5th Grade Idaho State Science Standards instructional Support				
Content Domain	**Performance Standard**	**Supporting Content**	**Science and Engineering Practice**	**Cross Cutting Concept**
Physical Science: Matter and its Interactions	**PS1-5-1.** Develop a model to describe that matter is made of particles too small to be seen.	**Matter is Made of Particles Too Small to be Seen** Matter of any type can be subdivided into particles that are too small to see; but, the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. • **Example**s could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, evaporating salt water. **Limit**: No need to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.	**Developing and Using Models** • Develop a model to describe a phenomenon that includes the idea that matter is made of particles too small to be seen. • The model should identify and describe relevant and causal relationships between bulk matter and tiny particles that cannot be seen and the behavior of a collection of many tiny particles and observations such as the Examples in Supporting Content.	**Scale, Proportion and Quantity** • Natural objects and phenomenon exist from the very small to the immensely large.
	PS1-5-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	**Effects of Heating/Cooling/Mixing Substances** Mass (weight) is conserved (not lost) when it changes form, even in transition in which it seems to vanish. No matter what reaction or change in properties occurs, the total weight of the substances does not change. • **Examples** of reactions or changes could include phase changes, dissolving, and mixing substances that form new substances. **Limit:** Mass and weight are not distinguished at this grade level.	**Using Mathematics and Computational Thinking** • Measure and graph quantities such as weight to address questions such as the difference between the total weight of substances before and after they are heated, cooled and/or mixed. • Describe changes in properties after heating, cooling, or mixing of substances. • Use measurements to describe evidence to address scientific questions about the conservation of mass.	**Scale, Proportion and Quantity** • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
	PS1-5-3. Make observations and measurements to identify materials based on their properties.	**Identify Materials Based on Properties** Measurements of a variety of properties can be used to identify materials. Identify different materials such as different powders, metals, minerals, and liquids by their properties. • **Example** properties could include color, hardness, reflectivity, melting point, boiling point, response to magnetic forces, conductivity, solubility, etc. **Limit:** Density not intended as an identifiable property. Mass and weight are not distinguished at this grade level.	**Planning and Carrying Out Investigations** • From an investigation plan, describe evidence that will be collected and how that evidence will provide data that will allow materials to be identified. • Make both qualitative and quantitative observations and measurements to produce evidence to identify materials based on their observable and measurable properties.	**Scale, Proportion and Quantity** • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
	PS1-5-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	**Results of Mixing Substances** When two or more different substances are mixed, a chemical reaction may occur and a new substance with different properties may be formed. • **Examples** of changing properties may include change in odor, change in color, change in temperature, etc.	**Planning and Carrying Out Investigations** • From an investigation plan, describe evidence that will be collected and how that evidence will provide data to determine if new substances were formed. • From an investigation plan, describe how data will be collected including the number of trials and appropriate controls. • Make both qualitative and quantitative observations and measurements to produce evidence about the idea that new substances are formed by mixing two or more substances.	**Cause and Effect** • Cause and effect relationships are routinely identified, tested, and used to explain change.

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Physical Science: Motion and Stability: Forces and Interactions	**PS2-5-1**. Support an argument that the gravitational force exerted by Earth on objects is directed down.	**Gravitational Force** The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planets center*. **Down* is a local description of the direction that points toward the center of the spherical Earth. **Limit**: Assessment does not include mathematical representation of gravitational force.	**Engaging in Argument from Evidence** • Identify a claim based on a phenomenon that includes the idea that gravity pulls things to the center of the Earth. • Identify, describe, evaluate, and critique multiple lines of evidence, data and/or models. • Use reasoning to connect relevant evidence to construct an argument that supports the claim.	**Cause and Effect** • Cause and effect relationships are routinely identified, tested, and used to explain change.
Physical Science: Energy	**PS3-5-1.** Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	**Energy in Food Came From the Sun** The energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. • **Examples** could include diagrams, and flow charts.	**Developing and Using Models** • Use models to describe a phenomenon that includes the idea that energy in animals' food was once energy from the sun. Models could include diagrams, and flow charts. • The model should identify and describe relevant and causal relationships between energy from the sun and animal's needs for energy.	**Energy and Matter** • Energy and matter can be transferred in various ways and between objects.

Content Domain	Performance Standard	Supporting Content	Science and Engineering Practice	Cross Cutting Concept
Life Science: **From** Molecules to Organisms: Structure and Function	**LS1-5-1.** Support an argument that plants get the materials they need for growth chiefly from air and water.	**Plants Get Material for Growth From Air and Water** Plants acquire their material for growth chiefly from air and water. • **Examples** could include how the mass of soil does not vary significantly as a plant grows, hydroponics, plants need water, but not soil to survive, etc.	**Engaging in Argument from Evidence** • Identify a claim based on a phenomenon including the idea that plants acquire the materials they need for growth chiefly from the air and water. • Describe, evaluate, and critique given evidence to support the claim. • Use reasoning to connect relevant evidence to construct an argument that supports the claim.	**Energy and Matter** • Matter is transported into, out of, and cycles within systems; the total weight of the substances does not change.
Life Science: Biological Evolution: Unity and Diversity	**LS2-5-1.** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	**Fossils Provide Evidence of Organisms & Environment** Some plants and animals that once lived are no longer alive but fossils provide information about those plants and animals and the environment in which they lived. • **Examples** of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct plants and animals. • **Examples** of data could include type, size, and distributions of fossil organisms. **Limit:** Include major fossil types and relative ages, but not identification of specific fossils or present plants and animals.	**Analyzing and Interpreting Data** • Use graphical displays to organize data such as plant and animal fossils, relative ages of fossils, and modern counterparts to fossils and where they live. • Identify and describe relationships in the data such as age of fossils, relationships between the fossils of organisms and the environments in which they lived, relationships between types of fossils and the current environments where similar organisms are found, current and past environments, and current living and fossil counterparts. • Interpret data, such as recognizing that fossils provide evidence of organisms that lived long ago but have become extinct, by interpreting where fossils are found and what those environments are like, fossilized plants and animals can be used to provide evidence that some environments look very different now than they did a long time ago.	**Scale, Proportion, and Quantity** • Observable phenomena exist from very short to very long time periods.
	LS2-5-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	**Variations and Advantages in Survival** Populations of animals are classified by their characteristics. Sometimes differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. • **Examples** of cause and effect relationships could be that plants have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration may be more likely to survive and therefore more likely to leave offspring.	**Constructing Explanations and Designing Solutions** • Articulate a statement that relates the given phenomenon to the idea that differences in characteristics between individuals of the same species provide advantages. • Identify, describe, and use evidence necessary to construct or support an explanation of the phenomenon. • Use reasoning to logically connect the evidence to support the explanation for the phenomenon such as cause and effect relationships that describe how variation in characteristics make it harder or easier for an animal to survive and reproduce.	**Cause and Effect** • Cause and effect relationships are routinely identified and used to explain change.
	LS2-5-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	**Organism Survival/Characteristics/Habitat** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. • **Examples** of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.	**Engaging in Argument from Evidence** • Identify a claim based on a phenomenon including the idea that in a particular habitat, some organisms can survive well, some can survive less well and some cannot survive at all. • Describe, evaluate, and critique evidence necessary to support the claim. • Use reasoning to connect relevant evidence to construct an argument that supports the claim.	**Cause and Effect** • Cause and effect relationships are routinely identified and used to explain change.

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	LS2-5-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	**Survival Relative to Environmental Changes** Populations live in a variety of habits and when an environment changes, the organisms in the environment are impacted, some positively and others negatively. When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. • **Examples** of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. • **Examples** of impacts to organisms could include adapting to the transformed environment, moving to new locations, or not surviving. **Limit:** Assessment limited to a single environmental change; not greenhouse effect or climate change.	**Engaging in Argument from Evidence** • Identify a claim about the merit of a given solution to a problem that is caused when the environment changes resulting in changes in the types of plants and animals that live there. • Describe evidence including how the solution meets the given criteria and constraints. • Use reasoning to describe, identify, evaluate, critique and connect relevant evidence to construct an argument that supports the claim.	**Systems and System Models** • A system can be described in terms of its components and their interactions.

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Earth and Space Science: Earth's Place in the Universe	**ESS1-5-1.** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.	**Apparent Brightness of Sun/Stars** The sun is a star, a natural body that gives off its own light, and appears larger and brighter than other stars because it is closer to Earth. Stars range greatly in their distance from Earth. **Limit:** Assessment is limited to relative distances; not sizes or other factors such as mass, age, or stage.	**Engaging in Argument from Evidence** • Identify a given claim based on a phenomenon including the idea that the apparent brightness of the sun and stars is due to their relative distance from Earth. • Use reasoning to describe, identify, evaluate, critique, and connect relevant evidence to construct an argument that supports the claim.	**Scale, Proportion and Quantity** • Natural objects exist from the very small to the immensely large.
	ESS1-5-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	**Shadows/Day/Night/Seasonal Appearance of Stars** The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. **Examples** orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. **Limit**: Assessment does not include causes of seasons.	**Analyzing and Interpreting Data** • Use graphical displays to organize data such as length and direction of shadows, duration of sunlight throughout the year, and presence or absence of selected stars during different times of the year. • Use the organized data to find and describe relationships within the datasets. • Use the organized data to find and describe relations ships among the datasets.	**Patterns** • Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena.
Earth and Space Science: Earth's Systems	**ESS2-5-1.** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	**Interaction of Geosphere/Biosphere/Hydrosphere/Atmosphere** Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans.) These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. • **Examples** could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system. **Limit**: Assessment is limited to the interactions of two systems at a time.	**Developing and Using Models** • Develop a model using a specific given example of a phenomenon that identifies the relevant components of two major Earth systems and describes how they interact. • Identify and describe relationships within and between the parts of the Earth systems used in the model. • Use the model to describe ways in which parts of the two systems interact to affect the Earth's surface materials and processes.	**Systems and System Models** • A system can be described in terms of its components and their interactions.
	ESS2-5-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	**Distribution of Water on Earth** Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. **Limit**: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps; not the atmosphere.	**Using Mathematics and Computational Thinking** • Graph data associated with the amount of fresh and salt water available on the Earth; individually and combined. • Use the graphed data to describe that the majority of water is found in oceans, most fresh water is in stored in glaciers or underground, and only a fraction is found in lakes, rivers, wetlands and the atmosphere.	**Scale, Proportion, and Quantity** • Standard units are used to measure and describe physical quantities such as weight and volume.
Earth and Space Science: Earth and Human Activity	**ESS3-5-1.** Support, obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	**Using Science Ideas to Protect the Earth** Human activities in agriculture, industry, and everyday life have effects on the land, vegetation, streams, ocean, air, and even outer space. Individuals and communities are doing things to help protect Earth's resources and environments.	**Obtaining, Evaluating, and Communicating Information** • Obtain and combine information from books and other reliable media about positive and negative effects on the environment as a result of human activities and how individual communities use scientific ideas and a scientific understanding of interactions between components of environmental systems to protect natural resources and the environment.	**Systems and System Models** • A system can be described in terms of its components and their interactions.