

Middle School Themes and Problems

Audio Podcasting

Theme: Students create an audio podcast reviewing/promoting a vacation destination.

Biotechnology

Theme: Students research and report on biotechnology that develops biofuels as an alternative to fossil fuels, helping to reduce pollution and combat climate change.

Career Prep

Theme: Choose a career from the Career Clusters Energy & Natural Resources category within one of the following subclusters:

- Resource Extraction
- Conservation & Land Management
- Ecological Research & Development
- Clean & Alternative Energy
- Environmental Protection
- Utilities

Challenging Technology Issues

Topics:

- Artificial Intelligence and Automation in the Workplace
- Cloning to Generate Human Organs
- Utilizing Lab-Grown Meat as a Substantiative Agricultural Practice
- Banning Gas-Powered Cars by 2035
- Human Microchip Implants for Medical Records

Children's Stories

Theme: Rhyming or Repetitive Text used to develop language development and memory in early readers.

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>

Construction Challenge

Theme: Your team has been tasked to design a playground appropriate for elementary school students (kindergarten through fifth grade). The playground should accommodate 50-60 students and be American Disabilities Act (ADA) compliant. The playground should have a minimum of three (3) distinct zones for students. Describe the materials your team will use and how they complement the local environment of the playground.

Cybersecurity

Problem Statement: MakerForge Supply Inc. is an online retailer of makerspace supplies for consumers. Previously, the company offered website chat support on their website for customers seeking answers to their questions about orders, returns, etc. The company recently deployed an artificial intelligence (AI) chatbot to answer customer's questions as a first-step basis – prior to connecting customers with a MakerForge customer service agent. Now the company is receiving reports that the AI chatbot is exposing customer information inappropriately and providing invalid responses. Address the potential causes and propose solutions for securing and managing the AI chatbot.

Data Science and Analytics

Data Set – [Transportation Details](#)

Topic: Using data from the U.S. Census Bureau's American Community Survey (<https://www.census.gov/topics/employment/commuting.html>), explore how people travel to work across the country. Look at key characteristics provided in the data set. Based on your analysis, create a set of data-driven criteria that could help predict how someone might commute to work. Support your criteria with evidence from the data.

Digital Photography

Theme: "Reflections": Members will take four photos that fit the theme of "reflections," such as water, mirrors, glass, etc.

Dragster

No theme for 2026, see official rules for specifications

Forensic Technology

Skills or Techniques

- Document Analysis: Forgery & Counterfeiting
- Trace Evidence: Glass & Paint
- Impression Analysis

Mass Production

Theme: Hobby Accessory

Mechanical Engineering

Design Challenge

Medical Technology

Theme: Musculoskeletal Conditions & Modern Technologies: Teams will select a musculoskeletal condition and outline it in the display. Then, teams will select modern medical technology that will be highlighted in an informational pamphlet and multimedia video.

Microcontroller Design

Theme: Musical Instrument

Off the Grid

Design Brief: Water Collection in Kenya

Family Overview: Maya and her family live in a rural village in Kenya. The family consists of Maya (the mother), her husband, and three children. They live in a small, single-story dwelling home made from mud bricks, with a thatched roof. The house has two bedrooms, a living room, and a small kitchen. The family has limited access to running water, and the only available water source is a small, seasonal river a 30-minute walk away. During the dry season, this river often dries up, and Maya must buy water from a nearby vendor; this can be expensive and unreliable.

Challenge: Maya's family needs a sustainable off-grid solution to collect and store water. The current system involves carrying water from the river during the rainy season and relying on expensive water deliveries during the dry season. Your task is to optimize the family's water collection and storage system, using natural resources like rainwater and local materials.

Requirements:

- The system must provide enough clean water for the family's daily needs, including drinking, cooking, and bathing.

- The system should make use of rainwater harvesting to reduce reliance on external water sources.
- The water storage system must be designed to handle both the rainy season and the dry season.
- The system should include a basic filtration solution to ensure the water is safe for drinking.
- The design must be cost-effective and use local materials when possible.

Budget: Your team has a budget of \$1,500 to develop and implement the water collection and storage system. This budget must cover materials for rainwater collection, filtration, storage tanks, and installation.

Prepared Speech

2026 National Conference Theme: "Unity Through Community"

Promotional Marketing

Theme: Your TSA chapter is hosting a family-friendly game night to raise funds to cover costs for attendance at upcoming conferences. The event will include board games, trivia rounds, and student-led challenges.

For the competition, participants must use the following information:

Name of event: "Game on for Good: TSA Fundraising Game Night"

Date/time of event: August 15, 2026, 6:00-9:00 PM

School: Eastwood Harbor Middle School TSA

School mascot: Hawk

Address: 92 Harborline Ave., Eastwood Harbor, MD 21457

- **Printable:** Promotional graphic to be used for social media promotion of the event
- **Wearable:** Participant's choice of a wearable design
- **Digital Signage:** Auto-advancing slides with event schedule and donation goals

Robotics

Theme: Check back soon

STEM Animation

Theme: Smart Cities: Technology in Urban Design

Structural Engineering

[Problem Statement](#)

[Verification Form](#)

Website Design

Design Brief: Community Story

Challenge: Develop a website that captures the essence of your local community and shares stories, history, or significant events that have shaped your community. The website should include an interactive element (e.g., timeline, map, etc.) that the user can interact with to understand the history or stories of your community. According to the official rules, do not include school or chapter name.