

| Physical Science Essentials | | Scope and Sequence |
|-----------------------------|-------------------------|--|
| Unit | Lesson | Objectives |
| Energy and Motion | | |
| | Introduction to Motion | |
| | | Describe the position of an object. |
| | | Explain how an object's motion is relative to a reference point or frame. |
| | | Distinguish between distance and displacement. |
| | Introduction to Forces | |
| | | Describe the concept of force. |
| | | Explain how to determine the net force on an object. |
| | | Distinguish between balanced and unbalanced forces and their effect on motion. |
| | Newton's Laws of Motion | |
| | | Describe Newton's first law of motion and how it relates to inertia. |
| | | Use Newton's second law of motion to calculate force, mass, and acceleration. |
| | | Explain Newton's third law of motion and how it relates to action and reaction forces. |
| | | Identify applications of Newton's three laws of motion. |
| | Introduction to Energy | |
| | | Define energy. |
| | | Explain how energy and work are related. |
| | | Identify and describe the different forms of energy. |
| | Energy Transformations | |
| | | Explain how energy changes form. |
| | | Identify examples of energy transformations. |
| | | Summarize the law of conservation of energy. |

Unit Lesson**Objectives**

Unit Test

Waves

Introduction to Waves

Define waves and explain how they carry energy.

Distinguish between mechanical waves and electromagnetic waves.

Compare and contrast transverse waves and longitudinal waves.

Properties of Waves

Describe how a wave's amplitude is related to the energy the wave carries.

Describe the relationship between the frequency and wavelength of a wave.

Calculate the speed of a transverse wave.

Explain why waves travel at different speeds.

Use mathematical representations to show relationships among the frequency, wavelength, and speed of waves traveling in various media.

Wave Interactions

Explain what happens when waves interact.

Describe how a wave's direction is changed by reflection, refraction, and diffraction.

Differentiate between constructive and destructive interference.

Properties of Sound

Describe the factors that determine the loudness of a sound.

Identify the factors that affect the pitch of a sound.

Describe resonance and sound quality.

Explain the Doppler effect.

Properties of Light

Unit Lesson**Objectives**

Describe the wave and particle models of light.

Explain what happens when light interacts with objects.

Recognize what determines the color of an object.

Unit Test

Elements and the Periodic Table

Atomic Theory

Describe the development of the modern model of the atom.

Compare the models of the atom put forth by Dalton, Thomson, Rutherford, and Bohr.

Atoms

Describe the parts of an atom.

Identify the masses, locations, and charges of protons, neutrons, and electrons.

Elements

Examine the properties of an element.

Describe what an isotope is and explain how isotopes of the same element are different.

Explain how ions form.

Periodic Table

Examine the history of the periodic table.

Describe the organization of the periodic table.

Determine an element's symbol, atomic number, and mass number from the periodic table.

Compounds

Describe the defining characteristics of a compound.

Explain how chemical formulas represent compounds.

Unit Lesson**Objectives**

Determine the number of atoms of each element in a chemical formula.

Use models to visualize the chemical structure of a compound.

Unit Test

Physical and Chemical Reactions

Introduction to Chemical Reactions

Recognize that a chemical reaction is a chemical change.

Describe the evidence that shows that a chemical reaction has occurred.

Explain the difference between an endothermic and an exothermic reaction.

Describing Chemical Reactions

Identify the parts of a chemical equation.

Describe the law of conservation of mass.

Explain how mass is conserved in chemical equations.

Types of Chemical Reactions

Distinguish among the types of chemical reactions.

Predict the product of each type of chemical reaction.

Mixtures

Distinguish between substances and mixtures.

Identify the properties of a mixture.

Compare and contrast types of mixtures.

Solubility

Unit Lesson**Objectives**

Define solubility and recognize that substances have different solubilities.

Describe types of solutions.

Identify factors that affect the solubility of a substance.

Describe factors that affect the rate of dissolving.

Unit Test

Properties of Matter

Introduction to Matter

Explain what makes up matter.

Describe how to measure mass and volume.

Differentiate between mass and weight.

Physical Properties

Describe and give examples of physical properties of matter.

Explain what happens during a physical change.

Identify examples of physical changes.

Explain how and why matter is conserved during a physical change.

States of Matter

Describe the arrangement and motion of atoms in the different states of matter.

Discriminate the characteristics of solids, liquids, and gases.

Changes of State

Describe what happens during the different changes of state.

Explain how energy is related to changes of state.

Chemical Properties

Physical Science Essentials**Scope and Sequence****Unit Lesson****Objectives**

Describe and give examples of chemical properties of matter.

Explain what happens during a chemical change.

Identify examples of chemical changes.

Differentiate between physical and chemical changes

Unit Test

Cumulative Exam

Cumulative Exam Review

Cumulative Exam