Middle School Themes and Problems

Biotechnology

Biotechnology that supports sustainable cosmetics packaging to reduce waste to landfills

Career Prep

Theme: Select a career from one (1) of the following:

- Bioenergy Technicians
- Data Architect
- Machine Learning Engineer
- Nurse Practitioner

Children's Stories

An interactive or pop-up book that focuses on making friends in-person

Coding

To prepare for MS Coding competition, teams should have knowledge of concepts (software development, computer science, and coding topics) that will be on the Coding written test. They also should be familiar and comfortable with using the Scratch programming language.

Scratch is a free visual programming language available from the MIT Media Lab (https://scratch.mit.edu/download). An offline version of the Scratch tool should be downloaded and available on each team's laptop.

Teams that advance to the semifinalist level, based on written test performance, will perform a challenge using the Scratch programming language. Semifinalist teams will receive the challenge on site and will have two hours to complete it. (PLEASE NOTE: Semifinalist teams MUST have a version of this program available for offline use, as there will be no Internet access available during the semifinalist level of the competition.)

Examples of the types of challenges students may be asked to complete can be found at this link: https://scratch.mit.edu/starter-projects

Challenging Technology Issues

Topics:
- Genetic Testing and Counseling
- Animal Testing for Scientific Research
- The Use of Drones for Surveillance
- Privatization of Space Travel
- Nanotechnology in Consumer Goods

Cybersecurity

Problem Statement: Byte Inc.'s Internet of things and Bluetooth are acting strangely on devices in the company's network. Address the potential cause and propose a solution.

Data Science and Analytics

Determine the potential "movie success" of a fictitious feature film based on different public metrics, such as, but not limited to box office revenue, date of release, movie genre (selected by the team), movie production budget, and more.

Digital Photography

Students will take four photographs that fit the theme "Through the Eye of an Animal."

Dragster

Address weights and lengths only; there are no special design challenges.

Essays on Technology

Topic: Reducing our impact on the planet.

Subtopics:

- Reducing microplastics in our oceans
- Reducing forever chemicals in soil
- Reducing energy consumption for cooling in residential and commercial buildings as temperatures rise

Forensic Technology

Be familiar with, and be able to demonstrate, the following forensic concepts:

1. Tool mark identification
2. Hair and fiber analysis
3. Forensic biometrics

Inventions and Innovations

Create a product that enhances the daily productivity of a middle school student.

Mass Production

Pet supply storage tower

Mechanical Engineering

Problem Statement: A vehicle must go forward at least ten (10) feet, then reverse to a full stop at seven (7) feet from the original starting line.

The floor surface for the 2025 National TSA Conference will be convention center concrete. The floor surfaces for state conferences may vary.

Medical Technology

Medical Drugs and Genetics: Why do some people respond to medicines differently than others?

Microcontroller Design

Interactive gift box

Off the Grid

Design a home for a family of four (4) in a country (of your choice) in which a boreal forest (taiga) biome is found. The house must be designed for an area that does not have access to a power grid. In addition, the house must include a renewable energy source, one (1) agricultural system, and must solve one (1) problem that is specific to the area.

Prepared Speech

2025 National Conference Theme: Tune into Technology

Promotional Marketing

Charitable and service organizations are the backbone of our communities. A group called "Students Helping Grandparents" has contacted your chapter advisor about your chapter hosting an event at a public library, during which chapter members will lead focus group discussions with senior citizens. The topic for the focus groups will be helping senior citizens understand and avoid online cybercrime. The event is Tuesday May 27, 2025, from 4:00 PM – 6:00 PM.

Printable: Design a tri-fold brochure.
Wearable: Design a hat that can be given to participants.
Digital Signage: Create an auto-advancing slide presentation that is no longer than two (2) minutes in length.

STEM Animation

Robotics in automobile manufacturing

2025 Middle School Themes and Problems

Structural Engineering

Design Brief

Verification Form

 BACKGROUND The Parthenon in Centennial Park (Nashville, Tennessee) is a full-scale replica of the original Parthenon in Athens, Greece. The roof of the Parthenon is supported by a series of columns. The 2025 National TSA Conference will be in Nashville. The design brief for 2025 is to design a pair of two (2) balsa tower structures that will support the greatest load possible using the least materials. The solutions must transfer the load from the architrave to the base as efficiently as possible.

Vlogging

Topic: Setting and achieving goals; the minimum number of audio pieces is four (4).

Website Design

Topic: Website for food preparation recipes

Challenge – Develop an original website with simple recipes for young cooks (MS and HS age). It should have an interactive element that will ask a few questions to direct the user to the desired ingredients and recipe.