

SCIENCE Eighth Grade

VALUES AND ATTITUDES	The student will: Understand that life is adaptable, diverse and complex. Understand that the Sun is the source of energy for most living things. Realize that life is classified by structure and function. Understand that our nurturing Earth is a reflection of God's love for His creations Understand that the Earth is dynamic and resilient, yet fragile and finite Appreciate the order of the physical world. Understand some of the connections between elements of the physical world. Use math sentences to describe observations. Understand that careful collection and comparison of information is important in advancing science. Realize that limiting the scope of initial investigations is important.
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STANDARD A Life Science

OBJECTIVES
<p><u>The following objectives are recommended for Grade 8.</u></p> <ul style="list-style-type: none">• Describe how and why ecosystems change over time.• List six major biomes and describe their ecosystems and climates.• Evaluate data related to human population growth, along with problems and solutions.• Discuss ecosystem resources are finite.• Explain the affect on organisms when the habitat changes.• Solve problems illustrating population dynamics by using charts and graphs.• Analyze practices that affect the use, availability, and management of natural resources.• Consider how the changing conditions on earth during geological time caused organisms to evolve, migrate, or become extinct.

STANDARD B Earth Science

OBJECTIVES
<p><u>The following topics are recommended for 8th grade.</u></p> <p>Geology, Meteorology, Astronomy, and Oceanography</p> <ul style="list-style-type: none">• Explain the hydrosphere including composition, properties, and structure.• Analyze hydrosphere data over time to predict the health of a water system.• Assess and discuss human impact on water quality.• Evaluate the effects on local waters of point and non-point sources of pollution.• Describe ocean features at different depths.• Describe the forces that cause tides, currents and waves.• Examine nutrients, minerals, dissolved gases, and life forms found in the Earth's oceans.

- Identify major land and water features on earth's crust.
- Describe how the features of earth's crust have changed over time.
- Identify the forces which acted to cause changes in earth's land and water features.
- Identify major divisions or eras of geologic time and the life forms found in each.
- Discuss how rocks, fossils, and ice cores record Earth's geologic history and the evolution of life.
- Examine evidence that the movement of continents has had significant global impact on the distribution of living things, and has had significant impact on major geological events.

STANDARD C Physical Science

OBJECTIVES

The following objectives are recommended for 8th grade.

- Analyze the nature of balanced and unbalanced forces.
- Investigate gravity as a universal force.
- Distinguish between *weight* and *mass*.
- Demonstrate how simple machines can change force.
- Investigate the mechanical advantage and efficiency of simple machines.
- Establish how the force of friction retards motion.
- Understand that an object's motion is always judged relative to some other object or point.
- Describe and measure quantities that characterize moving objects and their interactions within a system.
- Recognize that formulas used in solving problems in physical science are sentences written in symbolic language in formulas for concepts such as speed, acceleration, and mechanical advantage.
- Apply Newton's Laws of Motion.
- Investigate the basic properties and the relationship of electricity and magnetism as universal forces.
- Analyze the cyclic nature of energy transformation in relationship to electricity.

STRAND D Nature of Science

OBJECTIVES

Process skills

- Develop habits of careful observation.
- Select and use appropriate tools and technology to perform tests, collect data, and display data.
- Develop a hypothesis by evaluating observations and known information.
- Identify variables in a data table.
- Construct a data table and record changes in values of two related variables obtained during an investigation.
- Identify graphs as a form of data display and communication.
- Understand why scientists use graphs.
- Interpret data from a bar, circle and line graph and decide which type of graph best displays given data.
- Identify the elements required to construct a line graph from data table obtained in an investigation.

- Understand that measurement is a quantitative observation.
- Relate past experience to a current problem.
- Communicate steps and results from investigation in written reports and oral presentations.
- Recognize different types of questions.
- Recognize whether evidence is consistent with a proposed explanation.
- Develop habits of questioning information that lacks supporting data.
- Write hypothesis and conclusion statements as part of a scientific investigation.
- Write direction statements as part of developing a scientific investigation.
- Write simple sentences and paragraphs describing observations made during investigations using appropriate vocabulary.
- Identify and use chemical symbols.
- Use a variety of print and electronic resources to collect information and evidence for research.
- Compare SI (metric) and English measurements.
- Use mathematical formulas to describe a scientific principle.