

## **Grade 5 Science-Technology/Engineering**

### **Life Science**

#### **Life Cycles and Heredity**

*Students will be able to:*

- Identify common characteristics of the life cycles of animals and plants.
- Relate decomposition to the life cycle.
- Identify the stages of the life cycle of the frog.
- Explain how metamorphosis occurs in the life cycle of the frog.
- Compare the life cycle of a frog to other animals.
- Differentiate between inherited traits and those that result from interactions with the environment.

#### **Organisms and Their Environment**

*Students will be able to:*

- Explain how environment has changed the characteristics of present animals from their prehistoric ancestors.
- Relate habitats to an ecosystem.
- Describe responses how organisms respond to internal or external stimuli.
- Design an experiment to study the responses of a living thing to stimuli (hypotheses, observation, data collection, and conclusion).
- Describe the stimuli responses exhibited by plants such as heliotropism and geotropism.
- Explain how loss of habitat results in the endangerment of species; give examples of animals that are endangered.
- Distinguish between instinctive (turtles burying their eggs) and learned behaviors (humans building fires for warmth).

### **Earth/Space Science**

#### **Structure of the Earth System**

*Students will be able to:*

- Identify and label the layers of the earth.
- Identify the three categories of rocks and explain the process involved in their formation; differentiate the characteristics of each category
- Explain how different weather conditions interact to produce various types of precipitation.
- Relate the water cycle to changes in the earth's surface.

#### **Earth's History**

*Students will be able to:*

- Discuss and describe the effects of volcanic eruptions.

- Discuss and describe the effects of earthquakes.

### **Earth in the Solar System**

*Students will be able to:*

- Explain the normal, predictable motions of the earth and its moon in the solar system, and how these motions effect the day, year, and phases of the moon.

## **Physical Science**

### **Physics – Energy**

*Students will be able to:*

- Compare and contrast the different forms of energy.
- Explain how different forms of energy cause motion or change.
- Define friction and relate it to force.
- Determine the friction between sliders and surfaces.
- Determine the amount of friction between surfaces with a spring scale.
- Predict the amount of effort needed to move a load on a surface.
- Identify different forms of energy and explain how each form can be converted into another usable form of energy.
- Explain the causes of static electricity and predict when static electricity will occur; discuss.
- Build simple circuits using combinations of battery, bulb, wire, buzzer, motor, and switches.
- Identify materials as conductors or nonconductors.

## **Technology/Engineering**

### **Materials and Tools**

*Students will be able to:*

- Identify the materials used to build an electromagnet.
- Construct and test a simple electromagnet using a nail, insulated wire, and a 6-volt battery.

### **Engineering Design Process**

*Students will be able to:*

- Discuss the need to maintain reasonable temperatures within a house.
- Develop designs for a house that will maintain a comfortable temperature in an extreme temperature environment, (arctic, equatorial, or temperate {Massachusetts}).
- Identify the factors that engineers/builders must consider when they design houses in different climates.
- Discuss how engineers use animal movements as a basis for their won designs of moving objects, (how birds fly to airplanes {wings}; how aquatic animals swim to boats {of propulsion and shape}).