Competitive Event Overviews – Middle School

Biotechnology
Participants conduct research on a contemporary biotechnology issue of their choosing, document their research, and create a display. The information gathered may be student-performed research or a re-creation or simulation of research performed by the scientific community. If appropriate, a model or prototype depicting some aspect of the issue may be included in the display. Semifinalist teams are interviewed about their topic.

CAD Foundations
Participants have the opportunity to demonstrate their understanding of CAD fundamentals as they create a two-dimensional (2D) graphic representation of an engineering part or object.

Career Prep
Participants conduct research on a selected technology-related career according to a theme posted on the TSA website, and use this knowledge to prepare a letter of introduction and a chronological skills resume. Semifinalists participate in a mock interview.

Challenging Technology Issues
Participants work together to prepare and deliver a debate-style presentation with participants explaining opposing views of a current technology issue.

Chapter Team
Participants take a written parliamentary procedures test in order to qualify for the semifinals, in which they conduct an opening ceremony, items of business, parliamentary actions, and a closing ceremony within a specified time period.

Children's Stories
Participants create an illustrated children's story that will incorporate educational and social values. The story may be written in a genre of their choice and must address the annual theme. Examples are fables, adventures, non-fiction, fiction, and fairy tales.

Coding
Participants will demonstrate their knowledge of computer science and coding by taking a written test. Semifinalists will further demonstrate their programming knowledge by participating in an onsite programming challenge.

Community Service Video
Participants create and submit a video that depicts the local TSA chapter's involvement with a community service project (e.g., American Cancer Society) of their choice. Semifinalists are announced onsite at the annual conference.

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

Cybersecurity Foundations
Participants complete a Cybersecurity exam covering general cybersecurity vocabulary and knowledge needed to execute tasks commonly performed by all levels of cybersecurity professionals. Using digital presentation software, participants prepare a presentation, addressing a specific cybersecurity issue, to a group of hypothetical corporate board members.

Data Science and Analytics
Participants conduct research on an annual theme or topic, collect data, and document their research in a supporting portfolio and a display. Participants implement a variety of methods to find connections between data, and gain insightful knowledge about a particular issue. Using analytics, participants assess collected data to make predictions and informed decisions. Semifinalist teams report for a timed, onsite challenge in which they must review specific data sets, provide insights, make predictions, and present their findings.

Digital Photography
Participants produce a digital portfolio addressing an annual theme. Semifinalists participate in a timed challenge and demonstrate competency their knowledge of digital photography in a presentation/interview.

Competitive Event Overviews – Middle School

Dragster
Participants design and produce a race-worthy CO2-powered dragster according to stated specifications, using only specified materials.

Electrical Applications
Participants take a written test on basic electrical and electronic theory. Semifinalists assemble a specific circuit from a schematic diagram using their own kit, make required electrical measurements, and explain their solution during an interview.

Essays on Technology
Participants conduct research on specified subtopics of a broader technological area and, using the knowledge and resources gained through that research, write a comprehensive essay on one subtopic that is designated onsite.

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

Forensic Technology
Participants take a written test of basic forensic science theory to qualify as semifinalists. Semifinalists participate in a skills demonstration onsite.

Foundations of Information Technology (FIT)
Participants complete an examination covering essential IT skills and knowledge needed to perform tasks commonly performed by all levels of IT professionals.

Inventions and Innovations
Participants investigate and determine the need for an invention or innovation of a device, system, or process, and brainstorm ideas for a possible solution. Teams prepare an interactive display and model/prototype. Semifinalists present to a panel of judges (who act as venture capitalist investors) to persuade the panel to invest in their invention/innovation.

Junior Solar Sprint (JSS)
Participants apply STEM concepts, creativity, teamwork, and problem-solving skills as they design, construct, and race a solar-powered model car. Learn more about JSS, then register on Cvent to begin your JSS journey.

Leadership Strategies
Participants demonstrate leadership and team skills by preparing a presentation based on a selected challenge the officers of a TSA chapter might encounter.

Mass Production
Participants manufacture a marketable product addressing the annual theme. Teams document their design processes in a portfolio, including the duplication capability in the creation of three (3) prototypes. Semifinalists demonstrate the functionality of one (1) prototype.

Mechanical Engineering
Participants design and build a mechanical device to solve the problem statement for the identified theme. Teams identify and research an engineering process and construct a mechanical system. Semifinalists participate in a presentation/interview.

Medical Technology
Participants conduct research on a contemporary medical technology issue of their choosing, document their research within a display, and design a prototype depicting a medical technology solution. Semifinalists participate in a presentation.

Microcontroller Design
Participants develop a working digital device (product) with real-world applications. Through a product demonstration and documentation, the team demonstrates knowledge of microcontroller programming, simple circuitry, and product design and marketing. The project should have educational and social value, and conform to the theme for the year. Semifinalists demonstrate and promote their work in a presentation.

Off the Grid

Competitive Event Overviews – Middle School

Participants conduct research on a sustainable architectural design for a home in a country of the team's choosing (other than their home country), and document their findings in a display and a model. The model can be of the home designed by the team, or of a specific aspect of their design. Semifinalist teams give a presentation and are interviewed about their design.

Prepared Speech
Participants deliver a speech that reflects the theme of the current year's National TSA Conference.

Problem Solving
Participants use problem-solving skills to develop a finite solution to a problem provided onsite.

Promotional Marketing
Participants create a portfolio of marketing tools. Semifinalists work creatively under constraints to design a solution to a problem given onsite.

STEM Animation
Participants use computer graphics tools and design processes to communicate, inform, analyze, and/or illustrate a topic, idea, subject, or concept that focuses on one (1) or more of the following areas: science, technology, engineering, or mathematics. Semifinalists participate in an onsite presentation.

Structural Engineering
Participants apply the principles of structural design and engineering through basic research, design, construction, and destructive testing to determine the design efficiency of a structure.

System Control Technology
Participants use a team approach to develop a computer-controlled model solution to a given problem, typically one based on an industrial setting. Teams analyze the problem, build a computer-controlled mechanical model, program the model, explain the program and mechanical features of the model-solution, and leave instructions for judges to operate the device.

Tech Bowl
Participants demonstrate their knowledge of TSA and concepts addressed in the technology content standards by completing a written objective test. Semifinalist teams participate in a question/response, head-to-head competition.

Technical Design
Participants demonstrate their ability to use the technical design process to solve an engineering design problem onsite and present the team's solution in a portfolio at the conference.

VEX IQ Challenge
Participants collaborate on a robotics project that explores the relationship among STEM fields, culminating in a head-to-head game to test their robot's efficiency and productivity. Learn more.

Video Game Design
Participants develop build, and launch an E-rated, online game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing, and intellectually challenging. Semifinalist teams participate in an onsite interview to demonstrate the knowledge and expertise they gained during the development of the game.

Website Design
Participants design, build, and launch a website that features the team's ability to incorporate the elements of website design, graphic layout, and proper coding techniques. Semifinalists participate in an onsite conference interview, with an emphasis on web design as it pertains to their solution, to demonstrate the knowledge and expertise gained during the development of the website.