing envelope.
- C. The printed items contained in the folder must follow the below guidelines:
 - 1. The printed promotional items must incorporate a blank area designed for the user to provide a space where the informational documents can be personalized to the state or school that uses them.
 - 2. The printed items contained in the folder must be designed in color (four [4] minimum) on 8½" x 11" paper (maximum size).
 - 3. Preprinted or designed paper may not be used.
 - 4. Clip art may be used, however, no templates may be used.
 - 5. If it is determined that the product submitted is a template, the entry will be disqualified.
 - 6. Items that may be considered for the additional four (4) portfolio items might include: a pamphlet, post card, letter, small poster, or business card.
 - 7. The content of all items must be appropriate for viewing at the National TSA Conference. Any entry that includes images depicting sex, drugs, tobacco, alcohol, gangs, cults, etc., will be disqualified.
 - 8. These items must be included in the folder:
 - a. Proof of permission to use copyrighted image(s) must be included (see Student Copyright Checklist in the Forms Appendix or on the [TSA website](#)).
 - b. A release form must be present if photographs of individuals are used (see Photo Consent and Release form).
 - c. Clipart must be documented. Failure to do so results in disqualification.
 - 9. The complete packet should demonstrate a unity of design that repeats throughout the portfolio.
 - 10. No permission is needed for the use of the TSA logo by affiliated chapters. Refer to the TSA Branding Guide on the [TSA website](#).

SEMIFINAL ROUND

- A. Semifinalists supply their own computer hardware with USB port, power strip/surge protector, extension cord, and software for the on-site portion of the event.
 - 1. A laptop computer is recommended.
 - 2. Any semifinalist who does not provide these items will not be allowed to compete in the on-site event.
- B. Clip art may be used.
- C. No templates may be used.
- D. All on-site work is developed, saved as a PDF file on a USB flash drive, and submitted using only the participant's identification number.
- E. Semifinalists leave the event room only with permission from the event coordinator.
- F. The on-site entry should be saved and submitted when the work is completed and/or when time elapses.
- G. All entries become the property of TSA and will not be returned after judging.

EVALUATION

PRELIMINARY ROUND

- A. The promotional folder cover and contents

SEMIFINAL ROUND

- A. The semifinalist problem

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Advertising executive
- Graphic designer
- Marketing manager
- Printer
- Public relations manager

PROMOTIONAL DESIGN

2021 & 2022 OFFICIAL RATING FORM HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

-
- ☐ Entire Project and Related Forms are submitted inside a standard 10" x 13" mailing envelope
 - ☐ Entry folder contains the required four (4) items
 - ☐ No obvious templates are present in the entry
 - ☐ All permission forms are present
 - ☐ ENTRY NOT EVALUATED

PROMOTIONAL FOLDER COVER (Cover Graphic) (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Appropriateness of Graphic Design (X1)	The design has little connection to or is inadequate in conveying the essence of the design challenge; logo(s) are poorly placed or of poor quality.	The design has a general connection to the challenge; logo(s) are present.	The design is appropriate and effectively addresses the theme; logo(s) are present and appropriately placed.	
First Impressions (sharp, clean edges of graphics and fonts; entry is clear of smudges, smears, pencil or other extraneous marks) (X1)	The design is messy and/or damaged, and leaves an unfavorable impression.	The design is neat, with adequate attention to detail.	The design is eye-catching and compelling; attention to detail is very evident.	
Use of Color (X1)	The graphic has less than three (3) colors; colors used clash or distract from the graphic.	The graphic has three (3) colors, and they generally work well together.	The effective choice of colors creates an appealing graphic.	
Fonts (readable, have eye appeal, appropriate dimension and placement) (X1)	Font choice, size, and placement are ineffective in creating an aesthetically pleasing design.	Font choice and size are appropriate and incorporated somewhat effectively in the design.	Font choice and size are appropriate, and the location of text is effectively incorporated in the aesthetics of the design.	
PROMOTIONAL FOLDER COVER SUBTOTAL (40 points)				

PROMOTIONAL FOLDER CONTENTS (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Appropriateness of Graphic Products (X1)	Graphic products have little connection to the intent of the folder's target audience.	Graphic products are appropriate to the intended audience and have generally useful content.	Graphic products clearly connect with the intention of the promotional packet and its intended audience, providing useful, related content	
Unity of Design (X1)	The complete packet has little obvious unity of design throughout the included items.	The complete packet demonstrates a general sense of unity of design throughout the included items.	The complete packet demonstrates an obvious unity of design that repeats throughout the included items.	
Incorporation of Graphic Design Principles (alignment, contrast, unity, white space, balance, and proportion) (X1)	Graphic products incorporate or embody few, if any, of the design principles.	Graphic products are somewhat pleasing but may be missing one (1) or two (2) design principles; the products have a layout that is generally aesthetically pleasing.	Graphic products are clearly unique and aesthetically pleasing, with all graphic design principles incorporated in the overall design and layout.	
Grammar/Spelling (X1)	Many misspelled words are present, and grammar is poor.	Spelling and grammar are mostly correct.	Proper grammar and spelling are evident.	
Graphic Images (X1)	Images have little connection to the essence of the challenge; logo(s) are poorly placed or of poor quality.	Images have general connections to the challenge; logo(s) are present.	Images are appropriate and effectively address the challenge; logo(s) are present and appropriately placed.	
Use of Color (X1)	Graphic has less than three (3) colors; colors used clash or distract from the graphic.	Graphic has three (3) colors, and they generally work well together.	The effective choice of colors creates an appealing graphic.	
Fonts (readable, have eye appeal, appropriate dimension and placement) (X1)	Font choice, text size, and placement are ineffective in creating an aesthetically pleasing design.	Font choice is appropriate and incorporated somewhat effectively in the design.	Font choice and size are appropriate, and the location of text is effectively incorporated in the aesthetics of the design.	
PROMOTIONAL FOLDER CONTENTS SUBTOTAL (70 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
PRELIMINARY SUBTOTAL (110 points)				

SEMIFINAL PROBLEM (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Layout and Design (X1)	The design inadequately incorporates the design principles of alignment, consistency, contrast, unity, or white space.	The design incorporates most design principles; overall layout is generally aesthetically pleasing.	An aesthetically pleasing design is provided, with all design principles incorporated in the layout and design.	
Solution to Project (X1)	Three (3) or more attributes of the solution's criteria are missing; leadership and/or 21 st century skills are not evident.	Most attributes of the solution's criteria are included; leadership and/or 21 st century skills are somewhat evident.	All attributes of the solution's criteria are evident; leadership and/or 21 st century skills are clearly evident.	
Effectiveness (X1)	The solution inadequately conveys the intended message, and/or it contains unrelated text/graphics.	The solution conveys the intended message appropriately, and it uses text and/or graphics generally well.	The solution's message is easily understood and interpreted, with exceptional use of related graphics and text.	
Originality (X1)	The finished product is ordinary, plain, and unimaginative in design.	The finished product shows some effort to be imaginative and original.	The final product is truly unique and shows creativity.	
SEMIFINAL PROBLEM SUBTOTAL (40 points)				
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
SEMIFINAL SUBTOTAL (40 points)				
<p>To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.</p> <p>TOTAL (150 points)</p>				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

PROMOTIONAL DESIGN

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Results envelope

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough judges/assistants have been scheduled.
- D. 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. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time and place stated in the conference program.
- B. Participants check in a standard 10" x 13" mailing envelope containing the entry and required forms.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have CRC approval.
- E. Place an entry number in the upper right-hand corner of the portfolio.
- F. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. Judges independently evaluate each entry.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Judges determine the twelve (12) semifinalists and discuss and break any ties.
- D. Submit semifinalist results to the CRC for posting.

SEMIFINAL ROUND

- A. Inspect the area(s) in which the on-site activity is being held for appropriate set-up, including room size, chairs, tables, outlets, etc. Notify the event manager of any potential problems.
- B. At least one (1) hour before the event is to begin, meet with your judges for the on-site activity 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.

- C. Semifinalists report for the on-site problem.
- D. Begin the event at the scheduled time by closing the doors and checking the entry list.
 - 1. All semifinalists and judges should be in the room at this time.
 - 2. Semifinalists not present may be disqualified.
- E. Judges monitor the participants during the on-site activity.
- F. Each participant (using his/her individual identification number) saves the final product in a PDF file on a USB flash drive, which is submitted for evaluation.
- G. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- H. Judges determine the ten (10) finalists and discuss 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.

SCIENTIFIC AND TECHNICAL VISUALIZATION (SCIVIS)



OVERVIEW

Scientific and Technical Visualization (SciVis) is the representation of complex scientific and/or technical concepts in a visual form. Applying leadership and 21st century skills, participants use either 2D or 3D computer graphics tools and design processes to communicate, inform, analyze, and/or illustrate a STEM topic, idea, subject, or concept.

ELIGIBILITY

One (1) team per chapter may participate; individual entries are permitted.

TIME LIMITS

PRELIMINARY ROUND

- A. The visualization must be two to three (2-3) minutes in length.
- B. There is a five (5)-point deduction for each fifteen (15) seconds under two (2) minutes or over four (4) minutes.
- C. The visualization time length is calculated from the start of the first image or sound to the end of the last image or sound.

SEMIFINAL ROUND

- A. Up to ten (10) minutes are allowed for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants concentrate their efforts on creating a 2D or 3D computer graphic that illustrates a STEM topic.

PRELIMINARY ROUND

- A. Participants report at the time and place stated in the conference program to check in their entries.
- B. Entries are reviewed by judges with neither students nor advisors present.
 - 1. Judges review and score the Visualization criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four (24) contestants to determine the top twelve (12) semifinalist teams.
- C. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. No more than two (2) semifinalist team representatives report at the time and place stated in the conference program to sign up for an interview time.
- B. No more than two (2) representatives from each semifinalist team report at the assigned time and place for the interview.
- C. Each semifinalist team answers questions about their portfolio from the judges, discussing the purpose, value, research, and design process.
- D. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

A. All entries must be the original work of the participant or team.

1. Where applicable, all ideas, text, images, and sound from other sources must be cited.
2. If copyrighted material is used, proper written permission must be included.
3. Failure to follow this procedure results in disqualification.

B. All entries become the property of TSA and will not be returned after judging.

C. Documentation Portfolio:

1. Documentation materials (comprising a “portfolio”) are required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. USB flash drive (containing the visualization) in a secure holder or sealed sleeve at the front of the portfolio.
 - b. Title page with the event title, the conference city and state, and the year; one (1) page
 - c. Table of contents; pages as needed
 - d. Purpose of visualization, including the intended audience; one (1) page
 - e. Hand-sketched storyboard that documents the flow and progression of the visualization with written notes; special effects, audio cues, dialogue, transitions, and scene duration should be incorporated into the storyboard; pages as needed
 - f. 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.)
 - g. Permission letters for copyrighted material; pages as needed
 - h. List of software and hardware used in the development of the visualization; one (1) page

i. Plan of Work Log (see Forms Appendix or [TSA website](#)); pages as needed

j. Completed and signed Student Copyright Checklist (see Forms Appendix or [TSA website](#)); one (1) page

D. Visualization:

1. Visualizations must be turned in on a USB flash drive in MPEG format suitable for viewing with a VLC Player utilizing a Microsoft Windows operating system.
2. The following are NOT permitted:
 - a. PowerPoint presentation or PowerPoint slide show are not acceptable formats for this event.
 - b. Absolutely no purchased content may be used in any part of the visualization. (Purchased content includes, but is not limited to, texture, models, and royalty free music.)
 - c. Web applications that allow purchasing of elements (i.e.: Animaker and Powtoons) are not permitted.
 - d. Live action video, including “whiteboard” style entries.
3. Suggested software includes: Flash, Maya, 3DS Max, Adobe Animate, etc.
 - a. Stop motion animation (both 2D and 3D) are acceptable.
4. Each visualization must advance automatically once it has been opened and started by the judges. A splash screen is acceptable, provided the “PLAY” command is easily visible.
5. All work must be included in the portfolio and on a USB flash drive.
6. The visualization is not to be under two (2) or over three (3) minutes in length.
7. There will be a five (5)-point deduction for each fifteen (15) seconds under the minimum time or for each fifteen (15) seconds over the maximum time.
8. Sound may accompany the visualization.

EVALUATION

PRELIMINARY ROUND

- A. The portfolio
- B. The visualization

SEMIFINAL ROUND

- A. The interview

Refer to the official rating form for more information

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Computer animator
- Game designer
- Instructional technologist
- Software engineer

SCIENTIFIC AND TECHNICAL VISUALIZATION (SCIVIS)

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ The portfolio is present
- ☐ The USB flash drive is present
- ☐ The visualization is playable
- ☐ Student Copyright Checklist is present
- ☐ ENTRY NOT EVALUATED

VISUALIZATION (80 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Communication of Visualization (X2)	It is difficult to understand the concept being communicated; an illogical explanation is presented.	The concept is communicated generally adequately.	The concept is communicated in an organized, clear, and concise manner.	
Creativity (X2)	The visualization lacks creativity; no, or very few, design principles are integrated in the visualization.	Some elements of creativity are expressed, with most design principles integrated.	The visualization exudes creativity; essential design principles and elements are integrated.	
Aesthetics and Artanship (X1)	Unorganized, sloppy work is evident; the visualization seems to be an afterthought and/or thrown together.	A largely organized presentation of layout and design principles is evident.	An exemplary use of layout and design principles to logically communicate important data is evident.	
Graphical Representations (X2)	Graphical representations do not help to clarify visualization, or they are of little significance to the project.	Graphical representations are appropriate and help supplement the visualization by providing clarity to the project.	Graphical representations are of excellent quality; and clarify abstract concepts.	
Originality (X1)	The visualization lacks imagination, originality, and artistic detail.	The visualization is somewhat effective, inventive, and inspiring.	The visualization is inspiring, inventive, resourceful, and motivating.	
VISUALIZATION SUBTOTAL (80 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				

DOCUMENTATION PORTFOLIO (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	The portfolio is unorganized and/or missing three (3) or more components.	The portfolio has most components and is adequately organized.	All components are present, and content and organization are clearly evident.	
Purpose (X1)	The purpose of the visualization idea generation is unclear.	The purpose is explained appropriately and adequately.	The purpose of the visualization is clear and concisely written, and compelling.	
Storyboard (X2)	The storyboard is sloppy, seems to have been thrown together after the creation of the visualization, and/or it does not correlate with the visualization.	The storyboard is drawn appropriately and largely correlates with the completed visualization.	The storyboard is of exceptional aesthetic and artistic quality and clearly correlates with the visualization, including timings.	
Plan of Work Log (X1)	The Plan of Work Log lacks major elements of documentation.	The Plan of Work Log is somewhat completed and generally reflects the time and work necessary for the project.	The Plan of Work Log completely and accurately reflects the time and work necessary for the project and captures collaborative work with edits and changes noted.	
DOCUMENTATION PORTFOLIO SUBTOTAL (50 points)				

TIME DEDUCTIONS	
There will be a five (5) point deduction for each fifteen (15) seconds under the minimum time or each fifteen (15) seconds over the maximum time allowed for the visualization.	
Total time for visualization	
Visualization time deduction	
TOTAL TIME DEDUCTION	

PRELIMINARY SUBTOTAL (130 points)	
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SEMIFINAL INTERVIEW (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization (X1)	The team/individual seems unprepared and unorganized for the interview.	The team/individual is somewhat prepared and organized in its interview.	The team is well-prepared and any questions asked by judges are answered concisely.	
Knowledge (X2)	The team/individual seems to have little understanding of its chosen topic.	The team/individual has a generalized understanding of its chosen topic.	There is clear evidence of a thorough understanding of the chosen topic.	

SEMIFINAL INTERVIEW (50 points) – continued				
Articulation (X1)	Communication of the solution is unclear, unorganized, and/or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the solution is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Delivery (X1)	The team/individual is verbose and/or uncertain in the interview; posture, gestures, and lack of eye contact diminish the delivery.	The team/individual is somewhat well-spoken and clear in the interview; posture gestures, and eye contact result in an acceptable delivery.	The team/individual is well-spoken and distinct in the interview; posture, gestures, and eye contact result in a polished, natural, and effective delivery.	
SEMIFINAL INTERVIEW SUBTOTAL (50 points)				
Time violation (a deduction of five (5) points total will be incurred for exceeding the semifinalist interview time limit). Record the deduction in the space to the right.				
SEMIFINAL SUBTOTAL (50 points)				
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.

JUDGE

Printed name: _____ Signature: _____

SCIENTIFIC AND TECHNICAL VISUALIZATION (SCIVIS)

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistant for check-in, one (1)
- C. Judges:
 - 1. Preliminary round, two (2) or more for initial review of entries. If more than 20 entries, provide 2 additional evaluators to conduct heats.
 - 2. Semifinal round, two (2) or more for interviews

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judge/assistants
 - 4. Pre-populated flash drives for judges, if applicable
 - 5. Results envelope
- B. Tables for entries
- C. Tables and chairs for initial judges
- D. Tables and chairs for semifinalist judges and participants
- E. Extension cords and power-bars with protection for judges, as needed

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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. At least one (1) hour before the event is scheduled to begin, meet with judges/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.

EVENT CHECK-IN

- A. Participants check in:
 - 1. The entry on a USB thumb drive
 - 2. The documentation portfolio
- B. Late entries are considered on a case-by-case basis and only when the lateness is caused by events beyond the participant's control.
- C. In order to compete, participants must be on the entry list or must have approval of the CRC.
- D. Requirements for attire do NOT apply during check-in, only on the first day of the conference.
- E. Place a team identification number stick-on label in the lower right-hand corner of each portfolio.
- F. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. The number of judges depends upon the number of entries. Heats of 20 entries may be used at the coordinator's discretion.
- B. Judges independently assess the entries using the following procedure:
 - 1. Judges review and score the Visualization criteria to determine the top twenty-four (24) preliminary contestants, which will not be published.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four (24) contestants to determine the top twelve (12) semifinalist teams.

- C. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and a CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- D. Judges determine the twelve (12) semifinalist teams.
- E. Submit semifinalist results to the CRC for posting.
- F. Create an interview sign-up sheet.

SEMIFINAL ROUND

- A. Inspect the area in which the interviews are to take place. Ensure that there is a table and seating for the interviews.
- B. At least one (1) hour before the event is scheduled to begin, meet with judges/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.
- C. Semifinalists report to the event area at the time and place stated in the conference program to sign up for an interview time.
- D. Manage the interview process.
- E. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- F. Judges determine the ten (10) finalists and discuss and break any ties.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.
- H. Collect all USB flash drives and portfolios and give them to the event manager.
- I. Manage security and removal of all materials from the area.

OVERVIEW

Using leadership and 21st century skills, participants apply knowledge of cutting-edge technologies and algorithms to design, implement, test, and document a software development project. The project should have educational or social value.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

Up to seven (7) minutes for the presentation, and an additional three (3) minutes to respond to questions.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants identify a societal need and design software that addresses this need.
- B. Participants prepare for a live demonstration on-site.

ON-SITE PRESENTATION/INTERVIEW

- A. Participants report to the event area at the time and place stated in the conference program to sign up for a presentation time.
- B. Participants report at the assigned time and place for their presentation.
- C. Participants give a live demonstration of the functionality of their project, describe the design process, and discuss the value of the project.
- D. Participants remove their project and equipment from the area at the completion of the presentation.
- E. Judges evaluate the presentation and interview.
- F. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. Participants must provide all necessary hardware to demonstrate their project.
 - 1. This may include a laptop computer, mobile device(s), computer mouse, and/or 20' extension cord.
 - 2. The set-up should not exceed 2' x 2' x 2'.
- B. National TSA will NOT provide wireless Internet. Students may provide internet access using a hotspot from a mobile device, however, students should have an alternate presentation plan in case access is unavailable.

EVALUATION

- A. The quality of work
- B. The overall benefit of the work
- C. The technical skill exhibited in the project
- D. The ability to demonstrate and describe the team's software design process
- E. How well the problem identified is solved by the software project
- F. Teams are judged on the functionality and originality of their project. At a minimum, presentations should include:
 - 1. the design process
 - 2. end-user applications
 - 3. a demonstration
 - 4. information on the design

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILL DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Graphic designer
- Software engineer

SOFTWARE DEVELOPMENT

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ Computer hardware is present

☐ ENTRY NOT EVALUATED

SOFTWARE DESIGN (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Creativity (X2)	The work lacks creativity; it is evident there was little original thought in developing the project.	Some elements of creativity are expressed; the solution is somewhat original.	The work exudes creativity; the product is highly original.	
Software Coding Practices (X2)	The project is inadequately developed in terms of general software coding practices (requirements, design, implementation, and testing).	The project is developed following most general software coding practices (requirements, design, implementation, and testing).	The project is extremely well developed and follows general software coding practices (requirements, design, implementation and testing).	
Complexity (X2)	The software design exhibits little complexity.	The software design exhibits some degree of complexity.	The software design is complex, resulting in a highly functional product.	
Technical Skill (X1)	Little technical skill is exhibited in the software; the levels of software development are not fluid and/or are illogical.	Average technical skill is exhibited in the software's design and construction; the software flows somewhat effectively from level to level.	The software exhibits mastery of software design skill that few at this level possess; the software flow is constant and logical.	
SOFTWARE DESIGN SUBTOTAL (70 points)				

DEMONSTRATION (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Organization and Knowledge (X1)	The team seems unprepared and unorganized for the presentation and questions from judges; team members have very little understanding of the concepts in their project, and provide vague answers to judges' questions.	The team is prepared for the presentation and answers questions adequately; all team members have a general understanding of the concepts discussed and answer questions adequately.	The team's presentation is logical, organized, and effective; the team answers questions logically, thoughtfully, and with confidence; there is clear evidence that all team members have a thorough understanding of the concepts presented in their project.	
Articulation (X1)	Communication of the solution is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the solution is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	The demonstration provides a clear, concise, and easy-to-follow analysis of the solution; leadership and/or 21 st century skills are clearly evident.	
Team Participation (X1)	Only one (1) team member communicates with judges; there is no participation from other team members.	Team members participate generally equally and adequately understand the concepts of the project.	All team members fully understand the concepts of the project and share an equal role in answering judges' questions.	
DEMONSTRATION SUBTOTAL (30 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, 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, 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.

JUDGE

Printed name: _____ Signature: _____

SOFTWARE DEVELOPMENT

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick-on labels for entries, as needed
 - 5. Results envelope
- B. Chairs, as needed for judging
- C. Stopwatch for timing semifinalist presentations

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is scheduled to begin, meet with judges/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.

ON-SITE CHALLENGE

- A. Participants report at the time and place stated in the conference program to sign up for a presentation time.
- B. No more than three (3) participants report at the assigned time and place for the presentation.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.
- E. Judges assess the entries and may ask questions.
- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty (20%) of the total possible points in this round or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- G. Judges independently evaluate the presentation/ interview.
- H. Judges determine the ten (10) finalists and discuss and break any ties.
- I. Submit the finalist results and all related forms in the results envelope to the CRC room.

STRUCTURAL DESIGN AND ENGINEERING



OVERVIEW

Applying leadership and 21st century skills, team members collaborate to build a designated structure. Teams apply the principles of structural design and engineering through research, design, construction, destructive testing, and assessment to determine the design efficiency of the structure.

Details about the structure will be posted on the [TSA website](#) under Competitions/Themes and Problems. The on-site semifinalist problem is a variation of the Pre-conference problem posted on the TSA website.

ELIGIBILITY

One (1) team of two (2) individuals per chapter is allowed to participate.

SAFETY EYEWEAR

- A. Participants are required to wear safety-approved eyewear during the on-site phase of this event.
- B. Prescription eyewear needs to have side shields to be considered safety eyewear.
- C. Should a team member remove the eyewear and fail to replace it, s/he will be reminded once.
- D. If there is a second infraction, the team will be asked to leave the competition.
- E. Sunglasses are not suitable.

TIME LIMITS

- A. On-site structures must be started, completed, and checked in during the three (3) hours allowed for design and construction.
- B. 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 schedule. Work must begin during the time scheduled for the event.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Teams review the details about the structure on the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants conduct research and apply principles of structural design and engineering to their current structure while considering the theme.
- C. Pre-built structures must be started and completed during the current school year.
- D. All work must be completed by the team members only and verified by the team's chapter advisor using the Team Verification form on the [TSA website](#) under Competitions/Themes and Problems.
- E. Teams must provide a full-size, three (3)-view (front, top, and right end) drawing (hand or computer-generated) of their structure.

PRELIMINARY ROUND

On-site Destructive Testing of Pre-Built Structures

- A. Participants check in the following at the time and place stated in the conference program:
 1. Pre-built structure and any related required materials (including the Analysis and Assessment form on the [TSA website](#) under Competitions/Themes and Problems.)
 2. Documentation portfolio materials
- B. Participants are required to wear safety approved eyewear (refer to the Safety Eyewear section of this guide).
- C. Structures are assessed and undergo destructive testing.
- D. Destructive testing of pre-built structures is not open for public viewing.

- E. Destructive testing is completed using structural testing equipment, as designated by TSA.
- F. When the destructive testing is completed, a list of twenty (20) semifinalist teams are posted.

SEMIFINAL ROUND

On-site Construction

- A. The twenty (20) semifinalist teams take part in the on-site problem, which features the construction and destructive testing of a designated structure to determine the ten (10) finalist teams.
- B. Twenty (20) semifinalist teams report to the event area at the time and place stated in the conference program.
- C. Teams are seated by a monitor.
- D. The design problem is explained and a list of directions for the construction problem are provided.
- E. Teams have a three (3) hour window when drawing begins and building stops, typically allotted as:
 - 1. Thirty (30) minutes to review the problem and create a sketch/drawing of their solution.
 - 2. Two and one-half (2 ½) hours to review the problem and construct a solution.
- F. During the building of the team's structure, construction regulations must be observed.
- G. All work stops at the coordinator's signal. 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.
- H. Participants may leave early, but they must first complete check-out as directed.
- I. Teams return all supplied items, as directed, and clean and clear their work stations. Failure to do so will result in a 20% penalty deduction.
- J. Teams must identify their structure with only their team ID number, using the label provided.
- K. Structures are allowed to dry in a secure area until destructive testing time.

Destructive Testing

- A. Structures are checked for rules violations and weighed before testing.
- B. Destructive testing is completed by evaluators and is open for spectator viewing.
- C. 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.
- D. Subjective criteria is scored only after all the destructive testing is completed.
- E. The top ten (10) finalist teams are announced at the conference awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE

- A. Documentation Portfolio:
 - 1. Documentation materials (comprising "a portfolio") are required and must be secured in a [clear front report cover](#) with the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
 - b. Team Verification Form (See the [TSA website](#) under Competitions/Themes and Problems.
 - c. Analysis and Assessment Form (See the [TSA website](#) under Competitions/Themes and Problems).
 - d. Participants must provide a full-size, three (3)-view (front, top, and right end) drawing (hand or computer-generated) of their structure.

PRELIMINARY ROUND

- A. Participants must provide and wear safety glasses for this portion of the event.
- B. Drawing and pre-built structures must be completed prior to check-in.
- C. The testing of pre-built structures is not open to spectators.

SEMIFINAL ROUND

- A. Participants must provide and wear safety glasses for this portion of the event.
- B. 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 (note that some items are required):

1. The following is a *suggested* list:
 - a. Cutting devices; NONE may be electric
 - b. Adhesives
 - i. Aerosol and electric applicators are not allowed
 - ii. A bottle of Uncure or Debonder is recommended
 - c. Temporary fastening devices
 - i. Straight pins
 - ii. Clamps
 - iii. Tape
 - d. A cutting surface that prevents table-top marring (required)
 - e. Rulers, straightedges, and/or measuring scales
 - f. Abrasives sheets, sanding sponges, emery boards
 - g. Marking devices (pens, pencils, etc.) and sharpener
 - h. Sheet of wax paper, as large as is needed for the competition (required)

- i. Pliers, wrenches, nut drivers, as needed
 - j. Safety glasses and side shields, as required
 - k. Jigs and fixtures to assist with assembly and construction.
2. Planning and fabrication supplies are provided by TSA. Teams are issued a packet of construction materials (such as a specific type of wood) to use for fabrication of the on-site designed structure once the team's drawing of the on-site solution is complete.
3. 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

- C. Teams that fail to comply with the coordinator or monitor directions, after one (1) warning, will be issued a penalty of 20% of the team's total score.
- D. Filming and taking of photographs is prohibited during the viewing of the structure, judging, and testing.
- E. Subjective criteria is scored only after all destructive testing is completed.

EVALUATION

- A. All structures are weighed before testing and the weight is recorded on the scoring rubric.
- B. A designated structural testing device is used for testing each structure.
- C. A specific testing block or attachment may be necessary, depending on the nature of the on-site problem. Any special or unusual configurations for the attachment are posted with the design problem on the [TSA website](#).
- D. An increasing load is applied to the structure via the test block or attachment until the structure fails.

- E. The failure weight is recorded on the evaluation rubric. (The failure weight is the greatest weight recorded during testing before the failure of the structure.)
- F. The efficiency is determined by the failure weight x 4.54, divided by the weight of the structure in grams.
- G. The efficiency is rounded off to three (3) decimal places and recorded on the evaluation rubric.
- H. Each team's assessment form is reviewed.
- I. The highest numeric efficiency determines the winner. In case of an efficiency tie, the greatest weight held by the tied entries determines the winner.
- J. Failure to comply: If a structure fails to comply with any regulation, a penalty reduction of 20% 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.)

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Architect
- Civil engineer
- Engineering technician
- Mathematician
- Structural engineer
- Structural iron and steel work technician

STRUCTURAL DESIGN AND ENGINEERING

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Team of two is present
- ☐ The structure is present and identified
- ☐ Team Verification form is complete
- ☐ Analysis and Assessment form is complete
- ☐ Drawings are present
- ☐ There are no unapproved laminations present
- ☐ ENTRY NOT EVALUATED

PRE-BUILT STRUCTURE (Construction)				
Indicate N for noncompliant or C for compliant, for each regulation in the Construction section. One noncompliant mark will result in a 20% deduction; two noncompliant marks will result in disqualification.				
Regulation	Noncompliant		Compliant	
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.	
Placement on Abutment	The structure cannot be appropriately placed on the abutment.		The structure can be appropriately placed on the abutment.	
Internal Clearance	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.	
Other Construction/ Rule Regulation				
Other Construction/ Rule Regulation				
				DISQUALIFIED
				PRE-BUILT STRUCTURE APPROVED FOR TESTING

PRE-BUILT STRUCTURE (Construction) – continued	
Record the mass (weight) of the structure (in grams) prior to testing.	
Record the failure weight in pounds.	
Record the maximum failure rate for all tested structures.	
If only one construction regulation is noncompliant, record a deduction of 20% of the maximum failure weight.	
Adjusted failure weight	
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.	

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

PRE-BUILT STRUCTURE TOTAL POINTS	
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Go/No Go Specifications

- ☐ There are no unapproved laminations present
☐ ENTRY NOT EVALUATED

ON-SITE STRUCTURE (Qualification)				
For the On-site STRUCTURE: Indicate N for noncompliant or C for compliant, 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.				
Regulation	Noncompliant		Compliant	
Team of Two	Only one team member is present.		Both team members are present.	
Safety Eyewear	Warnings about eyewear are issued.		No warnings about eyewear are issued.	
Structure Identification	The identification sticker is not attached.		The identification sticker is attached.	
Tools and Fabrication Supplies	Inappropriate tools or supplies are brought to the event.		Appropriate tools and supplies are brought to the event.	
Placement on Abutment	The structure cannot be appropriately placed on the abutment.		The structure can be appropriately placed on the abutment.	
Internal Clearance	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.	
Construction Pins	Pins are still in place when the structure is submitted.		All pins have been removed from the structure.	
Other Construction/Rule Regulation				
Other Construction/Rule Regulation				
TOTAL			TOTAL	

ON-SITE STRUCTURE (Construction)				
Regulation	Noncompliant		Compliant	
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.	
DISQUALIFIED				
On-site structure approved for testing				
Record the mass (weight) of the structure (in grams) prior to testing.				
Record the failure weight in pounds.				
Record the maximum failure rate for all tested structures.				
If only one construction regulation is noncompliant, record a deduction of 20% of the maximum failure weight.				
Adjusted failure weight				
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.				

ON-SITE STRUCTURE TOTAL POINTS	
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SUBJECTIVE CRITERIA (30 points)				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Team Participation (X1)	The majority of the construction is done by one (1) member of the team; the partner may be disengaged.	Both team members generally are engaged in the process, though one (1) member may take on more responsibility than the other.	Both team members are actively involved in the construction; there is shared responsibility between team members.	
Drawing (X1)	The submitted drawing was incomplete, not accurate, of proper quality, or was not to scale; a complete parts list was not included.	The submitted drawing was complete but lacked clarity, accuracy, or was of poor quality; the parts diagram was not complete or was incorrect.	The submitted drawing was complete, accurate, and to scale; the parts list was complete and accurate.	
Portfolio (X1)	Portfolio is unorganized and/or missing three (3) or more components; leadership and/or 21 st century skills are not evident.	Portfolio includes most components and is generally organized; leadership and/or 21 st century skills are somewhat evident.	All components of the portfolio are included, and content and organization are clearly evident; leadership and/or 21 st century skills are clearly evident.	
SUBJECTIVE CRITERIA SUBTOTAL (30 points)				

Record scores in the column spaces below.

STRUCTURAL DESIGN AND ENGINEERING

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

Indicate the rule violated: _____

SEMIFINAL SUBTOTAL

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

TOTAL

Comments:

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

JUDGE

Printed name: _____ Signature: _____

STRUCTURAL DESIGN AND ENGINEERING

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges
 - 1. Preliminary round to evaluate pre-built structures, two (2) or more
 - 2. Semifinal round, to qualify structures after construction, two (2) or more
 - 3. Semifinal round, destructive test judges, two (2) or more
 - a. One (1) to weigh the structure, record structure weight, and record failure weight
 - b. 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
- C. Construction monitor, one (1) per twenty teams
- D. Timekeeper, one (1)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Stick on labels for identifying entries
 - 5. Results envelope with coordinator forms
- B. Testing equipment, provided by TSA
- C. Sample structures for both testing sessions that can be used to demonstrate the testing procedure and to determine that the testing equipment is working properly.
- D. Evaluation and recording equipment
 - 1. Gram scale (3-decimal place calculation)
 - 2. Tape measure or 2' rule
 - 3. Evaluation gauges (rulers)

E. 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 entries and storing 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, ¼" x ¼" 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. Construction materials – check with the event manager for the specific wood type needed for each team
 - c. Instructions

RESPONSIBILITIES

PRE-CONFERENCE

- A. Prepare the structure problem statement (including any necessary related information such as materials to be used for pre-built structures) for posting on the TSA website.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. Check to see that all event equipment and materials have been secured.
- F. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in participants at the time and place stated in the conference program.
- B. Participants check in:
 - 1. The pre-built structures
 - 2. The documentation portfolio
- C. Anyone reporting who is not on the entry list may check in only after official notification is received from the CRC.
- D. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.

PRELIMINARY ROUND

Pre-built structures

- A. Coordinate and manage the on-site testing of pre-built structures, the recording of results, and the determination of the twenty (20) semifinalist teams.
- B. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct 20% of the total possible points or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- C. Submit the semifinalist results and all related forms in the results envelope to the CRC room.
- D. Assemble semifinalist packets of construction materials and directions for the twenty (20) on-site semifinalist teams.

SEMIFINAL ROUND

Team Check-in for On-site Construction

- A. No individuals other than participants and event personnel are allowed in the construction area.
- B. Check-in begins at the time stated in the conference program and continues until all teams arriving on time have been checked in and seated. The event begins at the posted time.
- C. Both members of a team must be present during check-in.
- D. 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 stated in the conference program.
- E. Work must begin during the time frame scheduled for the event.

On-site Construction

- A. Assign team construction locations.
- B. When all teams are seated, distribute and review instructions, as well as any details for the assigned structure.

- C. Teams are allowed a maximum of three (3) hours to complete their structure:
 1. Thirty (30) minutes of this time is allotted for completing the design drawing.
 2. Two and one-half (2 ½) hours is allotted for actual construction.
- D. When a team notifies a monitor that the required sketch is complete, and the monitor confirms this, the team receives a materials packet and may begin the on-site construction phase of the event.
- E. No additional supplies are provided during the event.
- F. Call time at the end of the allotted three (3) hour time frame. All teams must stop working at this point.
- G. All work stops at the coordinator's signal. Failure to comply with instructions will result in a penalty of 20% to the team's total score.

Team Check-out

- A. Establish the procedure for check-in and recording of finished structures.
- B. Designate an area for storage, and allow for the return of construction materials.
- C. Coordinate the return and removal of all supplied items and ensure that teams clean and clear their work stations. Deduct a 20% penalty for teams that do not comply.
- D. Teams check-in excess supplies as directed by the monitors.
- E. Ensure that teams identify their structure with only their team ID number, using the label provided.
- F. Teams place their structures in the storage area with the sketch as directed by the monitor.
- G. Once check-out is complete, all participants leave the competition area. Participants may leave early, but they must complete check-out as directed.
- H. The structures are secured by the monitor and allowed to dry for a minimum of twelve (12) hours.

Destructive Testing

- A. After the structures have dried, judges report to the event area at the time and place stated in the conference program.
- B. Judges test each structure and score the results.
- C. Judges score the Subjective Criteria for semifinalists after destructive testing has taken place.

EVALUATION

- A. Check all structures for regulations compliance. Structures that are in compliance are tested without penalty.
 1. Weigh all structures before testing and record the weight on the evaluation rubric.
 2. 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.)
 3. Apply an increasing load to the structure, via the test block or attachment, until the structure fails.
 4. 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.
 5. 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.
 6. The highest numeric efficiency determines the winner. In the case of an efficiency tie, the greatest weight held by the tied entries determines the winner.
- B. Structures are not be tested if:
 1. A non-compliance construction regulation violation was determined before testing.
 2. The structure cannot be placed on the tester.
 3. The testing attachment cannot be properly placed within or on the structure.
 4. Straight pins are left in the structure.
 5. There is a failure of a participant to wear safety eyewear and/or to follow safe practices.
 6. Laminations fail to comply with the guidelines as specified in the current year's challenge.
 7. Failure to use each of the materials specified in the current year's challenge.
- C. Structures with one (1) construction regulation non-compliance mark is 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.)

- D. Manage, with assistance from evaluators, the destructive testing of all structures that were not officially tested due to non-compliance.
- E. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- F. Judges use the evaluation metrics and determine the placement of ten (10) finalists.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.
- H. If necessary, manage the security and removal of materials from the event area.
- I. Semifinalist teams may pick up their structures at a time designated by the event coordinator.

OVERVIEW

Applying leadership and 21st century skills, participants collaborate to develop a computer-controlled model-solution to a problem, typically one from 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 judges to operate the device.

ELIGIBILITY

One (1) team of three (3) individuals per state may participate.

TIME LIMITS

- A. The competition consists of three (3) phases.
 - 1. Phase 1: The team's captain is given thirty (30) minutes to set up the team's equipment.
 - 2. Phase 2: Following the set-up time, teams are given fifteen (15) minutes for problem analysis.
 - 3. Phase 3: Following the problem analysis time, teams are provided two and one-half (2½) hours for model development and programming.
- B. All students participate in an interview at the conclusion of their programming.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

- A. Each team selects a team captain prior to the orientation meeting.
- B. The team orientation meeting takes place at the beginning of the event at the conference.
- C. The captain checks in the team within the set-up time by submitting his/her participant identification number and the team's identification number for the written and model portions of the event.

- D. 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.
- E. Teams must complete their description or interpretation of the problem during this time.
- F. Each team is given a maximum of two and one-half (2½) hours to:
 - 1. Construct a model that simulates realistic industrial processes
 - 2. Program the model
 - 3. Test the solution
 - 4. Describe the program and mechanical features of the model-solution
 - 5. Complete directions
- G. 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 judges present.
 - 2. The interview takes place directly after the demonstration. Judges may ask questions pertaining to the team's design and logical processes.
 - 3. After judges have observed the operation of a team's model, the team leaves the room.
 - 4. 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.
 - 5. Evaluation of the solutions takes place without the teams present.
- H. Judges independently assess the entries, including each team's interview responses.
- I. The top ten (10) finalists are announced during the conference awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- A. No reference materials or building cards are allowed.
- B. Participants provide their own laptop computer with hardware and software systems. All equipment must be labeled with the team's identification number, advisor name, and advisor contact information.
- C. Each team provides pencils and scrap paper along with its own materials kit, which must be appropriate to build a system that can identify, secure, and move objects and that has light and/or sound outputs.
- D. Teams design a solution to a problem based on the assumption that every materials kit contains 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)
 8. No cutting devices may be used during the on-site challenge; materials must retain the original form in which they were brought to the competition.
 9. Power tools may not be used.
- E. 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/model 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.
- F. Programs must be written completely on-site.
- G. Use or modification of any programs written prior to the competition will result in disqualification.
- H. An example of a problem for this event is provided below to help students understand and interpret a typical issue common to industry that might be used at a national conference.

A manufacturing company has asked your engineering firm to design an important component in its manufacturing process. The company specializes in the production of cylindrical items. Its manufacturing line is getting “jammed” because multiple cylindrical items are making their way to stations that can handle only one item at a time. Your design must include a “hopper” that will store items as they wait to make their way to a station. When a station is empty, a light should turn on; this will indicate to an operator to press a button that will send one cylinder into the station. After ten (10) seconds, the item will need to be moved to the next hopper, leaving the station empty and signaling the operator to send in another cylinder.

Example Requirements

- A minimum of three (3) cylindrical items of consistent size and shape must be included.
- A hopper must store these items until a button is pushed.
- Only one item can advance when the button is pushed.
- Ten (10) seconds must pass with the item at a station before it is moved to the next hopper.
- A light must signal the operator when the station is empty.
- No additional cylinder can be sent to a station if a cylinder already is in place.

EVALUATION

- A. The written work
- B. The model function
- C. The programming structure and efficiency
- D. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- CNC programmer
- Computer programmer
- Robotics engineer

SYSTEM CONTROL TECHNOLOGY INVENTOR'S LOG

TEAM CAPTAIN ID

Use only the space provided. The description/interpretation of the problem must be completed DURING the problem analysis session.

Description or interpretation of the given problem:

The two (2) parts below are to be completed AFTER the problem analysis session.

Description of the team solution (explain the unique features of the program and model):

Directions to evaluators to start the system:

SYSTEM CONTROL TECHNOLOGY

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Computer hardware is present
- ☐ Materials kit is present
- ☐ ENTRY NOT EVALUATED

INVENTOR'S LOG (20 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Description of Problem (X1)	The description is incomplete, and/or it is illogical and unorganized; the description is simply a restatement of the problem's guidelines.	The description includes a logical, but only general, understanding of the problem's guidelines; it restates the guidelines with an overall understanding of the problem.	An organized, logical, and concise description of the problem is provided; it includes all major aspects of the problem's guidelines, as well as original thoughts.	
Description of Solution and Activation Instructions (X1)	The team's solution has little correlation with the final system creation; the solution is illogical in terms of the problem's guidelines; the directions to activate the solution are included, but they are incomplete.	The team's 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 description of the solution is written clearly and concisely; instructions for the solution are included and written concisely.	
INVENTOR'S LOG SUBTOTAL (20 points)				

SOLUTION TO PROBLEM (60 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Realistic Simulation (X1)	The simulation is not realistic; it has an abstract design that would be largely ineffective in its intended environment.	The simulation is somewhat realistic and logically designed; it may be adequately effective in its intended environment.	The simulation is realistic and is similar to a system that would be effective in its intended environment.	
Dependability of Solution (X1)	The solution is not constructed with dependability in mind; when the system is operated, construction pieces fall off, etc.	Most of the parts of the solution are well constructed and dependable.	Every component of the solution is well constructed and dependable; practical construction techniques have been used.	

SOLUTION TO PROBLEM (60 points) – continued				
Conservation of Materials (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.	
Solution to Problem (X2)	The solution is missing three (3) or more attributes/criteria, and several do not function as intended.	The solution includes most attributes/criteria, and they function adequately.	The solution includes all attributes/criteria listed in the design details, and all attributes function appropriately and correctly.	
Ingenuity and Creativity (X1)	The solution and design are unauthentic, complex, and/or 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.	
SOLUTION TO PROBLEM SUBTOTAL (60 points)				

PROGRAMMING STRUCTURE (20 points)				
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	Record scores in the column spaces below.
	1-4 points	5-8 points	9-10 points	
Programming Efficiency (X1)	The software used to program the system is overly complex and inefficient; advanced programming techniques, which would have simplified programming 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.	
Program Structure (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.	
PROGRAMMING STRUCTURE SUBTOTAL (20 points)				

<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>	
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DEMONSTRATION/INTERVIEW (10 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
DEMONSTRATION/INTERVIEW SUBTOTAL (10 points)				
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____				
SUBTOTAL (10 points)				
To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.				
TOTAL (110 points)				

Comments:

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

JUDGE

Printed name: _____ Signature: _____

SYSTEM CONTROL TECHNOLOGY EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

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

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of evaluators/assistants
 - 4. Stopwatch, one (1)
 - 5. Written problem, one (1) copy per team and judge
 - 6. Inventor's Log, one (1) copy per team
 - 7. Power strips with surge protectors, and extension cords, as needed
 - 8. Results envelope
- B. Large room to accommodate a first place team from every state and affiliated country
- C. One (1) table and three (3) chairs per team

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is scheduled to begin, meet with judges/assistants to distribute materials and 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.

EVENT CHECK-IN

- A. Begin the event at the scheduled time by closing the doors.
- B. All participants and judges should be in the room at this time.
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or have approval of the CRC.
- E. Secure participants' equipment in the area designated.

PRELIMINARY ROUND

- A. At the orientation meeting obtain the team/chapter identification numbers from each team captain.
 - 1. Judges must be present at the orientation meeting.
 - 2. Review the time limits, procedure, and regulations with team captains.
- B. Distribute the problem and Inventor's Log to teams at the beginning of the event.
- C. Teams have fifteen (15) minutes to complete their interpretation of the problem in the Inventor's Log.
- D. Each team is given two and one-half (2½) hours to complete the remaining portions of the event.
- E. Teams must demonstrate that their device/model is operable and has the ability to reset prior to leaving.
 - 1. Judges must observe this portion and shall ask a few questions.
 - 2. Judges may take notes, but evaluation occurs only after all teams have left the event room.
- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct 20% of the total possible points or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

- G. Judges determine the top ten (10) finalists and discuss and break any ties.
- 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.

OVERVIEW

Applying leadership and 21st century skills, participants demonstrate their knowledge of TSA and concepts addressed in the technology content standards by completing an objective test. Semifinalist teams demonstrate leadership and twenty first century skills through participating in a question/response, head-to-head team competition.

ELIGIBILITY

One (1) team of three (3) individuals per chapter may participate.

Teams that take the test and advance to the semifinalist portion of the event must be comprised of the same three (3) members.

TIME LIMITS

PRELIMINARY ROUND

- A. The one (1)-hour test is administered to all members of the team at the same time.

SEMIFINAL ROUND

- A. Teams selected as semifinalists must be available as scheduled for oral competition.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRELIMINARY ROUND

- A. Participants report to the event area at the time and place stated in the conference program for the test.
- 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 exam.
- E. The sixteen (16) top-scoring teams qualify as semifinalists.
- F. A semifinalist list (in random order) is posted.

SEMIFINAL ROUND

- A. Semifinalist team members report to the oral event area holding room at the time and place stated in the conference program.
- B. After a short briefing, advisors leave and the teams remain in the holding room until they are called for competition.
- C. When instructed to do so, two (2) teams enter the event area and are seated according to instructions.
- D. Teams are paired using the semifinalist teams' bracket.
- E. Questions are drawn from a card file resource bank.
- F. If equipment malfunctions, a question that is being considered at that time automatically is eliminated. 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.
- G. Once a team is eliminated, it is out of the oral competition except for the round in which the third and fourth positions are determined.
- H. The top ten (10) finalist teams are announced during the conference awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Tests may be administered online or via a scan-type answer sheet. Please review the Competition Updates page on the [TSA website](#).
- B. Scan-type forms are furnished by the event coordinator, if applicable.
- C. Participants are responsible for bringing two (2) sharpened No.2 pencils to the test site.

- D. Participant identification numbers must be entered on the scan form in the space indicated.
- E. Failure to follow instructions will result in the score sheet not being scored.
- F. Participants must stop work immediately when time is called.
- G. Should a participant complete the test before the time is allocated, the participant holds the test and remains seated quietly without distracting others. Failure to do so results in disqualification of the participant.
- H. All tests must be turned in before leaving the test area.
- I. The average of the scores of all three (3) team members determines team ranking.

SEMIFINAL ROUND/ORAL COMPETITION

- A. Sixteen (16) teams, based upon the test results, are selected as semifinalists.
- B. 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.
- C. If a team or member is late for participation, that team forfeits and is eliminated from competition.
- D. No transmitting or recording devices are permitted to assist in answering a question in the event area.
- E. No prompting is permitted.
- F. Teams that leave the holding room before being called for competition are eliminated.
- G. Teams may visit with other teams in the holding room.
- H. No advisors or visitors may enter the holding room.
- I. Team members may not enter the oral event area as spectators until after their team has been entirely eliminated from competition.
- J. A team's score is derived from the total number of correct answers to the questions asked:
 - 1. Twelve (12) questions are asked per round; no questions are repeated in another round.
 - 2. A correct answer gives the team ten (10) points, and an incorrect answer results in a loss of five (5) points.
- 3. The team member who "buzzes in" to answer a question has five (5) seconds to answer the question without discussion.
- 4. After a question is read, competing teams have ten (10) seconds to answer. If neither team buzzes in, the reader moves to the next question.
- 5. 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.
- 6. If the answer is incorrect, the reader reads the entire question for the opposing team.
- 7. In case of a tie, three (3) additional questions and bonus questions are asked.
- 8. If a tie exists after the first tiebreaker round, then three (3) additional questions and bonus questions are asked.
- 9. This procedure continues until the tie is broken.
- 10. The last question of every round is a bonus question that is worth fifteen (15) points,
- 11. Questions, to include the bonus question, may not be discussed by teams.
- 12. If a team answers the bonus question correctly, the team is given an additional question to answer. The team may discuss this question.
- 13. If the bonus question is not answered correctly, participants are not given an additional question.
- 14. The highest test scores are used to determine the additional two (2) finalists who were eliminated in the initial round of the oral competition.

EVALUATION

PRELIMINARY ROUND

- A. Averaged test scores are used to determine the sixteen (16) semifinalist teams.

SEMIFINAL ROUND

- A. Performance during the oral competition

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

TECHNOLOGY BOWL

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Competition Round ID# _____

Team # _____ (A) Team # _____ (B)

Scorekeeper's Signature _____

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

☐ ENTRY NOT EVALUATED

TEST (50 points)									Team A Average	Team B Average
Record the test scores of each of the three (3) team members (for team A and B) in the boxes below to determine the team average. Record the team average in the column space to the right.										
Team Member 1	(A)	(B)	Team Member 2	(A)	(B)	Team Member 3	(A)	(B)		
TEST SUBTOTAL (50 points)										
Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: _____										
PRELIMINARY SUBTOTAL (50 points)										

TECHNOLOGY BOWL

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Competition Round ID# _____

Team # _____ (A) Team # _____ (B)

Scorekeeper's Signature _____

SEMIFINAL ROUND – ORAL COMPETITION						Team A Average	Team B Average
Mark an X in the box beside the team that gives the correct response to the question and an O beside the team that gives an incorrect response. Record the scores for each response in the column to the right.							
Question #	Points						
1.	+10 for correct, -5 for incorrect response	Team # _____		Team # _____			
2.	+10 for correct, -5 for incorrect response						
3.	+10 for correct, -5 for incorrect response						
4.	+10 for correct, -5 for incorrect response						
5.	+10 for correct, -5 for incorrect response						
6.	+10 for correct, -5 for incorrect response						
7.	+10 for correct, -5 for incorrect response						
8.	+10 for correct, -5 for incorrect response						
9.	+10 for correct, -5 for incorrect response						
10.	+10 for correct, -5 for incorrect response						
11.	+10 for correct, -5 for incorrect response						
12. Bonus question	(+15 for answering the bonus question correctly; no penalty for answering the bonus question incorrectly)						
Additional question	(+5 for answering the additional question correctly; no penalty for answering the additional question incorrectly)						
ORAL COMPETITION (130 points)							

TECHNOLOGY BOWL

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Competition Round ID# _____

Team # _____ (A) Team # _____ (B)

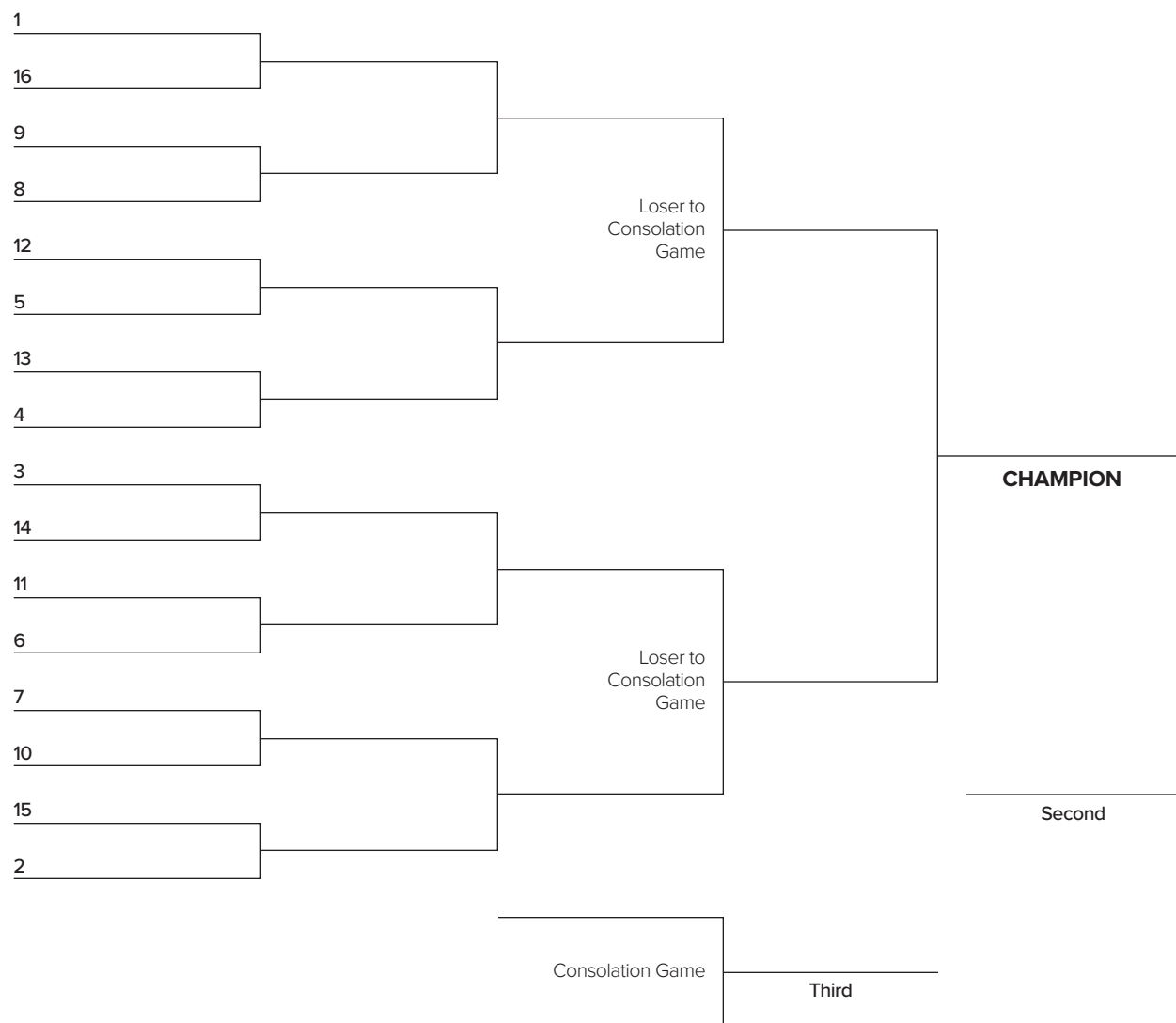
Scorekeeper's Signature _____

Tie Breaker Questions							
1.	+10 for correct, -5 for incorrect response	Team #		Team #			
2.	+10 for correct, -5 for incorrect response						
3.	+10 for correct, -5 for incorrect response						
TIE BREAKER QUESTIONS SUBTOTAL							
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>							
SEMIFINAL SUBTOTAL (160 points)							
<p>To arrive at the TOTAL score, subtract rules violation points, as necessary.</p>						TOTAL (210 points)	

Comments:

I certify these results to be true and accurate to the best of my knowledge.
JUDGE
Printed name: _____ Signature: _____

SINGLE ELIMINATION TOURNAMENT CHART – SEEDED 16 PLAYER FIELD



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	

TECHNOLOGY BOWL

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Timer for exam, one (1)
- C. Proctors for exam, four (4)
- D. Timekeeper for oral competition, one (1)
- E. Scorekeeper for oral competition, one (1)
- F. Moderator for oral competition, one (1)
- G. Judges, for semifinal oral competition, two (2)
- H. Assistants for oral competition, two (2)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of event judges/assistants
 - 4. Copies of the 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. Test
 - 1. Stopwatch for timekeeper
 - 2. Tables and chairs or tablet armchairs to accommodate all participants
 - 3. Scantron instruction forms
 - 4. Coordinators are responsible for creating the test to be administered at the National TSA Conference; copies are provided by the national TSA office
- C. Oral competition
 - 1. Table and chairs for the event judges and moderator
 - 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 large 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

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is scheduled to begin, meet with judges/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.

PRELIMINARY ROUND

- A. Begin the event at the scheduled time by closing the doors and checking the entry list.
- B. All participants and event judges should be in the room at this time.
- C. Late participants and/or entries are considered on a case-by-case basis and only when lateness is caused by events beyond the participant's control.
- D. In order to compete, participants must be on the entry list or must have approval of the CRC.

- E. Distribute the scantron forms to the participants, if applicable.
 - 1. Direct participants to fill in their participant identification number and test code letter in the appropriate spaces.
 - 2. Provide an opportunity for any questions about the scan form.
- F. Ensure the following testing procedure is applied with the help of the proctors (tests are coded A or B).
 - 1. Participants seated next to each other should not have the same coded test; tests should be alternated A, B, A, B, and so on.
 - 2. If the test is administered as hard copies, instruct the participants to keep the tests face down until they are directed to turn them over and begin.
 - 3. If exams are administered electronically, instruct participants not to begin until the scheduled time.
- G. 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 scan form, and begin.
- H. Exactly one (1) hour from the time that the participants begin the test, call time.
 - 1. Direct students to check out with a test proctor once they are finished with their test.
 - 2. Proctors should collect all tests and then students should immediately leave the testing room.
 - 3. If a line forms students must remain completely silent. Any talking will result in a zero score for the test of the person(s) talking.
 - 4. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 5. To deduct twenty percent (20%) of the total possible points in this round or
 - 6. To disqualify the entry
 The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- I. Determine the sixteen (16) semifinalist teams based on team members' averaged score on the test.
- J. Prepare a list of the sixteen (16) semifinalist teams and submit it to the CRC for posting.

SEMIFINAL ROUND

- A. Run the oral component of the event as described in the Procedure section.
- B. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- C. Determine the ten (10) finalists. Judges discuss and break any ties that affect the top three (3) placements.
- D. Judges determine the ten (10) finalists and discuss and break 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 event area.

TECHNOLOGY PROBLEM SOLVING



OVERVIEW

Applying leadership and 21st century skills, participants in problem solving to develop a finite solution to the stated problem provided on-site. Participants work as a team to provide the best solution, which is measured objectively.

ELIGIBILITY

One (1) team of two (2) individuals per chapter may participate.

TIME LIMITS

Two (2) hours for the design and construction of the solution are permitted.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

ON-SITE CHALLENGE

- A. Participants report to the event area at the time and place stated in the conference program.
- B. The problem, evaluation criteria, and materials are distributed.
- C. Teams are allowed two (2) hours for the construction of a solution.
- D. Each solution is tested as soon as possible after the construction phase is completed. (Some problems may require teams to be present for testing.)
- E. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

- 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 are provided by TSA. Only the materials issued to each team by the event coordinator may be used in the development of the solution. Note: Exceptions are Adhesives (glue) and masking tape from each team's tool box.
- C. Participants are required to provide their own tool box:
 1. Must include identification (school name, address, and advisor cell phone number)
 2. Must not exceed twenty (20) inches (508 mm) length x ten (10) inches (254 mm) width x ten (10) inches (254 mm) height.
 3. Contains all items needed to fabricate the solution/entry. The following is a suggested list:
 - a. Cutting devices; NONE may be electric
 - b. Adhesives
 - i. aerosol and electric applicators are not allowed
 - ii. a bottle of Uncure or Debonder is recommended
 - c. Temporary fastening devices
 - i. straight pins
 - ii. clamps
 - iii. tape (only masking tape may be used as construction material, all other tape may only be used as a temporary fastening or hold down device)
 - d. A cutting surface that prevents table top marring (required)
 - e. Rulers, straightedges, and/or measuring scales
 - f. Abrasive sheets/sandpaper, sanding sponges, sanding boards (i.e. emory boards or similar)
 - g. Marking devices (pens, pencils, etc.) and sharpener
 - h. Sheet of wax paper, as large as is needed for the competition
 - i. Pliers, wrenches, nut drivers, as needed
 - j. Safety glasses and side shields (required)

4. Participants are required to provide and wear safety-approved eyewear for this event.
 - a. Safety eyewear shall be worn by participants at event check-in and remain on until leaving the event venue.
 - b. Prescription eyewear needs to have side shields to be considered safety eyewear.
 - c. Should a team member remove his/her eyewear, s/he will be reminded once to replace it.
 - d. If there is a second infraction, the team will be asked to leave the competition.
 - e. Sunglasses are not suitable eyewear.
- D. Participants without a toolbox are not allowed to compete.
- E. Once tool box sizes are evaluated, teams self-examine their competitor's tools and materials using the Verifications sheet provided by the event coordinator. If there is a dispute, a judge is summoned to determine a final ruling. Any disallowed tools or materials are held by the event coordinator until the contest is complete.
- F. Sharing tools between teams is not permitted.

EVALUATION

- A. Each team's solution is evaluated objectively.
- B. A finite measure, such as elapsed time, horizontal or vertical distance, and/or strength, is used to determine the best solution.
- C. Ties shall be broken according to the entry with the earlier testing time given the advantage.

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Computer software engineer
- Mathematician
- Criminal investigator
- Air traffic controller

TECHNOLOGY PROBLEM SOLVING

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Safety eyewear is present
- ☐ The tool box is present
- ☐ ENTRY NOT EVALUATED

TESTING OF SOLUTION (60 points)

Evaluation: A finite unit of measure, such as elapsed time, linear distance, and/or strength, etc., is used to determine ranking.

1st: 60 Points	2nd: 55 Points	3rd: 50 Points	4th: 45 Points	5th: 40 Points	6th: 35 Points
7th: 30 Points	8th: 25 Points	9th: 20 Points	10th: 15 Points	11th: 10 Points	12th: 5 Points

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

Indicate the rule violated: _____

TESTING OF SOLUTIONS SUBTOTAL (60 points)

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

TOTAL (60 points)

Comments:

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

JUDGE

Printed name: _____ Signature: _____

TECHNOLOGY PROBLEM SOLVING

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistants for set-up, monitoring, and clean-up of on-site activity, two (2) or more per 100 teams
 - 1. Depending on the problem, one of the assistants may need to serve as timekeeper.
 - 2. Not all assistants are needed for set-up and clean-up, but all are needed while the on-site activity is being held.
- C. Judges, two (2) or more
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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. At least one (1) hour before the event is scheduled to begin, meet with judges/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.

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Identification tags or stick-on labels to identify entries
 - 5. Stopwatch
 - 6. Results envelope
- B. Tables and chairs for participants
- C. Tables and chairs for judges, to be used for tools/materials distribution and evaluation
- D. Well-written, technologically appropriate problem that can be objectively measured; one (1) copy per team and judge
- E. Adequate conditions, tools, materials, monitoring, and testing devices for the problem

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.

ON-SITE CHALLENGE

- A. Distribute materials as appropriate, prior to the start of the event.
- B. Begin the event at the scheduled time by closing the doors and checking the entry list.
- C. All participants and judges should be in the room at this time.
- D. Late participants and/or entries are considered on a case-by-case basis and only when lateness is caused by events beyond the participant's control.
- E. In order to compete, participants must be on the entry list or must have approval of the CRC.
- F. Each team submits their toolbox to the coordinator and judges for size verification.
- G. Once teams are seated (checked against the entry list) and general announcements have been made, the event problem is distributed, reviewed, and time is started.
- H. Judges and monitors observe the entire construction phase, with judges measuring solutions as soon as appropriate.
- I. Judges collect the solution design when the team's solution is submitted for testing.
- J. Judges use the designs to break any ties.

- K. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- L. Judges determine the ten (10) finalists and 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.

OVERVIEW

Using only designated materials and following required specifications, participants apply leadership and 21st century skills in the research, design, and production of a scale model of a vehicle that fits the annual design problem, which will be posted on the [TSA website](#) under Competitions/Themes and Problems. The entry must take appearance and realism into consideration.

ELIGIBILITY

One (1) individual per chapter may participate.

TIME LIMITS

Semifinalists participate in an on-site interview that lasts five (5) minutes.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants produce a scale model of a vehicle focusing on the year's current theme, while observing the outlined regulations.
- B. Participants prepare the documentation portfolio and display according to the regulations for this event.

PRELIMINARY ROUND

- A. Participants check in the following at the time and place stated in the conference program:
 1. the scale model
 2. the display
 3. the documentation portfolio
- B. Entries are evaluated by the judges with neither students nor advisors present based on the following criteria:
 1. Judges score the Model and Display criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.

2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.

- C. A list of twelve (12) semifinalists (in random order) is posted.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for an interview time.
- B. Participants report at the assigned time and place for the interview.
- C. Judges ask questions pertaining to the research, production of the model, and the design process.
- D. The top ten (10) finalists are announced during the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRELIMINARY ROUND

- A. Entries must include a scale model, a display, and documentation portfolio.
- B. The model, display and documentation must meet the following specifications:

Model

1. The scale model must accurately reflect the annual design problem.
2. The model must be designed and produced as original work by the student during the current school year.
3. The model may be made from wood or it may be 3D-printed.
4. Using commercially produced (store-bought) model vehicle body parts (including hoods, fenders, wings, propellers, frames, etc.) is prohibited.

5. It is permissible to use pre-manufactured parts such as body strengtheners, tires and wheels, plastic canopy, exhausts, mirrors, head and tail lights, windshields, and antennae.
 - a. These parts may be attached to or enclosed within the vehicle and may be constructed from materials other than wood, excluding glass or liquids. These parts must be fastened securely.
 - b. It is also permissible to use 3D printers in the production of the parts of this model.
6. The finished vehicle must fit inside the display space of 16" x 16" x 16".
7. The themed vehicle model must have an actual length that measures at least six inches (6").
8. The designer must choose a scale for the vehicle so that it meets regulations and must be specified in the portfolio.
9. Wheels: Dimensions should be consistent with the scale of the body. Wheels must roll.

Display

1. The model must be presented for evaluation on a display not to exceed 16" tall x 16" deep x 16" long (including the model).
2. The portfolio is not considered part of the display but is placed with it at its side.
3. No electrical access will be provided by TSA for displays.
4. Use of dry cell batteries is permissible, but they must be contained within the stated display space.

Documentation Portfolio

1. Documentation materials (comprising a "portfolio") are required and must be secured in a [clear front report cover](#).
2. In addition to the 11" x 17" pages noted below, the report cover must include the following single-sided, 8½" x 11" pages, in this order:
 - a. Title page with the event title, the conference city and state, and the year; a picture of the vehicle may be included as well; one (1) page

- b. Table of contents; pages as needed
- c. Description of designer's vehicle, making note of the scale used, inspiration for the choice and design of the vehicle, research about the history and evolution of the original vehicle, and design elements that set the vehicle apart from others (e.g. fuel used, unique features); one (1) page
- d. Photo examples of current or past vehicles that are similar to the current year's theme or that inspired the entry; one (1) page
- e. Concept drawings/detailed sketches or 3D CAD modeling; two (2) pages (11" x 17" size)
- f. Photos of the clay, foam, wax, or 3D-printed mock-up; one (1) page
- g. Final technical illustrations (orthographic); two (2) pages (11" x 17" size)
- h. Photos of the production of the model; one page
- i. Documentation for this event must not include the name of the chapter or state.
- j. All ideas, text, or images from sources other than the designer must be cited.
- k. Cited works should be in MLA format.
- l. Pages that are 11" x 17" in size should be folded to fit in the notebook.

EVALUATION

PRELIMINARY ROUND

- A. The notebook
- B. The model
- C. The display

SEMIFINAL ROUND

- A. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Automotive designer
- Automotive engineer
- Digital modeling technician
- Industrial designer
- Industrial engineer

TRANSPORTATION MODELING

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Vehicle scale model fits within the display and is at least 6" long
- ☐ The model is made of appropriate materials
- ☐ The documentation portfolio is present
- ☐ The display size is no more than 16" x 16" x 16"
- ☐ ENTRY NOT EVALUATED

MODEL AND DISPLAY (50 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Production Quality (X1)	The model exhibits poor production quality; the surface is rough; there is little or no attention to detail.	There is some evidence of proper production techniques; the model appearance is adequate.	The model demonstrates excellent production techniques with obvious effort and attention to detail.	
Paint and Finish (X1)	Surface imperfections are evident; the model is sticky, and/or the painting quality is low.	The quality of the painted surface is acceptable, with some imperfections visible.	The painted surface is exceptional, with little or no visible imperfections.	
Appropriate to Designated Problem (X1)	The model does not relate to the stated annual design theme.	The model generally relates to the stated annual design theme.	The model effectively represents and portrays the stated annual design theme.	
Details (X1)	There is a very weak and limited attempt to include identifying characteristics and/or additional parts to help create a realistic appearance.	The model includes some identifying characteristics and/or additional parts that give it a sense of realism.	The model displays exemplary effort to include identifying characteristics and/or additional parts that give it a realistic appearance.	
Display (X1)	The quality of the display is poor, and/or it exceeds the 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.	
MODEL AND DISPLAY SUBTOTAL (50 points)				

DOCUMENTATION PORTFOLIO (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	The portfolio is missing several components, and/or it is unorganized; it is messy and lacks quality.	Most components are included in the portfolio; it is adequately organized.	All portfolio components are included and completely organized; effort and quality of work are evident.	
Vehicle Description (X1)	The description is inadequate; research references are lacking; the scale is incomplete.	The description is adequate, research is evident with some documentation, and the scale is stated and accurate.	An excellent description is included, with necessary research referenced to support the model solution; the scale is stated and accurate.	
Concept Drawings, Detailed Sketches, or 3D CAD Modeling (X1)	The drawings are not to scale, and/or the quality is poor, and/or there are missing parts and dimensions; the drawings are not on 11" x 17" paper.	The drawings are acceptable, true to scale, and representative of the vehicle, with some details/dimensions included; the drawings are produced on 11" x 17" paper.	The drawings are accurate and complete; they include all necessary details/dimensions and are drawn on 11" x 17" paper.	
Photo Examples of Current/Past Similar Vehicles (X1)	There is only one (1) photo example of current or past similar vehicles.	There are two or three (2-3) photo examples of current or past similar vehicles.	There are a number of photo examples of current or past similar vehicles, showing that in-depth research was done.	
Photos of Clay, Foam, Wax, or 3D-Printed Model (X1)	There is only one (1) photograph of the clay/foam or wax model included.	Two or three (2-3) photographs of the clay/foam or wax model are included, but more are needed to adequately document the model.	There are a number of photographs included that effectively document the preliminary clay/foam/wax model.	
Final Technical Illustrations (orthographic plans) (X1)	Orthographic plans are poorly executed, and/or the plans are not on 11" x 17" paper.	Adequate orthographic plans are included; the plans are on 11" x 17" paper.	Complete orthographic plans are included; they are of excellent quality on 11" x 17" paper.	
Photos of Production of the Model (X1)	Only one (1) photograph of the model production is included.	Two or three (2-3) photographs of the model production are included, but they are not enough to provide full documentation.	The photographs included fully and effectively document and describe the model production process.	
DOCUMENTATION PORTFOLIO SUBTOTAL (70 points)				
<p>Rules violations (a deduction of 20% of the total possible points in the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>				
PRELIMINARY SUBTOTAL (120 points)				

SEMIFINAL INTERVIEW (30 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.	
Knowledge (X1)	Participant seems to have little understanding of the concepts in the project; vague interview answers are provided.	Participants have a generalized understanding of the concepts discussed and answer questions adequately.	Evidence is clear that the participant has a thorough understanding of the concepts discussed; questions are answered thoroughly.	
Organization (X1)	Participant is unprepared and unorganized for the interview, with an illogical explanation of the project.	Participant is prepared for the interview and is somewhat organized in his/her explanation to judges; the answers are, for the most part, logical and/or clear.	Participants responses are concise and logical, with a clear explanation of the development of the project.	
SEMIFINAL INTERVIEW SUBTOTAL (30 points)				
Rules violations (a deduction of 20% of the total possible points in the semifinalist 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: _____				
SEMIFINAL SUBTOTAL (30 points)				
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.

JUDGE

Printed name: _____ Signature: _____

TRANSPORTATION MODELING

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Assistants, two (2)
- C. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal round, two (2) or more

MATERIALS

- A. Coordinator's packet containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope

RESPONSIBILITIES

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.
- E. At least one (1) hour before the event is to begin, meet with judges 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.

EVENT CHECK-IN

- A. Check in the entries at the time and place stated in the conference program.
- B. Participants check in:
 - 1. the scale model
 - 2. the documentation portfolio
 - 3. the display
- C. Late entries are considered on a case-by-case basis and only when the delay is caused by events beyond participant control.
- D. In order to compete, participants must be on the entry list or must have CRC approval.
- E. Requirements for attire do NOT apply during check-in, only on the first day of conference.
- F. Each entry must include the identification number in the upper right-hand corner of the entry.
- G. Instruct the participants to position the displays for viewing.
- H. Secure the entries in the designated area.

PRELIMINARY ROUND

- A. When it is necessary to move models, only judges and official personnel should handle the models. Extreme care should be taken to avoid damage to the entries.
- B. Judges independently assess the entries based on the following:
 - 1. Judges review and score the Model and Display criteria to determine the top twenty-four (24) preliminary contestants, which will not be posted.
 - 2. Judges score the Documentation Portfolio criteria of those top twenty-four contestants to determine the top twelve (12) semifinalist teams.

- C. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct 20% of the total possible points or
 - 2. To disqualify the entryThe event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- D. Judges determine the twelve (12) semifinalists.
- E. Submit the finalist results and all related forms in the results envelope to the CRC room.
- F. Create a sign-up sheet for the semifinal interviews.

SEMIFINAL ROUND

- A. Semifinalists report at the time and place stated in the conference program to sign up for an interview time.
- B. Manage completion of the on-site interviews.
- C. Discuss rule violations (e.g. 20% deduction, disqualification) and have all relevant parties initial the rating form.
- D. Judges determine the ten (10) finalists and discuss and break any ties.
- E. Submit the finalist results and all related forms in the results envelope to the CRC room. .
- F. At the designated time, return models, displays, and portfolios to student owners after verifying official conference identification.

OVERVIEW

Applying leadership and 21st century skills, participants develop a video game that focuses on the annual theme. The game must be interesting, exciting, visually appealing, and intellectually challenging. The game must have high artistic, educational, and social value.

The game and all required documentation must be submitted online, Pre-conference. Semifinalist teams participate in an on-site interview to demonstrate the knowledge and expertise they gained during the development of the game.

The theme of the current year's game will be posted on the [TSA website](#) under Competition Themes/Problems.

ELIGIBILITY

Five (5) teams per state may participate.

TIME LIMITS

PRE-CONFERENCE

- A. All components of the chapter's entry must be finished, submitted, and accessible via by 11:59 p.m. ET on May 15th.
- B. Email verification of each team's entry will be made by June 10th.
- C. The game submitted for evaluation must be greater than three (3) minutes in length of play and must be interactive.
- D. 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.
- F. Games must be playable from the deadline until the end of the National TSA Conference.

SEMIFINAL ROUND

- A. Five to ten (5-10) minutes are allowed for the on-site interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Teams design an online video game.
- B. Teams design the game based on the annual theme posted under Themes and Problems on the [TSA website](#).
- C. The game entry and documentation portfolio must be submitted by 11:59 p.m. ET on May 15th.
- D. Submission information will be provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. A list of twelve (12) semifinalist teams (in random order) is posted at the National TSA Conference.

SEMIFINAL ROUND

- A. Two (2) representatives from each semifinalist team report at the time and place stated in the conference program to sign up for an interview time.
- B. No more than two (2) semifinalist team members report to the assigned time and place to respond to questions about their documentation, game, the game's purpose, value, design, and rules.
- C. The top ten (10) finalists are announced during the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE/PRELIMINARY ROUND

- A. The game must be an online based game, or one that is a downloadable *.exe file, and accessible for evaluation by the deadline posted on the [TSA website](#) under the Competition Updates page.
- B. Entries received, or changes made to submitted entries after this deadline will not be judged.
- C. The URL must point to the team's entry. Entries that require a software download or a request that access be granted will not be judged.
- D. Video Game:
 1. Must be an online based game or a downloadable *.exe file.
 2. Must be the original work of the team.
 3. Work that is not created by the team must have proper documentation, showing copyright permissions and/or license for usage in the game segment (See Forms Appendix on the [TSA website](#)).
 4. Game instructions must be clear and understandable.
 5. Judges must be able to play the game to the third (3rd) level.
 6. The game submitted for evaluation must be greater than three (3) minutes in length of play and must be interactive.
 7. A deduction of five (5) points total will be incurred for a game that completes under the three (3)-minute time minimum.
 8. The timing of the game segment starts with the first image or sound presented.
 9. Games must be playable from the submission deadline until the end of the National TSA Conference.
 10. Bonus points may be awarded for exceptional game features or content.

E. Documentation Portfolio:

1. The portfolio must include the following pages in a multi-page PDF document in this order:
 - a. Title page with the event title, the title of the video, the conference city and state, and the year, and the team's identification number; one (1) page
 - b. A completed Student Copyright Checklist (see Forms Appendix) and permission letters for the use of copyrighted material (if applicable)
 - c. Permission letters for the use of copyrighted material (See Forms Appendix on the [TSA website](#)); pages as needed (if applicable).
 - d. A hand-drawn storyboard, which depicts the design concept of the video game; pages as needed
 - e. 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
 - f. A completed Plan of Work log (see Forms Appendix); pages as needed
- F. Bonus points may be awarded for exceptional game features or content.
- G. Required documentation becomes the property of TSA.

EVALUATION

PRELIMINARY ROUND

- A. The first three (3) levels of the game
- B. The documentation portfolio
- C. Up to fifteen (15) bonus points may be added by the judges for exceptional game features, or for content showing exemplary educational and social value.

SEMIFINAL ROUND

- A. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Animator
- Computer programmer
- Electronic game designer
- Electronic game technician
- Writer

VIDEO GAME DESIGN

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ The game is playable
- ☐ PDF of the documentation portfolio is submitted and scored
- ☐ ENTRY NOT EVALUATED

GAME DESIGN (70 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Creativity and Artisanhip (X2)	The game lacks creativity; poor artisanship and development are evident.	The game exhibits adequate creativity and artisanship.	The game is highly creative and well-crafted.	
Technical Skill (X2)	The game lacks originality and shows few technical skills.	The game is original and shows some evidence of programming skills.	The game is original, highly artistic, and shows evidence of programming skills.	
Storyline/Flow of the Game (X1)	The game follows little or no story line; there is limited logical flow to the game.	The game follows a story line and flows adequately from one (1) scene/level to another.	The game is well-organized and flows smoothly from one (1) scene/level to the next.	
Overall Appeal (X2)	Playing the game is not enjoyable; interacting in game play is a struggle, due to the game's illogical sequencing.	The game is somewhat interesting, easy, and enjoyable to play; most design concepts are incorporated.	The game is innovative and entertaining; design principles are incorporated, which make playing the game easy and enjoyable.	
GAME DESIGN SUBTOTAL (70 points)				

DOCUMENTATION PORTFOLIO (40 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Portfolio Components (X1)	Not all portfolio pages are included, and/or the pages are unorganized.	Most portfolio elements are included and organized.	Outstanding organization skills are evident in the preparation of the portfolio, which contains all required elements.	
Game Directions and Control Function (X1)	The game explanation is difficult to follow; functions provided are illogical or incorrect.	The game directions can be followed, but at times they do not sync with overall workings of the game; most control functions are adequate.	The game explanation is easy to follow, and control functions are well-matched for the game.	

DOCUMENTATION PORTFOLIO (40 points) – continued			
Plan of Work Log (X1)	Plan of Work log is incomplete and inaccurate.	Plan of Work log is included and mostly addresses participation of all team members.	Plan of Work log is complete and shows participation of all members.
Storyboard (X1)	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.
DOCUMENTATION PORTFOLIO SUBTOTAL (40 points)			

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

Indicate the rule violated: _____

PRELIMINARY SUBTOTAL (110 points)

SEMIFINAL INTERVIEW (40 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Organization (X1)	Participants seem unorganized and unprepared for the interview; an 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.
Team Participation (X1)	The majority of the delivery is made by one (1) member of the team; the partner(s) may be disengaged in the interview.	Team members generally are engaged in the interview, though one (1) member may take on more responsibility than the other(s).	All team members are actively involved in the interview and responses to the questions; there is shared responsibility among team members.
Knowledge (X1)	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 the project.	Participants show clear evidence of a thorough understanding of their project.
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.
SEMIFINAL INTERVIEW SUBTOTAL (40 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 initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

SEMIFINAL SUBTOTAL (40 points)

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

BONUS (10 points)

CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Bonus Points Unique and exceptional features (X1)	The game demonstrates some unique and exceptional features and/or exemplary educational value.	The game is very good but limited in uniqueness.	The game is outstanding and unique.

Record scores
in the column
spaces below.

Comments:

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

JUDGE

Printed name: _____ Signature: _____

VIDEO GAME DESIGN

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round, two (2) or more
 - 2. Semifinal Round, two (2) or more (preferably the same judges from the preliminary round)

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope with coordinator forms
- B. Tables for entries
- C. One (1) extension cord for the semifinalist evaluation team
- D. One (1) power bar with surge protection for semifinalists, as needed
- E. Laptop computer with high speed Internet capability
- F. Tables and chairs for event coordinator, semifinalist judges, and participants

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants by June 10th. The results are shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and Pre-conference evaluation (at least two [2] or more judges should be recruited). Coordinate with the Judge Manager.

- D. Judges determine the twelve (12) semifinalists and discuss and break any ties.
- E. At least five (5) days prior to the National TSA Conference, make the online storage utility link for the entries accessible.
- F. Collect completed rating forms electronically and bring them to the conference on a flash drive.

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

PRELIMINARY ROUND

- A. On the first full day of competition, post a list of the twelve (12) semifinalists in random order.

SEMIFINAL ROUND

- A. At least one (1) hour before the event is scheduled to begin, meet with judges, and review time limits, procedures, regulations, evaluation, and all other details related to the event.
- B. Determine the procedure for breaking ties before the on-site competition begins.
- C. No more than two (2) semifinalist representatives report at the time and place stated in the conference program to sign up and participate in the on-site interview.
- D. Distribute the guidelines for the interview.
- E. Manage completion of the on-site interviews.

- F. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round or
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.

- G. Judges determine the ten (10) finalists and discuss and break any ties.
- H. Submit the finalist results and all related forms in the results envelope to the CRC room.

OVERVIEW

Applying leadership and 21st century skills, participants are required to design, build, and launch a website and present a given topic pertaining to technology (referred to as the “design brief”). Semifinalists participate in an on-site interview to demonstrate the knowledge and expertise gained during the development of the website — with an emphasis on web design methods and practices, as well as their research for the annual design topic. The topic for the current year will be posted on the [TSA website](#) under Competitions/Themes and Problems.

ELIGIBILITY

One (1) team per chapter may participate.

TIME LIMITS

PRELIMINARY ROUND

- A. 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. ET on May 15th.
- B. Entries received or changes made to submitted entries after this deadline will not be judged.
- C. Email verification of each team’s entry will be made by June 10th.

SEMIFINAL ROUND

- A. Five (5) to Ten (10) minutes is allowed for the interview.

ATTIRE

TSA competition attire is required for this event.

PROCEDURE

PRE-CONFERENCE

- A. Participants obtain the high school event design brief from the [TSA website](#) under Competitions/Themes and Problems.
- B. Participants design a website while observing the theme and design requirements.

- C. Participants submit the URL of the website online prior to the conference via the link provided on the [TSA website](#) under Competition Updates.

PRELIMINARY ROUND

- A. A list of twelve (12) semifinalists (in random order) is posted on the first full day of conference.

SEMIFINAL ROUND

- A. Participants report at the time and place stated in the conference program to sign up for an interview time.
- B. Up to five (5) team representatives report at the assigned time and place for the interview.
- C. Judges independently assess the interviews.
- D. The top ten (10) finalists are announced at the awards ceremony.

REGULATIONS AND REQUIREMENTS

Students will work to develop their leadership and 21st century skills in the process of preparing for and participating in this TSA competitive event. The development and application of those skills must be evident in their submission, demonstration, and/or communication pertaining to the entry.

PRE-CONFERENCE/PRELIMINARY ROUND

- A. Participants must launch their entry on a web server that can be accessed via the Internet twenty-four (24) hours a day, seven (7) days a week, fifty-two (52) weeks per year.
- B. Each entry must consist of web pages that specifically display the chapter’s solution to the high school design brief.
- C. The URL must point to the main page of the team’s entry. Entries requiring that access be granted will not be judged.
- D. Changes made after submission will result in disqualification from the event.

- E. The solution to the design brief is developed as a series of web pages (with a minimum of three [3] pages and no maximum number of pages) linked under the main design brief solution web page.
 1. One (1) of the pages must list all sources of information used to create the website.
 2. All web pages must be completed during the current school year.
 3. If copyrighted material, such as text, images, or sound from other sources is used, proper written permission must be included/documented.
 4. Participants must submit a completed Student Copyright Checklist (in PDF format) as a link on their website reference page. (See Forms Appendix)
 5. Participants also must include a completed Plan of Work log (in PDF format) as a link on their website reference page. (See Forms Appendix)
- F. All entries must be compatible using the latest versions of Internet Explorer, Firefox, Chrome, etc. on both desktop and mobile devices.
- G. In addition to basic HTML code, the website may contain Java applets, HTML5, Shockwave, Flash, and other state-of-the-art web-based applications.
- H. Framework systems, such as Drupal, Joomla, Wordpress, Bootstrap, or other current technologies may be used; however, pre-built templates and themes for these sites are not permissible. If a framework system is used, a statement affirming that the template or theme used on the framework was built by the team must be posted on an "About" section or page.
- I. Template engine websites, such as Webs, Wix, and Weebly, are NOT permitted.

EVALUATION

PRELIMINARY ROUND

- A. The website

SEMIFINAL ROUND

- A. The interview

Refer to the official rating form for more information.

STEM INTEGRATION

This event aligns with the STEM (Science, Technology, Engineering, and Mathematics) educational standards.

LEADERSHIP AND 21ST CENTURY SKILLS DEVELOPMENT

This event provides opportunity for students to build and develop leadership and 21st century skills including but not limited to:

- Communication
- Collaboration/Social Skills
- Initiative
- Problem Solving/Risk Taking
- Critical Thinking
- Perseverance/Grit
- Creativity
- Relationship Building/Teamwork
- Dependability/Integrity
- Flexibility/Adaptability

CAREERS RELATED TO THIS EVENT

This competition has connections to one (1) or more of the careers below:

- Computer engineer
- Webmaster
- Website designer
- Web technician

WEBMASTER

2021 & 2022 OFFICIAL RATING FORM

HIGH SCHOOL

Judges: Using minimal (1-4 points), adequate (5-8 points), or exemplary (9-10 points) performance levels as a guideline in the rating form, 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.) A score of zero (0) is acceptable if the minimal performance for any criterion is not met.

Go/No Go Specifications

- Before judging the entry, ensure that the items below are present; indicate presence with a check mark in the box.
- If an item is missing, leave the box next to the item blank and place a check mark in the box labeled ENTRY NOT EVALUATED.
- If a check mark is placed in the ENTRY NOT EVALUATED box, the entry is not to be judged.

- ☐ Website URL that is functional on a desktop and mobile devices
- ☐ Design brief solution with no copyright or plagiarism issues
- ☐ ENTRY NOT EVALUATED

WEBSITE (130 points)				Record scores in the column spaces below.
CRITERIA	Minimal performance	Adequate performance	Exemplary performance	
	1-4 points	5-8 points	9-10 points	
Layout and Navigation (X2)	The web pages are cluttered and confusing; it is often difficult to locate important elements; the navigation structure is unclear, unintuitive, and ineffective in getting users to relevant information.	The web pages have a reasonably usable layout, and all major elements can be found; the design is generally pleasing to view; the navigation structure is generally effective and intuitive, and provides reasonable ability to navigate the website.	The layout is exceptionally user-friendly; the relationship of elements and content are effective and attractive to the viewer; the navigation structure is highly intuitive, and provides efficient access to all pertinent information on the website.	
Graphics and Color Scheme (X2)	Graphic content is nonexistent or of low quality and questionable relation to the topic; colors are of poor contrast and detract from the user experience.	Graphic content effectively relates to the purpose of the site, provides enhancement to the user experience, and is of acceptable quality; the color scheme is effective and does not detract from the viewer's experience.	Graphics are well-used, of high quality, and clearly enhance the user experience; interactive elements effectively engage the user; the color scheme is attractive, appropriate, and clearly enhances the viewing experience.	
Function and Compatibility (X1)	There are several broken links and images, and/or the website does not render properly on multiple browsers.	There are no broken images, and/or few, if any, broken links; the website renders properly on most major browsers.	There are no broken images or links; the web site renders properly on most major browsers and is usable on mobile devices.	
Spelling and Grammar (X1)	There are numerous spelling and grammatical errors.	There are only a few spelling and/or grammatical errors.	There are few, if any, spelling and grammatical errors.	
Theme (X2)	The annual theme is not addressed.	The annual theme is somewhat addressed, but the supporting pages do not adequately support or contribute to the overall design.	The annual theme is addressed and is reflected in the supporting pages.	
Content (X2)	The content lacks originality and does not contribute to the overall design of the webpage; the content does not align with the purpose of the website.	Very basic information is presented; the content aligns somewhat with the purpose of the website; some pages are irrelevant.	The content aligns well with the purpose of the website and adds to its effectiveness.	

WEBSITE (130 points) – continued			
Design Brief Solution (X3)	The design brief solution is addressed, but not in great detail; it is generally ineffective, and/or missing many parts of the required research and presentation.	The design brief solution is generally well presented; it addresses most major parts of the required research and presentation.	The design brief solution is well presented, well researched, and highly effective; all expected components are present, and additional, unrequired elements that enhance the final product are incorporated.
WEBSITE SUBTOTAL (130 points)			
<p>Rules violations (a deduction of 20% of the total possible points for the above sections) must be initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.</p> <p>Indicate the rule violated: _____</p>			
PRELIMINARY SUBTOTAL (130 points)			

SEMIFINAL INTERVIEW (50 points)			
CRITERIA	Minimal performance	Adequate performance	Exemplary performance
	1-4 points	5-8 points	9-10 points
Organization (X1)	Participants seem unorganized and unprepared for the interview.	Participants are generally prepared and are somewhat organized for the interview.	Participants' interview is organized, logical, and easy to follow.
Knowledge (X1)	Team members seem to have little understanding of their project; answers are vague, short, and/or incomplete.	Team members have a general understanding of their project, and adequately discuss their process and solution to the challenge.	There is clear evidence that the team members have a thorough understanding of their project and design procedure.
Articulation (X1)	Communication of the design process is unclear, unorganized, and or illogical; leadership and/or 21 st century skills are not evident.	Communication of the design process is somewhat logical and clear; leadership and/or 21 st century skills are somewhat evident.	Communication of the design process is clear, concise, and logical; leadership and/or 21 st century skills are clearly evident.
Delivery (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.
Engagement and Participation (X1)	The team must be prompted to provide answers and information; a clear team leader dominates the interview, while other team members are unresponsive.	Team members generally answer questions with responses of acceptable length and depth; most team members participate adequately in the interview and engage the judges when answering questions.	All team members contribute in the interview; while there may be a clear team leader, all members provide appropriate substantive material to the conversation; the team engages the judges in the interview, which becomes less of a question and answer session and more of a conversation about the topic and solution.
SEMIFINAL INTERVIEW SUBTOTAL (50 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 initialed by the judge, coordinator, and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: _____

SEMIFINAL SUBTOTAL (50 points)

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.

JUDGE

Printed name: _____ Signature: _____

WEBMASTER

EVENT COORDINATOR INSTRUCTIONS

PERSONNEL

- A. Event coordinator
- B. Judges:
 - 1. Preliminary round for Pre-conference evaluation of websites, two (2) or more
 - 2. Semifinal round, semifinalist interviews, two (2) or more

MATERIALS

- A. Coordinator's packet, containing:
 - 1. Event guidelines, one (1) copy for the coordinator and for each judge
 - 2. TSA Event Coordinator Report
 - 3. List of judges/assistants
 - 4. Results envelope with coordinator forms
- B. The latest version of Internet Explorer, Firefox, Chrome, etc.
- C. List of questions for on-site interviews
- D. Laptop computer with high speed Internet capability

RESPONSIBILITIES

PRE-CONFERENCE

- A. National TSA will collect entries until 11:59 p.m. ET on May 15th and send out receipt confirmations to participants by June 10th. The results will be shared with the CRC manager, event coordinator, and assigned judges.
- B. Review entries as they are submitted to the designated online storage utility.
- C. Manage communication and Pre-conference evaluation (at least two [2] or more judges should be recruited earlier in the year). Coordinate with the Judge Manager.
- D. Judges determine the twelve (12) semifinalists and discuss and break any ties. Results are posted on-site at the national conference on the first full day of the conference.
- E. At least five (5) days prior to the National TSA Conference, make accessible the online storage utility link for the entries.

- F. Collect completed rating forms electronically and bring them to the conference on a flash

AT THE CONFERENCE

- A. Attend the mandatory coordinator's meeting at the designated time and location.
- B. Report to the CRC room and check the contents of the coordinator's packet.
- C. Review the event guidelines and check to see that enough personnel have been scheduled.
- D. 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.

PRELIMINARY ROUND

- A. On the first full day of the conference, post a list of the twelve (12) semifinalists in random order.

SEMIFINAL ROUND

- A. Review the time limits, procedures, and regulations with judges and clear up any questions or misunderstandings.
- B. Distribute/discuss the guidelines for the interview to the judges.
- C. Semifinalist teams report at the time and place stated in the conference program to sign up for an interview time.
- D. Manage completion of the on-site interviews.
- E. Decisions about rules violations must be discussed and verified with the judges, event coordinator, and the CRC manager to determine either:
 - 1. To deduct twenty percent (20%) of the total possible points in this round
 - 2. To disqualify the entry

The event coordinator, judges, and CRC manager must initial either of these actions on the rating form.
- F. Judges determine the ten (10) finalists and discuss and break any ties.
- G. Submit the finalist results and all related forms in the results envelope to the CRC room.

FORMS

APPENDIX

Downloadable forms are available on the
[TSA website](#) under Competition/Competition Forms.

TECHNOLOGY STUDENT ASSOCIATION PLAN OF WORK LOG				
Date	Task	Time involved	Team member responsible (student initials)	Comments
1.				
2.				
3.				
4.				
5.				
6.				

Advisor signature _____



STUDENT COPYRIGHT CHECKLIST (for students to complete and advisors to verify)

STUDENT: Answer question 1 below.

- 1) Does your solution to the competitive event integrate any type of music and/or sound? ☐ YES ☐ NO

If NO, go to question 2.

If YES, is the music and/or sound 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 and/or sound in your solution and included that permission (letter/form) in your documentation? If YES, move to question 2. If NO, ask for permission and if permission is granted, include the permission in your documentation.

1B) Is the music/sound royalty free, or did you create the music/sound yourself? If YES, cite the royalty free music/sound OR your original music/sound properly in your documentation.

CHAPTER ADVISOR: Sign below regarding your student's answer(s) to the use of music/sound in his/her competitive event solution. Even if your student answers "NO" to question 1, please sign below noting that you have evaluated the competitive event solution and the student answered the question(s) accurately.

I, _____ (chapter advisor), have checked my student's solution and confirm that any use of music/sound is done so with proper permission and is cited correctly in the student's documentation and/or the solution has been found to have no music/sound included.

STUDENT: Answer question 2 below.

- 2) Does your solution to the competitive event integrate any graphics/videos? ☐ YES ☐ NO

If NO, go to question 3.

If YES, is(are) the graphics/videos 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 graphics and/or videos in your solution and included a permission (letter/form) in your documentation for graphic/video used? If YES, move to question 3. If NO, ask for permission and if permission is granted, include the permission in your documentation.

2B) Is(are) the graphics/videos royalty free, or did you create your own graphic? If YES, cite the royalty free graphics/videos OR your own original graphics/videos properly in your documentation.

CHAPTER ADVISOR: Sign below regarding your student's answer(s) to the use of graphics/videos in his/her competitive event solution. Even if your student answers "NO" to question 2, please sign below noting that you have evaluated the competitive event solution and the student answered the question(s) accurately.

I, _____ (chapter advisor), have checked my student's solution and confirm that the use of graphics/videos with proper permission and is cited correctly in the student's documentation and/or the solution has been found to have no graphics/videos included.

STUDENT: Answer question 3 below.

- 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? ☐ YES ☐ NO

CHAPTER ADVISOR: Sign below regarding your student's answer(s) to having integrated any thoughts/research of others in his/her competitive event solution. Even if your student answers "NO" to question 3, please sign below noting that you have evaluated the competitive event solution and the student answered the question(s) accurately.

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 and/or the solution has been found to have all original thought with no use of other's thoughts/research.

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

NEW COMPETITIVE EVENT PROPOSAL

New proposals may only be submitted by chapter advisors of currently affiliated chapters or TSA alumni. Please attach any additional pages as necessary.

Name of Competitive Event: _____

Level: ☐ High School ☐ Middle School

Overview (description of the event and participant expectations):

Eligibility for entry (how many teams/individuals can participate):

Limitations (such as time or entry submission requirements):

Resources (i.e. are the resources a limiting factor, or are they affordable/readily available to all populations? Can this be executed at the national level?):

Specific regulations:

Required personnel:

Alignment with STEM standards (how does this align with STEM standards?):

What are the societal benefits for learning this information? How can this be applied in a real world context?

Do you know of a TSA Chapter, at the regional or state level, that executes this event at conferences? If so, whom?

Name Date

Email Phone Number

How are you affiliated with TSA? ☐ Chapter Advisor ☐ Alumni ☐ Other: _____

Mail to: CRC, c/o National TSA, 1904 Association Drive, Reston, VA 20191-1540; Email to: general@tsaweb.org

EVENT REVISION SUGGESTION

As TSA expands its membership and participation in competitive events increases, competitive events may require revision. TSA consistently tracks and monitors misinterpretations and strives to revise the guide to improve clarity. TSA encourages input so that competitive events continue to improve. Use this form to note how outcomes for competitive events may be improved.

Competitive Event: _____

Level: ☐ High School ☐ Middle School

Note a reference to the exact section and page number (if applicable): _____

Specifically state the suggestion. List exactly what should be deleted, replaced, and/or added to the event rule or procedure.

Provide a rationale and list the pros and cons of this proposed update.

In your opinion, will the update to this event change the space requirements at the conference? ☐ YES ☐ NO

If yes, provide your rationale.

In your opinion, will the update to this event require additional resources? ☐ YES ☐ NO

If yes, provide your rationale.

Enter any additional comments

Print Name Signature Date

State Advisor's Name Signature Date

Contact Email Contact Phone

Mail to: CRC, c/o National TSA, 1904 Association Drive, Reston, VA 20191-1540; Email to: 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.