

**CUMBERLAND COUNTY SCHOOL DISTRICT
BENCHMARK ASSESSMENT CURRICULUM PACING GUIDE**

School: Cumberland County Elementary	Subject: Science	Grade: 5 th Grade
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Benchmark Assessment 1

Instructional Timeline: Section 1 Weeks 1-9

Topic(s): Scientific Method, Matter, Force and Motion, Water, Atmosphere

KCAS Standards	Learning Target (I Can Statement)	Key Vocabulary
<p><u>SC-5-STM-U-5</u> Students will understand that results of investigations are seldom exactly the same, but if the results vary widely, then it is necessary to figure out why they differ.</p> <p><u>SC-5-STM-S-3</u> Students will keep accurate records of investigations (procedures, data) in order to support or dispute conclusions.</p> <p><u>SC-5-STM-U-1</u> Students will understand that a substance has its own set of properties which allows it to be distinguished from other substances.</p> <p><u>SC-5-STM-U-2</u> Students will understand that the physical properties of a substance do not change regardless of how much or how little of the substance there is.</p>	<p><u>SC-5-STM-U-5</u></p> <ul style="list-style-type: none"> • I can list the steps of the scientific method in order. • I can form a hypothesis. • I can record my observations. • I can report my conclusion. <p><u>SC-5-STM-U-1</u></p> <ul style="list-style-type: none"> • I can classify matter based on physical properties. • I can choose the appropriate tool to test: boiling point solubility density of matter. 	<ul style="list-style-type: none"> • Observe • Hypothesis • Variables • Measure • Investigate • Conduct experiment • Conclusion <ul style="list-style-type: none"> • Physical properties • Boiling point • Solubility • Density • Substance, matter

SC-5-STM-U-3

Students will understand that many kinds of changes in the properties of substances occur faster when the temperature is higher.

SC-5-STM-U-4

Students will understand that when individual substances are combined, the total weight is equal to the sum of the individual weights.

SC-5-STM-S-1

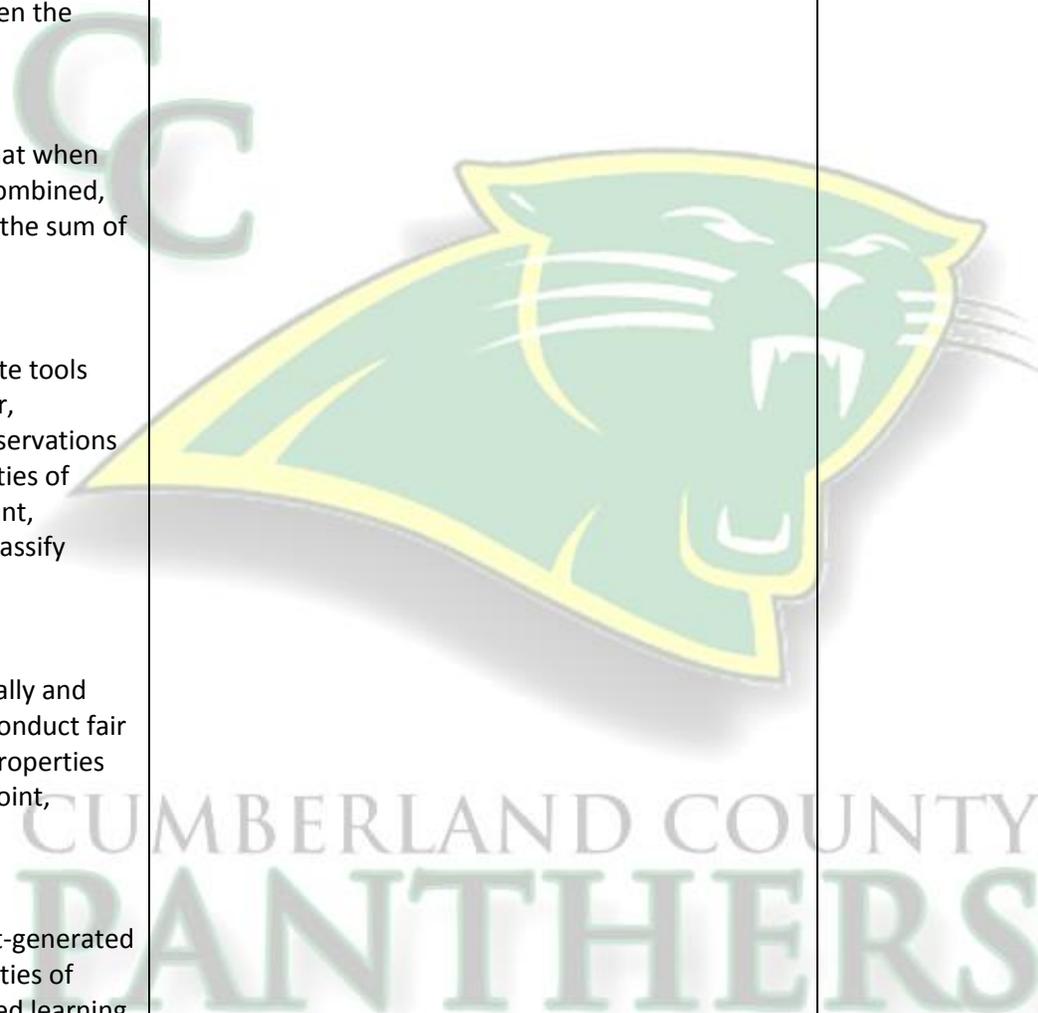
Students will use appropriate tools (e.g., balance, thermometer, graduated cylinder) and observations to describe physical properties of substances (e.g., boiling point, solubility, density) and to classify materials.

SC-5-STM-S-2

Students will work individually and with others to design and conduct fair tests to safely investigate properties of matter, such as boiling point, density, and solubility.

SC-5-STM-S-4

Students will utilize student-generated questions about the properties of matter to drive inquiry-based learning experiences.



<p><u>SC-5-MF-U-1</u> Students will understand that predictions and/or inferences about the direction or speed of an object can be made by interpreting graphs, charts or descriptions of the objects motion.</p> <p><u>SC-5-MF-S-2</u> Students will create and interpret graphical representations in order to make inferences and draw conclusions about the motion of an object.</p> <p><u>SC-5-MF-U-2</u> Students will understand that the more mass an object has, the less effect a given force will have.</p> <p><u>SC-5-MF-U-3</u> Students will understand that forces are pushes and pulls that may be invisible (e.g., gravity, magnetism) or visible (e.g., friction, collisions).</p> <p><u>SC-5-MF-U-4</u> Students will understand that some comparisons may not be 'fair' because some conditions (e.g. mass, force, speed, friction) might not be the same.</p>	<p><u>SC-5-MF-U-1</u></p> <ul style="list-style-type: none"> • I can read data to describe the straight-line motion of an object (table, chart, or graph). • I can read data to predict the straight-line motion of an object (table, chart, or graph). • I can create a graph about the motion of an object. • I can predict the motion of an object. • I can describe the relationship between mass and force. • I can classify forces into visible and invisible. 	<ul style="list-style-type: none"> • fast, slow, forward, backward • quantitative descriptions • predictions, • motion • relative position • direction • measure • graph • forces • push • pull • Gravity • Magnetism • Friction • collisions
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<p><u>SC-5-MF-S-1</u> Students will use observations and appropriate tools (e.g., timer, meter stick, balance, spring scale) to explore the relationship between force and mass</p> <p><u>SC-5-EU-U-1</u> Students will understand that the earth's water supply has existed since the formation of the planet and is constantly cycled from the ocean to the atmosphere, allowing the same water to be endlessly reused without the creation of new water.</p> <p><u>SC-5-EU-S-1</u> Students will investigate how water can change forms yet still be conserved in the water cycle</p> <p><u>SC-5-EU-S-2</u> Students will create/analyze/explain representations that illustrate the circulation of water (evaporation and condensation) from the surface of the Earth, through the crust, oceans, and atmosphere (water cycle)</p> <p><u>SC-5-EU-U-2</u> Students will understand that water is a powerful solvent that dissolves earth</p>	<p><u>SC-5-EU-U-1</u></p> <ul style="list-style-type: none"> • I can describe the water cycle. • I can explain how matter is conserved in the water cycle. • I can interpret/create a representation of the water cycle. • I can explain how water interacts with the Earth. • I can identify factors that impact watersheds. • I can explain how the movement of air influences weather. • I can explain how oceans have an effect on climate. 	<ul style="list-style-type: none"> • Circulation • Evaporation • Condensation • Crust, • Atmosphere, • Water cycle • Matter • Conservation • Interactions • Earth materials • dissolving, • minerals • Gases • watersheds • atmospheric movement • weather • climate
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materials, allowing them to impact the ocean system as water is cycled into it.

SC-5-EU-S-4

Students will explore the concept of watersheds and identify factors that impact them, including results of interactions of water with earth materials (e.g., dissolving minerals, moving minerals and gases)

SC-5-EU-S-8

Students will explain why scale models are important tools for understanding a number of phenomena (e.g., solar system, watersheds, earth's atmosphere) but are not always easy to construct or require trade-offs in other aspects of the model (e.g. distance vs. size)

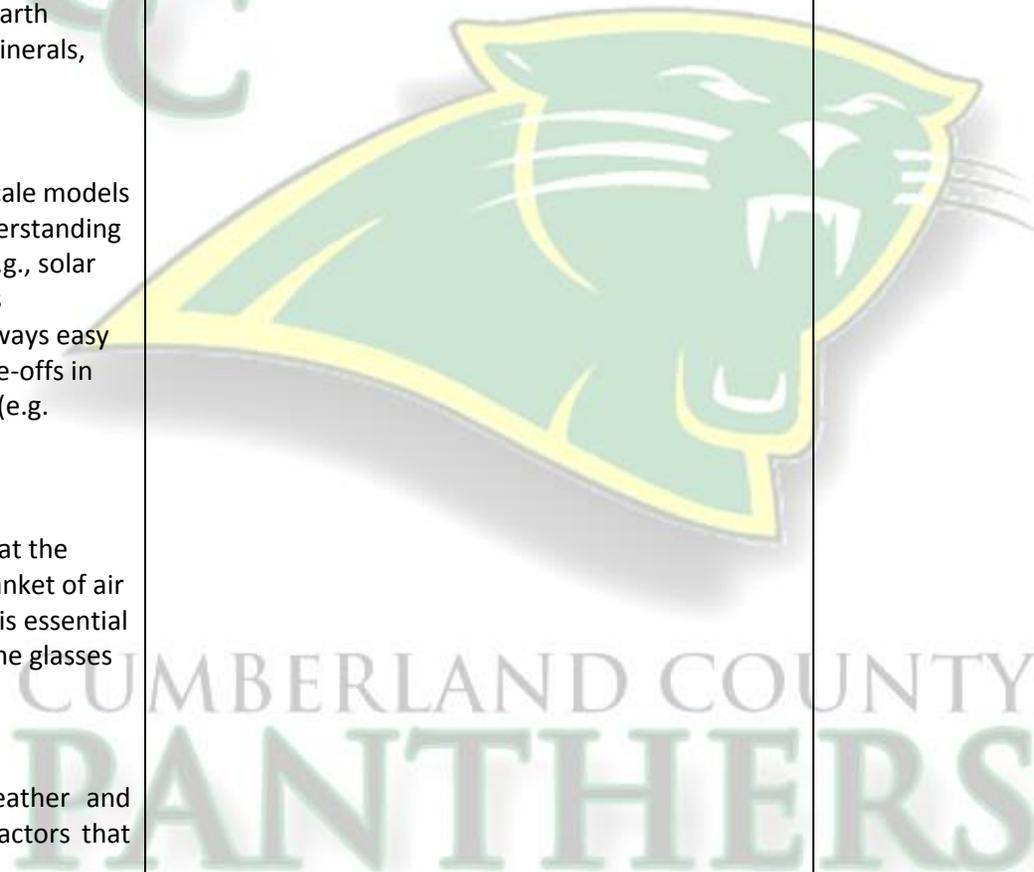
SC-5-EU-U-3

Students will understand that the earth is surrounded by a blanket of air called the atmosphere that is essential to life because of some of the gases it contains.

SC-5-EU-S-3

Students will compare weather and climate and describe factors that influence each.

SC-5-EU-S-5



Students will describe the makeup of the Earth's atmosphere and analyze atmospheric data to explain real life phenomena (e.g., pressurized cabins in airplanes, mountain-climber's need for oxygen).

SC-5-EU-U-4

Students will understand that air is free to move from place to place all across the planet and this movement causes global weather patterns. Observing air movements helps scientists explain both global and local weather patterns.

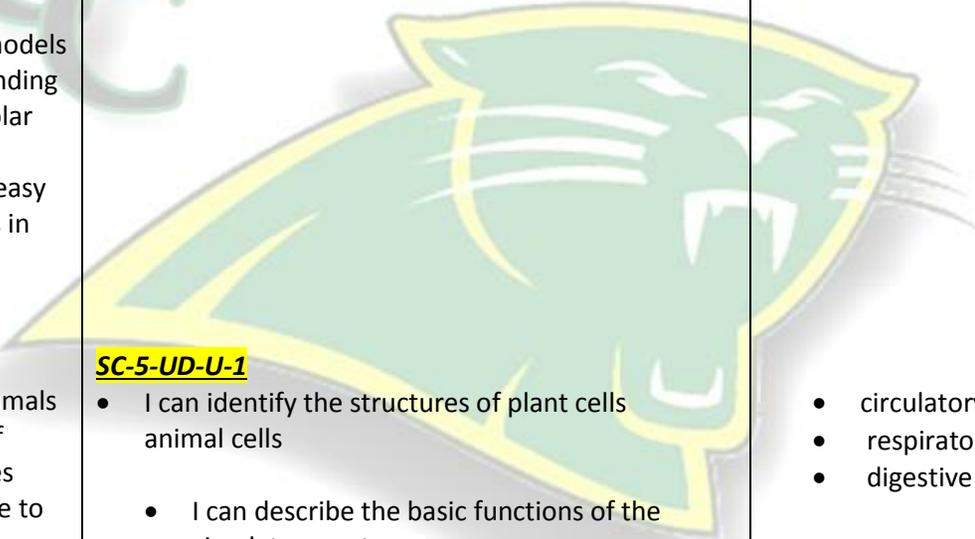
SC-5-EU-S-8

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**CUMBERLAND COUNTY SCHOOL DISTRICT
BENCHMARK ASSESSMENT CURRICULUM PACING GUIDE**

School: Cumberland County Elementary	Subject: Science	Grade: 5 th Grade
Benchmark Assessment 2		
Instructional Timeline: Section 2 Weeks 10-18		
Topic(s): Solar System, Living Systems, Unity/Diversity and Survival, Reproduction, Change Over Time		
KCAS Standards	Learning Target (I Can Statement)	Key Vocabulary
<p>SC-5-EU-U-5 Students will understand that observations, models and diagrams of the solar system illustrate the position and relationship of the earth, sun, and moon within the larger system of planets and other celestial bodies. Even though they are all parts of the same system, a comparison of their properties reveals great differences among celestial bodies.</p> <p>SC-5-EU-U-6 Students will understand that technology extends the ability of people to understand the universe. Most tools of today are different than those of the past, but may also be modifications of much older tools.</p> <p>SC-5-EU-S-6 Students will use a variety of models and graphic representations to obtain and organize data in order to compare the major components of our solar system.</p>	<p>SC-5-EU-U-5</p> <ul style="list-style-type: none"> • I can identify the planets in relation to the sun. • I can compare/ contrast the Earth's features to the other planets. • I can explain why scale models are important to study the solar system 	<ul style="list-style-type: none"> • solar system • scale models • Representations • Earth, Mercury, Mars, Venus, Saturn, Uranus, Neptune, Pluto, Jupiter, Sun, moon, planet, system, diagrams

<p><u>SC-5-EU-S-7</u> Students will explore the development of and types of technology useful for learning about the atmosphere and our solar system.</p> <p><u>SC-5-EU-S-8</u> Students will explain why scale models are important tools for understanding a number of phenomena (e.g., solar system, watersheds, earth's atmosphere) but are not always easy to construct or require trade-offs in other aspects of the model (e.g. distance vs. size).</p> <p><u>SC-5-UD-U-1</u> Students will understand that animals and plants have a great variety of body plans and internal structures that contribute to their being able to meet their needs.</p> <p><u>SC-5-UD-S-1</u> Students will use observations and models to describe and compare internal and external structures of plants and animals and their corresponding functions.</p> <p><u>SC-5-UD-U-2</u> Students will understand that organisms are composed of a variety</p>	 <p><u>SC-5-UD-U-1</u></p> <ul style="list-style-type: none"> • I can identify the structures of plant cells animal cells • I can describe the basic functions of the circulatory system. <p><u>SC-5-UD-S-1</u></p> <ul style="list-style-type: none"> • I can describe the basic functions of the digestive system. • I can describe the basic functions of the respiratory system. 	<ul style="list-style-type: none"> • circulatory system • respiratory system • digestive system
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of sub-systems that have essential functions. Organisms function with a minimum of superfluous parts because their structures are precisely suited to their essential functions.

SC-5-UD-S-2

Students will identify and describe systems and subsystems essential to an organism's survival.

SC-5-UD-U-3

Students will understand that microscopes make it possible to see that living things are made mostly of cells. Some organism's cells vary greatly in appearance and perform very different roles in the organism.

SC-5-UD-S-3

Students will use observations and models (conceptual, analogical, physical) to identify major structures of cells and their corresponding functions.

SC-5-UD-S-4

Students will use scientific tools (e.g., microscopes) to observe and make comparisons of unicellular and multicellular organisms.

SC-5-UD-S-2

- I can describe the function of a cell.



<p><u>SC-5-BC-U-1</u> Students will understand that the gradual changes in organisms that have occurred over time are only accurately represented using a geologic time scale dating back to the formation of the earth.</p> <p><u>SC-5-BC-S-1</u> Students will analyze various geologic time scale representations.</p> <p><u>SC-5-BC-U-2</u> Students will understand that sometimes differences in organisms give individuals an advantage in surviving and reproducing. Over many generations these adaptations have led to a wide variety of types of organisms.</p> <p><u>SC-5-BC-U-3</u> Students will understand that successful organisms must be able to maintain the basic functions of life in response to normal environmental fluctuations (e.g. day/night, seasonal temperature changes, precipitation). However, an organism that has an advantage in a specific environment may not be able to survive if the environment changes too drastically.</p>	<p><u>SC-5-BC-U-1</u></p> <ul style="list-style-type: none"> • I can explain the relationship between survival and adaptations over time. <p><u>SC-5-BC-U-3</u></p> <ul style="list-style-type: none"> • I can describe how the environment affects basic functions of life. 	<ul style="list-style-type: none"> • cause and effect relationships • survival, reproduction • biological adaptations • Structures • Behaviors • physiology • change over time • processes, generations <ul style="list-style-type: none"> • Resources • Organisms • Maintain • stable internal conditions • external environment
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SC-5-BC-S-2

Students will investigate and describe adaptations of various organisms to their environments through observations as well as print and non-print based resources.

SC-5-BC-S-3

Students will investigate ways that organisms cope with fluctuations (e.g. temperature, precipitation, change in food sources) in their environments.

SC-5-BC-S-4

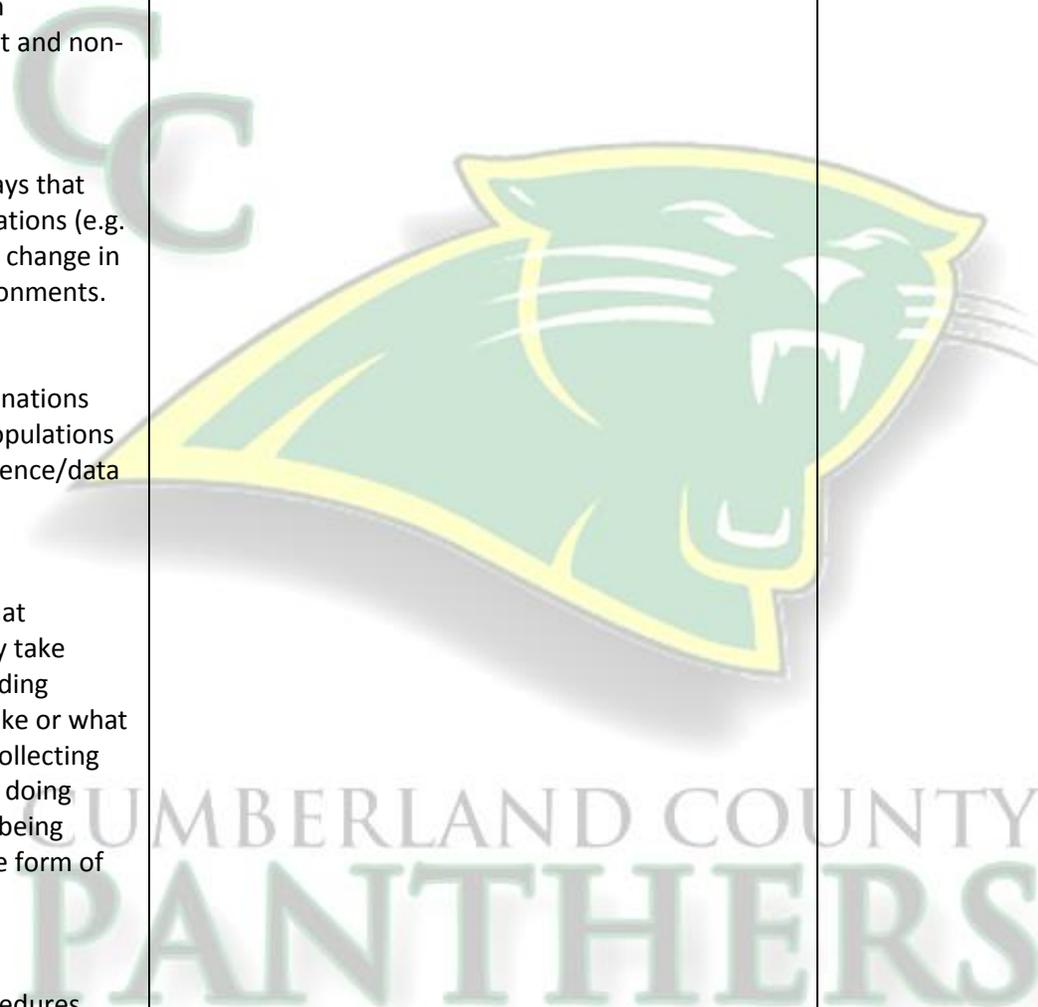
Students will propose explanations regarding adaptations of populations to environments citing evidence/data to support conclusions.

SC-5-BC-U-4

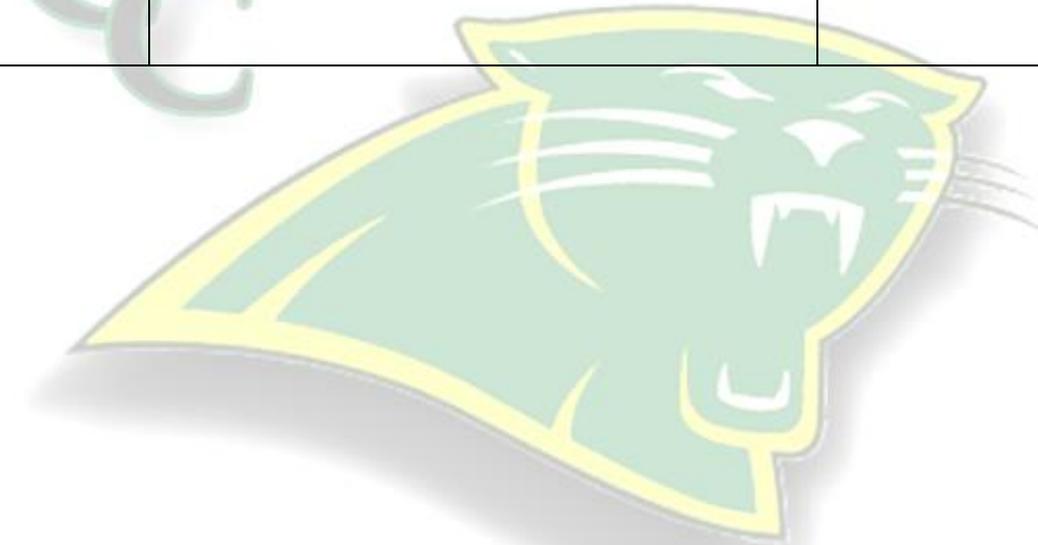
Students will understand that scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments. The question being investigated determines the form of the investigation used.

SC-5-BC-S-5

Students will compare procedures used (e.g., experiments, investigative and non-investigative research,



observations) to find information/collect data about the diversity of organisms that exist or have existed on Earth.		
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CUMBERLAND COUNTY
PANTHERS

**CUMBERLAND COUNTY SCHOOL DISTRICT
BENCHMARK ASSESSMENT CURRICULUM PACING GUIDE**

School: Cumberland County Elementary	Subject: Science	Grade: 5 th Grade
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Benchmark Assessment 3

Instructional Timeline: Section 3 Weeks 19-31

Topic(s): Transfer of Energy, Heat, light, Sound, Electrical Circuits, Interdependence and Ecosystems

KCAS Standards	Learning Target (I Can Statement)	Key Vocabulary
<p><u>SC-5-ET-U-1</u> Students will understand that energy can have many different forms and be contained in many different substances. Evidence of energy transfer may be observed in a wide variety of systems.</p> <p><u>SC-5-ET-S-1</u> Students will classify energy phenomena (e.g., heat/thermal energy, electrical energy, energy of position) as kinetic or potential and use observations and evidence to describe the transfer of energy occurring in simple systems</p> <p><u>SC-5-ET-U-2</u> Students will understand that energy from the sun flows through space to reach the earth. Solar energy provides the driving force for many of the changes that happen on the Earth's surface.</p>	<p><u>SC-5-ET-U-1</u></p> <ul style="list-style-type: none"> • I can describe • kinetic energy • potential energy • I can classify energy into kinetic and potential. <p><u>SC-5-ET-S-1</u></p> <ul style="list-style-type: none"> • I can explain how the transfer of energy produces heat, light, and sound • I can design/conduct an experiment to explain the transfer of energy. • I can describe conduction, radiation, and convection • I can explain how sound travels. • I can explain how light travels. 	<ul style="list-style-type: none"> • Kinetic • Potential • Transfer • energy • heat energy • temperature • heat movement,

<p><u>SC-5-ET-S-2</u> Students will describe solar energy and how it impacts physical and biological systems on Earth</p>	<ul style="list-style-type: none"> • I can explain refraction, absorption, scattering, and reflection 	
<p><u>SC-5-ET-U-3</u> Students will understand that electrical circuits transfer energy and can produce heat, light, sound, and magnetic effects. They can be used for different purposes by rearranging their components.</p>	<p><u>SC-5-ET-U-3</u></p> <ul style="list-style-type: none"> • I can explain how electrical circuits transfer energy. • I can describe how changing the circuit changes the outcome. • I can explain how the transfer of energy produces magnetic effects. • I can design/conduct an experiment to determine the conductivity of materials. 	<ul style="list-style-type: none"> • Conduction • Convection • radiation
<p><u>SC-5-ET-S-3</u> Students will design and conduct investigations/experiments to determine the effects of altering variables within electrical circuits and to draw conclusions about the transfer of energy (e.g., heat, light, sound, and magnetic effects) within a system</p>		<ul style="list-style-type: none"> • sound wave • vibration • frequency • wave length
<p><u>SC-5-ET-U-4</u> Students will understand that light interacts with matter in predictable ways that can be discovered through investigations.</p>		<ul style="list-style-type: none"> • Radiation • Refraction • Absorption • Scattering • reflection
<p><u>SC-5-ET-S-4</u> Students will design and conduct investigations/experiments to identify predictable patterns of interaction between light and matter (e.g. some</p>		

materials are more reflective, different liquids refract differently, effects of multiple or differing light sources)

SC-5-ET-U-5

Students will understand that in a closed system, warm objects will cool and cool objects will warm until they are all the same temperature.

SC-5-ET-U-6

Students will understand that if the results of an investigation are unexpected, it is good to make new observations. If those observations continue to be unexpected, different ideas should be considered to explain the results.

SC-5-ET-U-3

Students will understand that matter and energy flow along multiple paths within a community. Complex models depicting this interdependence make these relationships easier to visualize and comprehend.

SC-5-ET-S-3

Students will design and conduct investigations/experiments to determine the effects of altering variables within electrical circuits and

- electrical circuits
- magnetic effects
- Transfer
- series circuit
- parallel circuit
- Current
- Conductor
- Insulator
- Resistor
- simple circuits
- volt
- electromagnets

<p>to draw conclusions about the transfer of energy (e.g., heat, light, sounds, and magnetic effects) within a system.</p> <p><u>SC-5-I-U-1</u> Students will understand that within every ecosystem are populations of organisms that serve specific functions. Changes to any population may affect the other populations in that ecosystem.</p> <p><u>SC-5-I-U-2</u> Students will understand that all of the populations that interact with each other in an ecosystem form a specific community, but there may be multiple communities within the same ecosystem.</p> <p><u>SC-5-I-S-1</u> Students will define the concepts of population and community and identify examples of populations and communities within various ecosystems</p> <p><u>SC-5-I-S-2</u> Students will identify the role/function a population of organisms has in a particular community/ecosystem (e.g., producers, consumers, decomposers)</p> <p><u>SC-5-I-S-3</u></p>	<p><u>SC-5-I-U-1</u></p> <ul style="list-style-type: none"> • I can describe the role of a: producer, consumer, and decomposer • I can sort organisms by their function in an ecosystem. • I can describe the effect of change on ecosystems. • I can form conclusions about a food web. 	<ul style="list-style-type: none"> • Populations • Organisms • Function • Ecosystem • Producers • Consumers • Decomposers • Populations • food chain • micro-organisms • Bacteria • Fungi • waste materials • food webs • components (ecosystem) • Species • physical factors • Interact • compose
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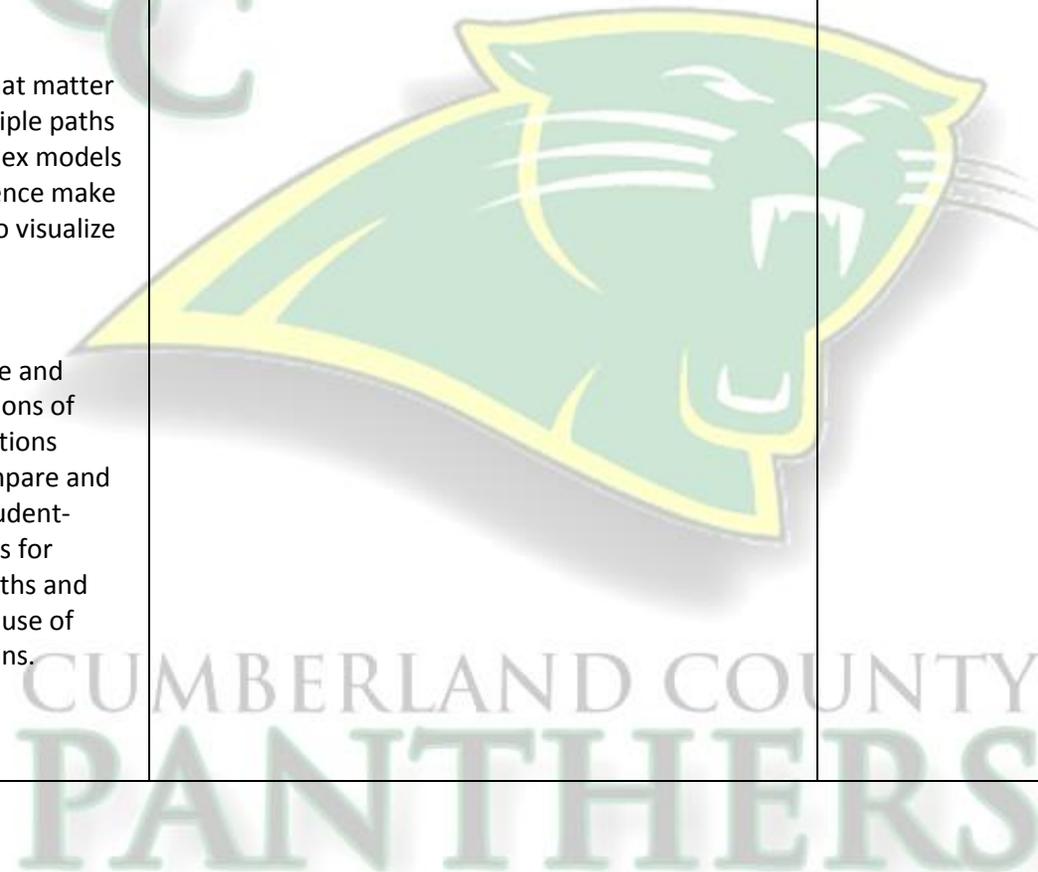
Students will explore the cause/effect relationship of altering a particular population of organisms within an ecosystem using data/evidence collected through research and/or simulations (e.g., role-play games, computer-based simulations).

SC-5-I-U-3

Students will understand that matter and energy flow along multiple paths within a community. Complex models depicting this interdependence make these relationships easier to visualize and comprehend.

SC-5-I-S-4

Students will analyze, create and describe visual representations of ecosystems and the interactions occurring within them. Compare and critique pre-existing and student-constructed representations for accuracy, identifying strengths and limitations, insisting on the use of evidence to support decisions.



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BENCHMARK ASSESSMENT CURRICULUM PACING GUIDE**

School: Cumberland County Elementary	Subject: Science	Grade: 5 th Grade
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Benchmark Assessment None

Instructional Timeline: Section 4 Weeks 32-36

Topic(s): Review of Science Standards and Targets

KCAS Standards	Learning Target (I Can Statement)	Key Vocabulary
Review of all standards	Differentiated learning stations for science. Library/AR books on science standard topics according to reading level. SRA kits on science topics according to reading level. STEM products Conducting experiments using the Scientific method	

