

Electrical Circuits

Alignment to

New York State Learning Standards for Mathematics, Science, and Technology

Elementary Level Science Core Curriculum

Standard 6 - Interconnectedness: Common Themes

Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes and other areas of learning.

Key Idea 1: Systems Thinking

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.

Key Idea 2: Models

Models are simplified representations of objects, structures, or systems, used in analysis, explanation, or design.

Key Idea 5: Patterns of Change

Identifying patterns of change is necessary for making predictions about future behavior and conditions.

Key Idea 6: Optimization

In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.

| <u>Major Understandings:</u> | <u>Major Understandings:</u> | <u>Major Understandings:</u> | <u>Major Understandings:</u> |
|--|--|--|--|
| <ul style="list-style-type: none"> • Observe and describe interactions among components of simple systems • Identify common things that can be considered to be systems (e.g., a plant, a transportation system, human beings) | <ul style="list-style-type: none"> • Analyze, construct, and operate models in order to discover attributes of the real thing • Discover that a model of something is different from the real thing but can be used to study the real thing • Use different types of models, such as graphs, sketches, diagrams, and maps, to represent various aspects of the real world | <ul style="list-style-type: none"> • Use simple instruments to measure such quantities as distance, size, and weight and look for patterns in the data • Analyze data by making tables and graphs and looking for patterns of change | <ul style="list-style-type: none"> • Choose the best alternative of a set of solutions under given constraints • Explain the criteria used in selecting a solution orally and in writing |

Standard 7 - Interdisciplinary Problem Solving

Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

Key Idea 1: Connections

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.

Key Idea 2: Strategies

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.

| <u>Major Understandings:</u> | <u>Major Understandings:</u> |
|---|--|
| <ul style="list-style-type: none"> • Analyze science/technology/society problems and issues that affect their home, school, or community, and carry out a remedial course of action • Make informed consumer decisions by applying knowledge about the attributes of particular products and making cost/benefit trade-offs to arrive at an optimal choice • Design solutions to problems involving a familiar and real context, investigate related science concepts to determine the solution, and use mathematics to model, quantify, measure, and compute • Observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions | <ul style="list-style-type: none"> • Work effectively • Gather and process information • Generate and analyze ideas • Realize ideas • Present Results |