

# Middle School Themes and Problems



## BIOTECHNOLOGY

**Theme:** 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

## 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

## CHILDREN'S STORIES

**Theme:** 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 ([scratch.mit.edu/download](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: [scratch.mit.edu/starter-projects](https://scratch.mit.edu/starter-projects)

## 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

**Topic:** 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

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

## DRAGSTER

No special design requirements for 2023-2024.

## 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

# Middle School Themes and Problems

(continued)



## 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

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

## MASS PRODUCTION

**Theme:** 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

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

## MICROCONTROLLER DESIGN

**Theme:** Interactive gift box

## OFF THE GRID

**Design Brief:** 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 In To Technology

## PROMOTIONAL MARKETING

**Theme:** 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

**Theme:** Robotics in automobile manufacturing

## STRUCTURAL ENGINEERING

- [Design Brief](#)
- [Verification Form](#)

## VLOGGING

**Topic:** Setting and achieving goals

**Minimum number of videos:** 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.