

**-Science-**  
(5<sup>th</sup> Grade)

**Physical Science**

**Energy Transfer and Transformation**

**What is the role of energy in our world?**

- **Sound and light are forms of energy**

Initial Understanding

Understand that sound is a form of energy that is produced by vibrations

Understand that light is a form of energy that travels in a straight line

Identify the characteristics of light

Identify the characteristics of sound

Show an understanding that colors observed are a result of reflection of light waves that is not absorbed by the object

Developing an Interpretation

Describe how pitch and loudness of sound are produced by vibrating objects

Describe how light is absorbed and/or reflected by different surfaces

Compare and contrast natural and/or artificial light sources

Demonstrate that the shadow is a representation of a specific object

Making Connections

Explain how sound is transmitted, reflected and/or absorbed by different materials

Explain how light is absorbed and/or reflected by different surfaces

Observe that the Sun is the most important source of light

Observe how the shadow cast by an object changes when the position of the light source changes

Critical Stance

Explain how sound is a form of energy that is produced by the vibration of objects and is transmitted by vibration of air and objects

Explain how the human ear is able to make meaning out of the vibrations it receives

Explain how light is a form of energy that travels in a straight line and can be reflected by a mirror, refracted by a lens, or absorbed by objects

Explain that light reflected from objects and seen through the human eyes has specific colors due to receptors in the eyes

**Life Science**

**Structure and Function**

**How are organisms structured to ensure efficiency and survival?**

- **Perceiving and responding to information about the environment is critical to the survival of organisms**

Initial Understanding

Identify the sense organs: eyes, ears, smell, taste, touch

Being to explore the sense organs and their functions

Developing an Interpretation

Understand that the senses correspond to specific body parts

Describe how light absorption and reflection allow one to see the shapes and colors of objects

Recognize the structure and function of the human senses and the signals they perceive

Making Connections

Discover that people have made devices that enhance the senses: magnifiers, hand lenses, hearing aids, voice activated computer, etc.

Compare and contrast the various sense organs with its survival attribute

Critical Stance

Recognize that the sense organs perceive stimuli from the environment and send signals to the brain through the nervous system

Recognize that people and other animals have senses that help them to survive in their environment

Understand that man is the only animal who is able to enhance his senses using artificial mechanisms

## **Earth Science**

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

#### **How does the position of Earth in the solar system affect conditions on our planet?**

- **Most objects in the solar system are in a regular and predictable motion**

#### Initial Understanding

Describe the characteristics of the Sun as compared to the characteristics of the Moon and Earth  
Recognize that the Moon travels around the Earth and that together they travel around the Sun

#### Developing an Interpretation

Recognize that the positions of the Earth and moon relative to the sun explain the cycles of day and night  
Understand that the monthly moon phases are dependent upon the position of the Earth and moon relative to the sun

#### Making Connections

Illustrate the relationship that shows the cause of day and night based on the rotation of Earth on its axis

#### Critical Stance

Explain, draw and demonstrate the position and relative size of the Sun, the Moon and the Earth as they pertain to our day and night cycles  
Demonstrate their position during eclipses, tidal surges and seasonal changes

### **Science and Technology in Society**

#### **How do science and technology affect the quality of our lives?**

- **Humans have the capacity to build and use tools to advance the quality of their lives**

#### Initial Understanding

Compare and contrast the structure of the human eye with those of the camera lens

#### Developing an Interpretation

Describe the uses of different instruments, such as eye glasses, magnifiers, microscopes, periscopes, telescopes, to enhance our vision

#### Making Connections

Advances in technology allow individuals to acquire new information about the existing world

#### Critical Stance

Draw conclusions on how cutting edge technology combined with scientific fortitude enables continual human advancements