KINDERGARTEN – 5TH GRADE

Earth Science

GRADE · DOMAIN · ESSENTIAL STANDARD NUMBER · CLARIFYING OBJECTIVE NUMBER

K.E.1.1

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	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5
Earth in the Universe	Intentionally left blank.	**1.E.1 Recognize the features and patterns of the Earth/Moon/Sun system as observed from Earth.** 1.E.1.1 Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth. 1.E.1.2 Recognize patterns of observable changes in the Moon's appearance from day to day.	Intentionally left blank.	**3.E.1 Recognize the major components and patterns observed in the Earth/Moon/Sun system.** 3.E.1.1 Recognize that the Earth is part of a system called the solar system that includes the Sun (a star), planets, and many moons and the Earth is the third planet from the Sun in our solar system. 3.E.1.2 Recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the Sun during the day although the patterns of the stars in the sky, to include the Sun, stay the same.	**4.E.1 Explain the causes of day and night and phases of the Moon.** 4.E.1.1 Explain the cause of day and night based on the rotation of Earth on its axis. 4.E.1.2 Explain the monthly changes in the appearance of the Moon, based on the Moon's orbit around the Earth.	Intentionally left blank.
Earth Systems, Structures & Processes	**K.E.1 Understand change and observable patterns of weather that occur from day to day and throughout the year.** K.E.1.1 Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses. K.E.1.2 Summarize daily weather conditions noting changes that occur from day to day and throughout the year. K.E.1.3 Compare weather patterns that occur from season to season.	**1.E.2 Understand the physical properties of Earth materials that make them useful in different ways.** 1.E.2.1 Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways. 1.E.2.2 Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.	**2.E.1 Understand patterns of weather and factors that affect weather.** 2.E.1.1 Summarize how energy from the Sun serves as a source of light that warms the land, air and water. 2.E.1.2 Summarize weather conditions using qualitative and quantitative measures to describe: temperature, wind direction, wind speed, precipitation 2.E.1.3 Compare weather patterns that occur over time and relate observable patterns to time of day and time of year. 2.E.1.4 Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons.	**3.E.2 Compare the structures of the Earth's surface using models or three-dimensional diagrams.** 3.E.2.1 Compare Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers). 3.E.2.2 Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.	Intentionally left blank.	**5.E.1 Understand weather patterns and phenomena, making connections to the weather in a particular place and time.** 5.E.1.1 Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns. 5.E.1.2 Predict upcoming weather events from weather data collected through observation and measurements. 5.E.1.3 Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.
Earth History	Intentionally left blank.	Intentionally left blank.	Intentionally left blank.	Intentionally left blank.	**4.E.2 Understand the use of fossils and changes in the surface of the Earth as evidence of the history of Earth and its changing life forms.** 4.E.2.1 Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms. 4.E.2.2 Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago. 4.E.2.3 Give examples of how the surface of the Earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.	Intentionally left blank.

KINDERGARTEN – 5TH GRADE

Life Science

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K.L.1.1

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	KINDERGARTEN	GRADE 1	GRADE 2	GRADE 3	GRADE 4	GRADE 5
Structures and Functions of Living Organisms	**K.L.1 Compare characteristics of animals that make them alike and different from other animals and nonliving things.** K.L.1.1 Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal. K.L.1.2 Compare characteristics of living and nonliving things in terms of their: structure, growth, changes, movement, basic needs.	Intentionally left blank.	**2.L.1 Understand animal life cycles.** 2.L.1.1 Summarize the life cycle of animals: birth, developing into an adult, reproducing, aging and death. 2.L.1.2 Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.	**3.L.1 Understand human body systems and how they are essential for life: protection, movement and support.** 3.L.1.1 Compare the different functions of the skeletal and muscular system. 3.L.1.2 Explain why skin is necessary for protection and for the body to remain healthy.	Intentionally left blank.	**5.L.1 Understand how structures and systems of organisms (to include the human body) perform functions necessary for life.** 5.L.1.1 Explain why some organisms are capable of surviving as a single cell while others require many cells that are specialized to survive. 5.L.1.2 Compare the major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, cardiovascular) in terms of their functions necessary for life.
Ecosystems	Intentionally left blank.	**1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.** 1.L.1.1 Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment. 1.L.1.2 Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world. 1.L.1.3 Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there. (e.g., reuse or recycle products to avoid littering).	Intentionally left blank.	**3.L.2 Understand how plants survive in their environments.** 3.L.2.1 Remember the function of the following structures as it relates to the survival of plants in their environment; Roots – absorb nutrients; Stems – provide support; Leaves – synthesize food; Flowers – attract pollinators and produce seeds for reproduction 3.L.2.2 Explain how environmental conditions determine how well plants survive and grow. 3.L.2.3 Summarize the distinct stages of the life cycle of seed plants. 3.L.2.4 Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.	**4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.** 4.L.1.1 Give examples of changes in an organism's environment that are beneficial to it and some that are harmful. 4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment. 4.L.1.3 Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion). 4.L.1.4 Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats.	**5.L.2 Understand the interdependence of plants and animals with their ecosystem.** 5.L.2.1 Compare the characteristics of several common ecosystems, including estuaries and salt marshes, oceans, lakes and ponds, forests, and grasslands. 5.L.2.2 Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors). 5.L.2.3 Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.
Evolution and Genetics	Intentionally left blank.	Intentionally left blank.	**2.L.2 Remember that organisms differ from or are similar to their parents based on the characteristics of the organism.** 2.L.2.1 Identify ways in which many plants and animals closely resemble their parents in observed appearance and ways they are different. 2.L.2.2 Recognize that there is variation among individuals that are related.	Intentionally left blank.	Intentionally left blank.	**5.L.3 Understand why organisms differ from or are similar to their parents based on the characteristics of the organism.** 5.L.3.1 Explain why organisms differ from or are similar to their parents based on the characteristics of the organism. 5.L.3.2 Give examples of likenesses that are inherited and some that are not.
Molecular Biology	Intentionally left blank.	**1.L.2 Summarize the needs of living organisms for energy and growth.** 1.L.2.1 Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth. 1.L.2.2 Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.	Intentionally left blank.	Intentionally left blank.	**4.L.2 Understand food and the benefits of vitamins, minerals and exercise.** 4.L.2.1 Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth and repair of the body. 4.L.2.2 Explain the role of vitamins, minerals and exercise in maintaining a healthy body.	Intentionally left blank.

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Physical Science

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Forces and Motion	**K.P.1 Understand the positions and motions of objects and organisms observed in the environment.** K.P.1.1 Compare the relative position of various objects observed in the classroom and outside using position words such as: in front of, behind, between, on top of, under, above, below and beside. K.P.1.2 Give examples of different ways objects and organisms move (to include falling to the ground when dropped): straight, zigzag, round and round, back and forth, fast and slow.	**1.P.1 Understand how forces (pushes or pulls) affect the motion of an object.** 1.P.1.1 Explain the importance of a push or pull to changing the motion of an object. 1.P.1.2 Explain how some forces (pushes and pulls) can be used to make things move without touching them, such as magnets. 1.P.1.3 Predict the effect of a given force on the motion of an object, including balanced forces.	**2.P.1 Understand the relationship between sound and vibrating objects.** 2.P.1.1 Illustrate how sound is produced by vibrating objects and columns of air. 2.P.1.2 Summarize the relationship between sound and objects of the body that vibrate eardrum and vocal cords.	**3.P.1 Understand motion and factors that affect motion.** 3.P.1.1 Infer changes in speed or direction resulting from forces acting on an object. 3.P.1.2 Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time. 3.P.13 Explain the effect of Earth's gravity on the motion of any object on or near the Earth.	**4.P.1 Explain how various forces affect the motion of an object.** 4.P.1.1 Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them. 4.P.1.2 Explain how electrically charged objects push or pull on other electrically charged objects and produce motion.	**5.P.1 Understand force, motion and the relationship between them.** 5.P.1.1 Explain how factors such as gravity, friction, and change in mass affect the motion of objects. 5.P.1.2 Infer the motion of objects in terms of how far they travel in a certain amount of time and the direction in which they travel. 5.P.1.3 Illustrate the motion of an object using a graph to show a change in position over a period of time. 5.P.1.4 Predict the effect of a given force or a change in mass on the motion of an object.
Matter: Properties and Change	**K.P.2 Understand how objects are described based on their physical properties and how they are used.** K.P.2.1 Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility). K.P.2.2 Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc) from which objects are made and how they are used.	Intentionally left blank.	**2.P.2 Understand properties of solids and liquids and the changes they undergo.** 2.P.2.1 Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling. 2.P.2.2 Compare the amount (volume and weight) of water in a container before and after freezing. 2.P.2.3 Compare what happens to water left in an open container over time as to water left in a closed container.	**3.P.2 Understand the structure and properties of matter before and after they undergo a change.** 3.P.2.1 Recognize that air is a substance that surrounds us, takes up space and has mass. 3.P.2.2 Compare solids, liquids, and gases based on their basic properties. 3.P.2.3 Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.	**4.P.2 Understand the composition and properties of matter before and after they undergo a change or interaction.** 4.P.2.1 Compare the physical properties of samples of matter (strength, hardness, flexibility, ability to conduct heat, ability to conduct electricity, ability to be attracted by magnets, reactions to water and fire). 4.P.2.2 Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage, and streak. 4.P.2.3 Classify rocks as metamorphic, sedimentary or igneous based on their composition, how they are formed and the processes that create them.	**5.P.2 Understand the interactions of matter and energy and the changes that occur.** 5.P.2.1 Explain how the Sun's energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation and runoff). 5.P.2.2 Compare the weight of an object to the sum of the weight of its parts before and after an interaction. 5.P.2.3 Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.
Energy: Conservation and Transfer	Intentionally left blank.	Intentionally left blank.	Intentionally left blank.	**3.P.3 Recognize how energy can be transferred from one object to another.** 3.P.3.1 Recognize that energy can be transferred from one object to another by rubbing them against each other. 3.P.3.2 Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.	**4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter.** 4.P.3.1 Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change. 4.P.3.2 Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.	**5.P.3 Explain how the properties of some materials change as a result of heating and cooling.** 5.P.3.1 Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation) 5.P.3.2 Explain how heating and cooling affect some materials and how this relates to their purpose and practical applications.