

New York State Mathematics, Science, and Technology Standards

Grades 5-8

As Addressed by Challenger Learning Center's

e-Mission: Space Station Alpha



This e-Mission™ addresses the following New York state mathematics, science, and technology standards:

- Actively participate in scientific explorations and use the cognitive and manipulative skills associated with the formulation of scientific explanations.
- Are introduced to scientific topics that have been highlighted by current events.
- Are offered science- and technology-related problems as meaningful investigations.
- Develop meaning through active involvement.

Standard 1: Analysis, Inquiry, and Design Mathematical Analysis

- Use inductive reasoning to construct, evaluate, and validate conjectures and arguments, recognizing that patterns and relationships can assist in explaining and extending mathematical phenomena.
- Apply mathematical knowledge to solve real-world problems and problems that arise from the investigation of mathematical ideas, using representations such as pictures, charts, and tables.

Scientific Inquiry

- Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.
- Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.

Standard 2: Information Systems

- Use a range of equipment and software to integrate several forms of information in order to create good quality audio, video, graphic, and text-based presentations.
- Students access needed information from electronic data bases and online telecommunication services.

Standard 3: Mathematics

- Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.
- Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.
- Add, subtract, multiply, and divide fractions, decimals, and integers.

- Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.
- Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.
- Describe and represent patterns and functional relationships using tables, charts and graphs, algebraic expressions, rules, and verbal descriptions.

Standard 4: Science

- The Earth and celestial phenomena can be described by principles of relative motion and perspective.
- Energy exists in many forms, and when these forms change, energy is conserved.
- Describe how living things, including humans, depend upon the living and nonliving environment for their survival.

Standard 5: Technology

- Computers, as tools for design, modeling, information processing, communication, and system control, have greatly increased human productivity and knowledge.
- Technology has been the driving force in the evolution of society from an agricultural to an industrial to an information base.

Standard 6: Interconnectedness

- Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.
- Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.
- Identifying patterns of change is necessary for making predictions about future behavior and conditions.
- In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.

Standard 7: Interdisciplinary Problem Solving

- The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.
- Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.
- Working effectively: Contributing to the work of a brainstorming group, laboratory partnership, cooperative learning group, or project team; planning procedures; identifying

and managing responsibilities of team members; and staying on task, whether working alone or as part of a group.

- Gathering and processing information: Accessing information from printed media, electronic data bases, and community resources and using the information to develop a definition of the problem and to research possible solutions.
- Generating and analyzing ideas: Developing ideas for proposed solutions, investigating ideas, collecting data, and showing relationships and patterns in the data.