

	Content Statement	I Can...	Key Vocabulary
Earth's Resources (ESS)	<p>1. Earth's nonliving resources have specific properties.</p> <p>NOTE: Rock classification is not the focus for this grade level; this is found in grade 6. At this grade, the actual characteristics of rocks can be used to sort or compare, rather than formal classification.</p> <p>NOTE: It is important to use the term "soil," not "dirt." Dirt and soil are not synonymous.</p>	<ul style="list-style-type: none"> -Identify rock, soil, air and water as examples of non-living resources. -Sort rocks based on characteristics such as grain-size (texture), color and patterns. -Recall that air and water are present in rocks and soil and play an important role in their formation. -Test rocks and soil to determine that ability of water to pass through them, composition, and moisture level of soil. -Use appropriate tools to test rock color, size, shape of the particles or grains, and texture. -Use the characteristics of rocks (texture, composition or color) to determine the environment in which it formed. -Use technology to analyze and compare test results, share rock samples, and share documentation of findings. 	<ul style="list-style-type: none"> • Nonliving resources • Properties • Soil • Rocks • Texture (grain size) • Composition • Moisture level

For further explanation and details visit the "Science Revised Academic Content Standards (2010) and Model Curriculum Development" on the ODE website.

	Content Statement	I Can...	Key Vocabulary
Earth's Resources (ESS)	2. Earth's resources can be used for energy.	-Investigate the differences between renewable (replenished within a short amount of time by natural processes) and nonrenewable (a finite energy source that cannot be replenished in a short amount of time) resources. -Provide examples of both renewable (wind, water, solar energy, etc.) and nonrenewable resources (coal, oil, etc.). -Describe heat, electrical energy, light, sound and magnetic energy as renewable or nonrenewable energies. -Recognize specific energy sources in Ohio (e.g., fossil fuels). -Identify new energy technologies and the development of renewable energy sources within Ohio. -Investigate the positives and negatives of the use of different renewable and nonrenewable resources (cost, method of collection, materials used, etc.) -Compare Ohio's energy sources with other states.	<ul style="list-style-type: none"> • Renewable resources • Nonrenewable resources • Energy • Heat • Electrical energy • Light • Sound • Magnetic energy • Solar energy • Fossil fuels • Energy technologies • Renewable energy
	3. Some of Earth's resources are limited. NOTE: The concentration of this statement must be on the science behind the conservation of resources and why certain resources are limited. NOTE: Reducing or limiting the use and/or waste of resources should be emphasized (rather than concentrating only on recycling of resources).	-Use scientific data to evaluate and compare different methods of conservation (e.g., effectiveness of different kinds of recycling such as paper vs. metal). -Describe ways to help conserve Earth's resources (reduce use, decrease waste and/or pollution, recycle, re-use resources). -Investigate the positive and negative effects of recycling different types of materials (e.g., methods, effectiveness, recycling rates, etc.). -Describe the different types of earth's resources and how they are used.	<ul style="list-style-type: none"> • Conservation • Recycling • Pollution

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	Content Statement	I Can...	Key Vocabulary
Behavior, Growth and Changes (LS)	<p>4. Offspring resemble their parents and each other.</p> <p>NOTE: At this grade level, the definition of either instinctual or learned behavior is not learned. The focus is on making observations of different types of plant and animal behavior.</p> <p>NOTE: It is not appropriate or necessary to introduce the genetic mechanisms involved in heredity, however, care should be taken to avoid introducing the misconception that the individual organism has a way to select the traits that are passed on to the next generation.</p> <p>NOTE: Human genetic study is not recommended since not all students may have information available from their biological parents.</p>	<ul style="list-style-type: none"> -Compare in the physical appearance of an adult organism with its offspring. -Understand that traits can be passed down from parents to their offspring. -Study the life cycle of different organisms. -Observe organisms doing activities they have learned from their parents (e.g., hunting). -Observe organisms doing activities that are in response to the environment around them (e.g., plant stems bending toward the light). -Use books and/or technology (webcam) to study organisms’ traits and behaviors in their natural and human made environments. -Describe examples of differences among similar organisms that are part of a group. 	<ul style="list-style-type: none"> • Offspring • Traits • Environment • Life cycle • Organisms • Physical appearance and features

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	Content Statement	I Can...	Key Vocabulary
Behavior, Growth and Changes (LS)	<p>5. Individuals of the same kind differ in their traits and sometimes the differences give individuals an advantage in surviving and reproducing.</p> <p>NOTE: Venn diagrams can be used to illustrate the similarities and differences between individuals of the same type.</p> <p>NOTE: Comparison across species is not appropriate at this grade level; only observation of variation within the same species is expected.</p> <p>NOTE: The focus is in the individual, not the population. Adaptation is not the focus at this grade level.</p>	<p>-Name various physical features of plants and animals that are associated with the environment in which they live (e.g., coloration, location of eyes, type of feet, etc.).</p> <p>-Observe various structures and behaviors of organisms that serve different functions (e.g., plants have leaves, stems, and roots that each serves a different function; animals have wings, feathers, and beaks that each serves different functions).</p> <p>-Study variations in the traits of organisms that have been passed down to determine whether the trait helps increase, reduce, or has no effect on the ability of the organism to survive and reproduce in different environmental conditions (e.g., color, size, weight, etc.).</p> <p>-Study plants (e.g., radishes, beans) and animals (e.g., insects – butterflies, moths, beetles, brine shrimp) to learn the features which helped them survive and reproduce and are passed on to future generations.</p>	<ul style="list-style-type: none"> • Traits • Survival • Reproduce • Venn diagram • Physical features • Environment • Structures • Behaviors • Organisms • Functions • Future generations

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	Content Statement	I Can...	Key Vocabulary
Behavior, Growth and Changes (LS)	<p>6. Plants and animals have life cycles that are part of their adaptations for survival in their natural environments.</p> <p>NOTE: The names of the stages within the life cycles are not the focus.</p> <p>NOTE: New organisms are produced by the old ones.</p>	<p>-Sequence the typical stages of a life cycle (birth, growth, development, adulthood, reproduction, death).</p> <p>-Recognize that a life cycle can be different for different organisms.</p> <p>-Recognize that a life cycle can be interrupted at any stage.</p> <p>-Observe (in the classroom or virtually) the complete life cycle of an organism.</p> <p>-Use appropriate tools to question, explore, and investigate the appearances of living things (e.g., hand lens, magnifying lenses, metric rulers and scales).</p> <p>-Explain what conditions may be needed for reproduction of different organisms (e.g., temperature, availability of food/water, season, etc.).</p>	<ul style="list-style-type: none"> • Life cycle • Reproduction • Adaption • Survival • Organism • Hand lens • Magnifying lens • Metric ruler • Scale

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	Content Statement	I Can...	Key Vocabulary
Matter and Forms of Energy (PS)	<p>7. All objects and substances in the natural world are composed of matter.</p> <p>NOTE: Students will not be assessed on the differences between mass and weight until Grade 6. The distinction between mass and weight will be introduced at the middle school level.</p>	<ul style="list-style-type: none"> -Name observable differences between the 3 states of matter. -Distinguish between weight and volume. -Represent the differences between weight and volume in words and visual models. -Recognize that matter is anything that has mass and takes up space and that solids, liquids, and gases are made of matter. -Measure and record the volume of various liquids with a beaker or graduated cylinder using metric units. -Measure and record the weight of various objects using a scale. -Recognize that weight is how strongly the Earth’s gravity pulls the object toward Earth. -Recognize that for any given location, the more matter there is in an object, the greater the weight. -Experiment with different methods of measuring weight and liquid volume. -Recognize that matter continues to exist, even when broken into pieces too tiny to be visible. 	<ul style="list-style-type: none"> • States of matter • Solid • Liquid • Gas • Volume • Weight • Matter • Beaker • Gravity • Metric Units • Liquid volume • Mass • Model • Scale • Graduated cylinder

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	Content Statement	I Can...	Key Vocabulary
Matter and Forms of Energy (PS)	<p>8. Matter exists in different states, each of which has different properties.</p> <p>NOTE: Teaching about the atomic structure as related to the phases is not appropriate of this grade level.</p> <p>NOTE: Only solids, liquids, and gases are appropriate at this grade, even though other phases have been identified.</p> <p>NOTE: The differences between boiling and evaporation are not dealt with at this grade.</p> <p>NOTE: Students will not be assessed on the differences between mass and weight until Grade 6. The distinction between mass and weight will be introduced at the middle school level.</p>	<p>-Differentiate between the different properties of the different states of matter:</p> <ul style="list-style-type: none"> -Understand that liquids and solids do not compress into a smaller volume as easily as do gases. -Understand that liquids and gases flow easily, but solids do not. -Recognize that solids retain their shape and volume (unless a force is applied). -Understand that liquids assume the shape of the container that it occupies (retaining its volume), and -Recognize that gases assume the shape and volume of its container. <p>-Investigate the manner in which heating and cooling may cause changes to solids, liquids, and gases.</p> <p>-Conduct an experiment demonstrating phase changes with substances other than water.</p>	<ul style="list-style-type: none"> • States of matter • Solid • Liquid • Gas • Volume • Heating • Cooling • Matter • Properties • Force • Phase change

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	Content Statement	I Can...	Key Vocabulary
Matter and Forms of Energy (PS)	<p>9. Heat, electrical energy, light, sound and magnetic energy are forms of energy.</p> <p>NOTE: It is not appropriate at this grade level to explore the different types of energy in depth or use wave terminology when discussing energy. These will be developed at later grades.</p> <p>NOTE: There often is confusion between the concepts of force and energy. Force can be thought of as a push or pull between two objects and energy as the property of an object that can cause change. If forces actually push or pull something over a distance, then there is an exchange of energy between the objects. The differences between force and energy will be developed over time and are not appropriate for this grade level.</p> <p>NOTE: The word “heat” is used loosely in everyday language, yet it has a very specific scientific meaning. Usually what is called heat is actually “thermal or radiant energy.” An object has thermal energy due to the random movement of the particles that make up the object. Radiant energy is that which is given off by objects through space (e.g., warmth from a fire, solar energy from the sun). “Heating” is used to describe the transfer of thermal or radiant energy to another object or place. Differentiating between these concepts is inappropriate at this grade. The Model Curriculum uses the same conventions as noted in the NAEP 2009 Science Framework (see page 29) where “heat” is used in lower grades. However, the word “heat” has been used with care so it refers to a <i>transfer</i> of thermal or radiant energy. The concept of thermal energy, as it relates to particle motion, is introduced in grade 6.</p>	<p>-Recognize that energy is the ability to cause motion or create change.</p> <p>-Identify different forms of energy:</p> <ul style="list-style-type: none"> -Falling rock causing a crater to form on the ground, -Heating water causing water to change into a gas, -Light energy from the sun contributing to plant growth, -Electricity causing the blades of a fan to move, -Electrically charged objects causing movement in uncharged objects or other electrically charged objects, -Sound from a drum causing rice sitting on the drum to vibrate, and -Magnets causing other magnets and some metal objects to move. <p>-Investigate (3-D or virtual) the relationship between different forms of energy and motion.</p>	<ul style="list-style-type: none"> • Energy • Heat • Light • Electrical energy • Sound • Magnetic energy • Gas • Electricity • Electrically charged objects • Uncharged objects • Vibrate • Magnets • Light energy

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