

GRENADA UPPER ELEMENTARY SCHOOL
FOURTH GRADE/2009-2010
SCIENCE CURRICULUM MAP
1ST NINE WEEKS

CONTENT STRAND: LIFE SCIENCE

Competency 3: Develop and demonstrate an understanding of the characteristics, structures, life cycles, and environments of organisms.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Describe the cause and effect relationships that explain the diversity and evolution of organisms over time. (DOK 2) <ul style="list-style-type: none"> • Observable traits due to inherited or environmental adaptations • Variations in environment (over time and from place to place) • Variations in species as exemplified by fossils • Extinction of a species due to insufficient adaptive capability in the face of environmental changes 	Lesson 6 Unit B Lesson 5 Unit A Lesson 3 Unit A Lesson 3 Unit A	
b	Classify the organs and functions of the nervous, circulatory, and respiratory systems of the body. (DOK 1)	Lesson 4 Unit B	
c	Compare characteristics of organisms, including growth and development, reproduction, acquisition and use of energy, and response to the environment. (DOK 2) <ul style="list-style-type: none"> • Life cycles of various animals to include complete and incomplete metamorphosis • Plant or animal structures that serve different functions in growth, adaptation, and survival • Photosynthesis 	Lesson 4 Unit A Lesson 5 Unit B Lesson 6 Unit B Lesson 6 Unit A	
d	Distinguish the parts of plants as they relate to sexual reproduction and explain the effects of various actions on the pollination process (e.g., wind, water, insects, adaptations of flowering plants, negative impacts of pesticides). (DOK 2)	Lessons 6, 7 Unit A	
e	Analyze food webs to interpret how energy flows from the sun. (DOK 2)	Lesson 4 Unit A	
f	Describe the structural and functional relationships among the cells of an organism. (DOK2) <ul style="list-style-type: none"> • Benefit from cooperating • Vary greatly in appearance • Perform very different roles 	Lesson 1 Unit A	

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SCIENCE CURRICULUM MAP
2ND NINE WEEKS

CONTENT STRAND: EARTH AND SPACE SCIENCE

Competency 4: Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Classify sedimentary, metamorphic, and igneous rocks. (DOK 2)	Lesson 1 Unit C	
b	Compare and contrast Earth's geological features and the changes caused by external forces. (DOK 2) <ul style="list-style-type: none"> • Bodies of water, beaches, ocean ridges, continental shelves, plateaus, faults, canyons, sand dunes, and ice caps • External forces including heat, wind and water • Movement of continental plates 	Lesson 3, Unit C	
c	Investigate, record, analyze and predict weather by observing, measuring with simple weather instruments, and recording weather data (e.g., temperature, precipitation, sky conditions, weather events), and using past patterns to predict future patterns. (DOK 2)	Lessons 6, 7 Unit D	
d	Describe how human activities have decreased the capacity of the environment to support some life forms. (DOK 2) <ul style="list-style-type: none"> • Reducing the amount of forest cover • Increasing the amount of chemicals released into the atmosphere • Farming intensively 		
e	Compare and Contrast the seasons and explain why seasons vary at different locations on Earth. (DOK 2)	Lesson 6, Unit C	
f	Describe objects in the universe including their movement. (DOK 2) <ul style="list-style-type: none"> • Physical features of the moon (craters, plains, mountains) • Appearance and movement of Earth and its moon (e.g., waxing/waning of the moon and lunar/solar eclipses) • Why a planet can be seen in different constellations (locations) at different times 	Lessons 6, 7 Unit C	
g	Summarize the process that results in deposits of fossil fuels and conclude why fossil fuels are classified as nonrenewable resources. (DOK 2)		

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3RD NINE WEEKS

CONTENT STRAND: PHYSICAL SCIENCE

Competency 2: Use the properties of objects and materials, position and motion of objects, and transfer of energy to develop an understanding of physical science concepts.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Recognize that materials may be composed of parts that are too small to be seen without magnification. (DOK 1)	Lessons 1, 2 Unit E	
b	Distinguish between physical and chemical changes and between objects composed of a single substance from those composed of more than one substance. (DOK 2)	Lessons 3, 4, 5 Unit E	
c	Determine the causes and effects of forces on motion. (DOK 2) <ul style="list-style-type: none"> • Force exerted over a distance causes work to be done and that the result (work) is the product of force and distance • Friction on moving objects and actions that increase or decrease friction • Momentum and inertia 	Lesson 1 Unit F	
d	Explain how energy flowing through an electrical circuit can be converted from electrical energy to light, sound, or heat energy. (DOK1) <ul style="list-style-type: none"> • Parts of an electric circuit and resulting actions when circuits are opened or closed • Construction and uses of electromagnets • Energy transferred through an electrical circuit to a bulb or bell to its surroundings as light, sound, and heat (thermal) energy 	Lessons 7, 8 Unit F	
e	Describe how light behaves (travels in a straight line, is absorbed, reflected, refracted, or appears transparent or translucent). (DOK 1)	Lesson 4 Unit F	
f	Investigate and draw conclusions about the relationship between the rate of vibrating objects and the pitch of the sound. (DOK 3)	Lesson 5 Unit F	
g	Describe how heat flows from a warm object to a cold one and categorize examples of materials that may or may not be used as insulators. (DOK 2)	Lesson 3 Unit F	

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SCIENCE CURRICULUM MAP
4TH NINE WEEKS

Review of all objectives

Catch up time on any objectives not yet covered

Competency 1 shall be ongoing throughout the school year.

Each Science lesson must cover the content strand: Inquiry

CONTENT STRAND: INQUIRY

Competency 1: Explain and use skills necessary to conduct scientific inquiry.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>
a	Form hypotheses and predict outcomes of problems to be investigated. (DOK 3)
b	Use the senses and simple tools to gather qualitative information about objects or events (size, shape, color, texture, sound, position, change). (DOK 1)
c	Demonstrate the accurate use of simple tools to gather and compare information (DOK 1) <ul style="list-style-type: none"> • Tools (English rulers [to the nearest eighth of an inch], metric rulers [to the nearest centimeter], thermometers, scales, hand lenses, microscopes, balances, clocks, calculators, anemometers, rain gauges) • Types of data (height, mass/weight, temperature, length, distance, volume, area, perimeter)
d	Use simple sketches, diagrams, tables, charts, and writing to draw conclusions and communicate data results. (DOK 2)
e	Interpret and describe patterns of data using drawings, diagrams, charts, tables, graphs, and maps. (DOK 2)
f	Explain why scientists and engineers often work in teams with different individuals doing different things that contribute to the results. (DOK 2)
g	Draw conclusions about important steps (e.g., making observations, asking questions, trying to solve a problem, etc.) that led to inventions and discoveries. (DOK 3)

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SCIENCE CURRICULUM MAP
1ST NINE WEEKS

CONTENT STRAND: LIFE SCIENCE

Competency 1: Identify and describe structures and functions in living systems.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Investigate levels of organization in organisms including cells, tissues, organs, organ systems, whole organisms, and ecosystems.	Lessons 1, 8 Unit A R27-R34	
b	Explore ecosystems and biomes.	Lessons 1-5 Unit B	

Competency 2: Identify and describe reproduction and heredity of organisms.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Define and recognize examples of sexual and asexual reproduction.	Lessons 4, 5, 6 Unit A	
b	Explore how traits are used to classify individual inheritance patterns.	Lessons 1, 8 Unit A	

Competency 3: Determine the factors that influence the regulation and behavior of organisms.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Identify and describe resources needed to grow, reproduce, maintain, and survive in a changing environment.	Lessons 2, 3 Unit A	
b	Investigate ways organisms adapt to their environment.	Lessons 7, 9 Unit A	

Competency 4: Examine the physical factors of populations as they relate to the formation of the ecosystem.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Identify, describe, and illustrate the roles among producers, consumers, and decomposers in a food web.	Lessons 2, 3 Unit B	
b	Investigate resources and other factors (living and nonliving) that promote and limit growth of populations in an ecosystem.	Lesson 4 Unit B	

Competency 5: Explore the diversity and adaptations of organisms.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Classify organisms by their similarities.	Lesson 1, 8 Unit A	
b	Explore and explain biological adaptations in a particular environment.	Lesson 6 Unit B	
c	Research and investigate environmental changes and the inability of a species to adapt.	Lesson 7 Unit A Lesson 6 Unit B	

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2ND NINE WEEKS

CONTENT STRAND: EARTH AND SPACE SCIENCE

Competency 6: Investigate the structure of the Earth.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Investigate the structure of the atmosphere (gas-air), hydrosphere (liquid-water), and lithosphere (solid-land).	Lesson 1 Unit C	
b	Examine how organisms affect the composition of the Earth and its atmosphere.	Lesson 5 Unit C	
c	Analyze processes that cause changes on Earth.	Lesson 2 Unit C	
d	Explore fossils as indicators of how life and environmental conditions have changed.	Lesson 4 Unit C	

Competency 7: Investigate the Earth as a part of the solar system.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Explore how the Earth's motion defines the day and the year and influences the phases of the moon and eclipses.	Lesson 1 Unit C	
b	Explain how gravity influences the action of the tides.	Lesson 7 Unit C	
c	Explain and illustrate how the tilt of the Earth's axis and Earth's revolution around the Sun create the seasons.	Lesson 1 Unit C	

- **Do not forget that the State Science test does cover the 3rd and 4th grade objectives on Weather. Make sure you go over that section with your students.**

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3RD NINE WEEKS

CONTENT STRAND: PHYSICAL SCIENCE

Competency 8: Identify properties and changes of matter.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Observe and explore physical and chemical properties such as density, boiling/freezing point, and solubility of a substance.	Lessons 1, 3 Unit E	
b	Explore, observe, discuss, and record physical and chemical changes using everyday substances.	Lessons 4, 5 Unit E	
c	Recognize elements that combine chemically to produce compounds.	Lesson 2 Unit E	
d	Demonstrate the ability to use simple measuring devices using metric and English units.	Lessons 1, 2, 4 Unit E	

Competency 9: Investigate the effect motions and forces have on objects.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Explore, measure, and graph the motion of an object.	Lesson 7 Unit E Lesson 1 Unit F	
b	Explore and measure the effect of force on an object.	Lessons 2, 3 Unit F	

Competency 10: Examine the transformations of forms of energy.

<u>Obj. Letter</u>	<u>OBJECTIVE</u>	<u>Reference to Textbook</u>	<u>Date(s) Taught</u>
a	Design and construct simple and compound machines.		
b	Design and construct electrical circuits (open, closed, series, parallel).		
c	Design and construct an electromagnet.		

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4TH NINE WEEKS

Review of all objectives taught throughout the year.