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4th Grade

	Unit 1: Weather	
Time Frame	Approximately 6 weeks	**Quarterly Benchmark Assessment Window (October 5-9, 2015)**
Instructional Days	August 10-September 18, 2015	
Georgia Content Focus Standards	***Habits of Mind / Nature of Science – See Page 3*** **S4E3. Students will differentiate between the states of water and how they relate to the water cycle and weather.** a. Demonstrate how water changes states from solid (ice) to liquid (water) to gas (water vapor/steam) and changes from gas to liquid to solid. Identify the temperatures at which water becomes a solid and at which water becomes a gas. b. Investigate how clouds are formed. c. Explain the water cycle (evaporation, condensation, and precipitation). d. Investigate different forms of precipitation and sky conditions. (rain, snow, sleet, hail, clouds, and fog). **S4E4. Students will analyze weather charts/maps and collect weather data to predict weather events and infer patterns and seasonal changes.** a. Identify weather instruments and explain how each is used in gathering weather data and making forecasts (thermometer, rain gauge, barometer, wind vane, anemometer). b. Using a weather map identify the fronts, temperature, and precipitation and use the information to interpret the weather conditions. Use observations and records of weather conditions to predict weather patterns throughout the year. d. Differentiate between weather and climate.	

	Unit 2: Sound	
Time Frame	Approximately 2-3 weeks	
Instructional Days	September 21-October 7, 2015	
Georgia Content Focus Standards	***Habits of Mind / Nature of Science – See Page 3*** **S4P2 Students will demonstrate how sound is produced by vibrating objects and how can be varied by changing the rate of vibration.** a. Investigate how sound is produced. b. Recognize the conditions that cause pitch to vary.	

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	Unit 3: Light	Quarterly Benchmark Assessment Window (December 7 - 11, 2015)
Time Frame	Approximately 2-3 weeks	
Instructional Days	October 7- October 23, 2015	
Georgia Content Focus Standards	***Habits of Mind / Nature of Science – See Page 3*** **S4P1 Students will investigate the nature of light using tools such as mirrors, lenses, and prisms.** a. Identify materials that are transparent, opaque, and translucent. b. Investigate the reflection of light using a mirror and a light source. c. Identify the physical attributes of a convex lens, a concave lens, and a prism and where each is used.	
	Unit 4: Forces and Motion	
Time Frame	Approximately 4 weeks	
Instructional Days	October 26-November 30, 2015	
Georgia Content Focus Standards	***Habits of Mind / Nature of Science – See Page 3*** **S4P3. Students will demonstrate the relationship between the application of a force and the resulting change in position and motion on an object.** a. Identify simple machines and explain their uses (lever, pulley, wedge, inclined plane, screw, wheel and axle). b. Using different size objects, observe how force affects speed and motion. c. Explain what happens to the speed or direction of an object when a greater force than the initial one is applied. d. Demonstrate the effect of gravitational force on the motion of an object.	

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	Unit 5: Stars and Solar System	Quarterly Benchmark Assessment Window (March 7-11, 2016)
Time Frame	Approximately 6 weeks	
Instructional Days	December 1- January 22, 2016	
Georgia Content Focus Standards	***Habits of Mind / Nature of Science – See Page 3*** **S4E1 Students will compare and contrast the physical attributes of stars, star patterns, and planets.** a. Recognize the physical attributes of stars in the night sky such as number, size, color, and patterns. b. Compare the similarities and differences of planets to the stars in appearance, position, and number in the night sky. c. Explain why the pattern of stars in a constellation stays the same, but a planet can be seen in different locations at different times. d. d. Identify how technology is used to observe distant objects in the sky. **S4E2 Students will model the position and motion of the earth in the solar system and will explain the role of relative position and motion in determining sequence of the phases of the moon.** a. Explain the day/night cycle of the earth using a model. b. Explain the sequence of the phases of the moon. c. Demonstrate the revolution of the earth around the sun and the earth's tilt to explain the seasonal changes. d. Demonstrate the relative size and order from the sun of the planets in the solar system. a.	
	Unit 6: Ecology	
Time Frame	Approximately 6 weeks	
Instructional Days	January 25-March 4, 2016	
Georgia Content Focus Standards	***Habits of Mind / Nature of Science – See Page 3*** **S4L1 Students will describe the roles of organisms and the flow of energy within an ecosystem.** a. Identify the roles of producers, consumers, and decomposers in a community. b. Demonstrate the flow of energy through a food web/food chain beginning with sunlight and including producers, consumers, and decomposers. c. Predict how changes in the environment would affect a community (ecosystem) of organisms. d. Predict effects on a population if some of the plants or animals in the community are scarce or if there are too many. **S4L2 Students will identify factors that affect the survival or extinction of organisms such as adaptation, variation of behaviors (hibernation) and external features (camouflage and protection).** b. Identify external features of organisms that allow them to survive or reproduce better than other organisms that do not have these features. (e.g. camouflage, use of hibernation, protection, etc.) Identify factors that may have lead to the extinction of some organisms.	

	Formative Learning Review	Formative Learning Review and Next Grade Preview
Time Frame	March 7 until GMAS EOG Science	Post-testing Window through End of School Year
Instructional Days	Approximately 15-20 days (3-4 weeks)	Approximately 20-25 days (4-5 weeks)
Georgia Content Focus Standards Review	Whole group, small group and individual Formative Learning review based on spiraled Quarterly Benchmark Assessment data	Additional Formative Learning review for targeted non-proficiency students Fourth grade content enrichment activities

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Georgia Supporting Standards Descriptions

Habits of the Mind

S4CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.

a. Keep records of investigations and observations and do not alter the records later.

b. Carefully distinguish observations from ideas and speculation about those observations.

c. Offer reasons for findings and consider reasons suggested by others.

d. Take responsibility for understanding the importance of being safety conscious.

S4CS2. Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.

a. Add, subtract, multiply, and divide whole numbers mentally, on paper, and with a calculator.

b. Use fractions and decimals, and translate between decimals and commonly encountered fractions – halves, thirds, fourths, fifths, tenths, and hundredths (but not sixths, sevenths, and so on) – in scientific calculations.

c. Judge whether measurements and computations of quantities, such as length, area, volume, weight, or time, are reasonable answers to scientific problems by comparing them to typical values.

S4CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities utilizing safe laboratory procedures.

a. Choose appropriate common materials for making simple mechanical constructions and repairing things.

b. Measure and mix dry and liquid materials in prescribed amounts, exercising reasonable safety.

c. Use computers, cameras and recording devices for capturing information.

d. Identify and practice accepted safety procedures in manipulating science materials and equipment.

S4CS4. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.

a. Observe and describe how parts influence one another in things with many parts.

b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world. Identify ways in which the representations do not match their original counterparts.

c. Identify patterns of change in things—such as steady, repetitive, or irregular change—using records, tables, or graphs of measurements where appropriate.

S4CS5. Students will communicate scientific ideas and activities clearly.

a. Write instructions that others can follow in carrying out a scientific procedure.

b. Make sketches to aid in explaining scientific procedures or ideas.

c. Use numerical data in describing and comparing objects and events.

d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.

S4CS6. Students will question scientific claims and arguments effectively.

a. Support statements with facts found in books, articles, and databases, and identify the sources used.

b. Identify when comparisons might not be fair because some conditions are different.

The Nature of Science

S4CS7. Students will be familiar with the character of scientific knowledge and how it is achieved. Students will recognize that:

a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.

b. Some scientific knowledge is very old and yet is still applicable today.

S4CS8. Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:

a. 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.

b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.

c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.

d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.

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Quarterly Benchmark Assessments (cumulative)

Question Types
Q1 – 25 MC
Q2 – 35 MC
Q3 – 45 MC

Time

- Approximately 60 minutes
- Must be scheduled during a single day test session

Georgia Milestones End of Grade Measures: Domain Structures and Content Weights	Domain	Approximate Weight	Unit	Number of Instructional Days
Science	Earth Science	40%	1, 5	60
	Life Science	30%	6	30
	Physical Science	30%	2, 3, 4	35

Pertinent GMS Assessment Information

Question Types

- **75 Selected-response items**
  - 65- Operational items which contribute to student's criterion-referenced and/or norm-referenced score
    - 45 points- 45 items (criterion-referenced score/ proficiency designation only)
    - 10 points- 10 items (criterion-referenced score/proficiency designation **and** norm-referenced score)
    - 10 points- 10 items (norm-referenced score only)
  - 10- Field test items (Do not contribute to student's score)
  - Four answer choices
    - Incorrect choices, called distractors, usually reflect common errors
    - The student's task is to choose, from the alternatives provided, the best answer to the question posed in the stem (the question)

Time

- Two sections
- 70 minutes per section

Sections 1 and 2 must be scheduled to be administered on the same day in one test session