SAU 15
Auburn, Candia, Hooksett
Grade 8
POWER STANDARDS
Science

EARTH

The Rock Cycle and Earth Forces

- **Students can identify major Earth processes**
  - **S:ESS1:8:2.2** Use geological evidence provided to support the idea that Earth's crust/lithosphere is composed of plates that move
  - **S:ESS1:8:3.1** Explain how fossils found in sedimentary rock can be used to support the theories of Earth's evolution over geologic time; and describe how the folding, breaking, and uplifting of the layers affects the evidence
  - **S:ESS1:8:4.1** Describe how catastrophic changes that have taken place on the Earth's surface can be revealed by satellite images
  - **S:ESS1:8:5.1** Explain that the Earth's crust is divided into plates which move at extremely slow rates in response to movements in the mantle
  - **S:ESS1:8:5.2** Explain how Earth events, abruptly and over time, can bring about changes on Earth's surface (e.g., landforms, ocean floor, rock features, climate)
  - **S:ESS1:8:6.1** Describe the processes of the rock cycle.
  - **S:ESS1:8:6.2** Explain that sedimentary, igneous, and metamorphic rocks contain evidence of the minerals, temperatures, and forces that created them.
  - **S:ESS1:8:6.3** Explain how sediments of sand and smaller particles, which may contain the remains of organisms, are gradually buried and cemented together by dissolved minerals to form solid rock
  - **S:ESS1:8:6.4** Using data about a rock's physical characteristics, make and support an inference about the rock's history and connection to the rock cycle
  - **S:ESS4:8:3.3** Explain how technologies can reduce the environmental impact of natural disasters.

PHYSICAL

Chemical Interactions

- **Students can compare and contrast atoms to molecules to compounds**
  - **S:PS1:8:1.4** Differentiate between a mixture and a pure substance
  - **S:PS1:8:1.5** Identify methods used to separate mixtures, such as boiling, filtering, chromatography and screening
  - **S:PS1:8:2.5** Given data about characteristic properties of matter (e.g., melting and boiling points, density, solubility), identify, compare, or classify different substances.
  - **S:PS2:8:1.1** Explain how substances react chemically with other substances to form new substances, known as compounds, and that in such recombinations, the properties of the new substances may be very different from those of the old.
  - **S:PS2:8:1.2** Identify factors that affect reaction rates, such as temperature, concentration and surface area; and explain that dissolving substances in liquids often accelerates reaction rates.
  - **S:PS2:8:1.3** Explain that oxidation involves combining oxygen with another substance, as in burning or rusting

Atoms to Compounds

- **Student will experiment with and make use of chemical interactions**
  - **S:PS1:8:1.1** Explain that atoms often combine to form a molecule or formula unit (crystal).
  - **S:PS1:8:1.2** Recognize that elements can combine in a variety of ways to form compounds.
  - **S:PS1:8:1.3** Differentiate between an atom and an molecule
  - **S:PS1:8:1.6** Collect data or use data provided to infer or predict that the total amount of mass in a closed system stays the same, regardless of how substances interact
  - **S:PS1:8:2.1** Differentiate between volume and mass and define density.
  - **S:PS1:8:2.2** Explain how different substances of equal volume usually have different weights
  - **S:PS1:8:2.3** Identify a molecule as the smallest part of a substance that retains its properties
  - **S:PS1:8:2.4** Investigate the relationships among mass, volume and density
  - **S:PS2:8:1.4** Explain that states of matter depend on the arrangement of the molecules and their motion
  - **S:PS4:8:1.1** Understand that design features, such as size shape, weight, and function, must be considered when designing new technology

LIFE

Cell Structure and Function

- **Students can explain the relationships between or among the structure and function of cells, tissues, organs, organ systems and organisms.**
  - **S:LS1:8:1.2** Describe or compare how different organisms have mechanisms that work in a coordinated way to obtain energy, grow, move, respond, provide defense, enable reproduction, or maintain internal balance (e.g., cells, tissues, organs and systems).
  - **S:LS1:8:2.1** Identify the functions of the human body's systems, including digestion, respiration, reproduction, circulation, excretion, movement, control and coordination and protection from disease; and describe how they interact with one another
  - **S:LS1:8:2.4** Explain relationships between or among the structure and function of the cells, tissues, organs, and organ systems in an organism
  - **S:LS2:8:2.1** Explain how food provides energy and materials for growth and repair of body parts
  - **S:LS2:8:3.1** Identify autotrophs as producers who may use photosynthesis, and describe this as the basis of the food web

Genetics

- **Students can recognize that the characteristics of an organism can be described in terms of a combination of traits.**
  - **S:LS1:8:3.7** Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring
  - **S:LS3:8:3.1** Recognize that hereditary information is contained in genes, which are located in the chromosomes of each cell; and explain that inherited traits can be determined by either one or many genes, and that a single gene can influence more than one trait, such as eye and hair color
  - **S:LS3:8:3.4** Recognize that humans are able to control some characteristics of plants and animals through selective breeding; and explain how this results in small differences between the parents and offspring, which can accumulate in successive generations so that decedents are very different from their ancestors
  - **S:LS3:8:3.5** Cite examples supporting the concept that certain traits of organisms may provide a survival advantage in a specific environment and therefore, an increased likelihood to produce offspring
  - **S:LS4:8:1.1** Recognize that unlike human beings, behavior in insects and many other species is determined almost entirely by biological inheritance
  - **S:LS4:8:1.2** Explain that organism's behavioral response is a reaction to internal or and environmental stimuli, and that these responses may be determined by heredity or from past experience
  - **S:LS4:8:1.3** Explain how all behavior is affected by both inheritance and experience
  - **S:LS4:8:3.2** Recognize that an organism can be described in terms of a combination of traits; and differentiate between inherited traits and those that result from interactions with the environment

Diseases

- **Students can explain the effects of diseases and the body's response to disease as a stimuli.**
  - **S:LS4:8:2.1** Recognize that disease in organisms can be caused by intrinsic failures of the system or infection from other organisms.
  - **S:LS4:8:2.2** Describe how viruses, bacteria, fungi, and parasites may affect the human body and provide examples of how they can interfere with normal body function.
  - **S:LS4:8:2.3** Describe the function of white blood cells and explain how they support the body's defense system.
  - **S:LS4:8:2.4** Use data and observations to support the concept that environmental or biological factors affect human body systems

HEALTH

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