New Jersey Core Curriculum Content Standard Area:

SCIENCE Grade 6

Properties of Matter

Catastrophic Events

Fruitvale Water Contamination

Revised July 2011

By

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New Jersey Core Curriculum Content Standard Area: SCIENCE

Topic/Course: Properties of Matter Grade: 6 Date: Revised July 2011 2

Essential Question NJCCCS Standard	*NJCCCS* Skills/Objectives/ Areas of Focus	*Instructional Strategies* Activities/ Materials /Technology Interdisciplinary Connections Cultural Diversity	*Modifications* ESL / Special Education Academic Support/ G&T	*Assessments* Formative Summative Benchmarks	*Pacing*
Standards: **5.1 Science Practices** **5.2 Physical Science** **5.1 D How does scientific knowledge benefit, deepen, and broaden from scientists sharing and debating ideas and information with peers?** **5.1.8. D.1** Engage in multiple forms of discussion in order to process, make sense of and learn from others' ideas, observations, and experiences. **5.1.8. D.2** Engage in productive scientific discussion practices during conversations with peers, both face-to-face and virtually, in the context of investigations and model-building. **5.1.8. D.3** Demonstrate how to safely use tools, instruments, and supplies.	SWDAT: Gain an understanding of what matter is. Explore the three states of matter: solid, liquid and gas. Find mass, volume, density of various objects and substances. Understand density of various liquids.	TLW: Perform index card activity to categorize matter and non matter. Create charts and illustrations of the three states using the Frayer Model and clothesline activity. Conduct practice lab activities using rulers, graduated cylinders, balances and calculators to determine mass, volume and density of various objects/substances. Create charts to organize and compare results. Create a liquid density column in a graduated cylinder.	• cooperative learning groups • extended time • reduced number of questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash • Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls • Quiz – Quiz - Trade	• Pre-unit assessment • Class and team discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	2 Days 2 Weeks 6 weeks 1 Week

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5.2 A How do the properties of materials determine their use? **5.2.6. A.1** Determine the volume of common objects using water displacement methods. **5.2.6. A.2** Calculate the density of objects of substances after determining volume and mass. **5.2.6. A.3** Determine the identity of an unknown substance using data about intrinsic properties. **5.2.8. A.1** Explain that all matter is made of atoms, and give examples of common elements. **5.2.8.A.2** Analyze and explain the implications of the statement "all substances are composed of elements" **5.2.8. A.3** Use the kinetic molecular model to predict how solids, liquids, and gases would behave under various physical circumstances, such as heating or cooling.	SWDAT: Investigate the structure of an atom. Explore the Periodic Table of Elements and understand its basic organization.	TLW: Illustrate and label parts of an atom. Conduct Matterville Activity to understand protons, neutrons and electrons. Reinforce learnings with the Atoms Family song Use the Internet to discover everyday uses for elements	• cooperative learning groups • extended time • reduced number of questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash • Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls • Quiz – Quiz - Trade	• Pre-unit assessment • Class and team discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	2 Weeks 3 Weeks

Topic/Course: Catastrophic Events Grade: 6 Date Revised: July 2011

Essential Question NJCCCS Standard	*NJCCCS* Skills/Objectives/ Areas of Focus	*Instructional Strategies* Activities/ Materials /Technology Interdisciplinary Connections Cultural Diversity	*Modifications* ESL / Special Education Academic Support/ G&T	*Assessments* Formative Summative Benchmarks	*Pacing*
Standards: **5.1 Science Practices** **5.4 Earth Systems Science** **Strands:** **5.1 D How does scientific knowledge benefit deepen and broaden from scientists sharing and debating ideas and information with peers?** **5.4 E Which earth materials change temperature the most in the sun and shade?**	SWDAT: Understand how scientists collaborate in order to further understand catastrophic events. **5.1.8. D.1** Engage in multiple forms of discussion in order to process, make sense of, and learn from others' ideas, observations, and experiences. **5.1.8. D.2** Engage in productive scientific discussion practices during conversations with peers, both face-to-face and virtually, in the context of scientific investigations and model-building. **5.4.6. E.1**Generate a conclusion about energy transfer and circulation by observing a model of convection currents. **5.4.8. E.1**Explain how energy from the Sun is transformed or transferred in global wind circulation, ocean circulation, and the water cycle.	TLW: Brainstorm catastrophic events and discuss the characteristics of them Create flash cards to classify each type of scientist and the tools they use	• cooperative learning groups • extended time • reduced number of questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash • Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls • Quiz – Quiz - Trade • cooperative learning	• Pre-unit assessment • Class and team discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	1 day 2 days

Topic/Course: Catastrophic Events Grade: 6 Date Revised: July 2011

5.4 F How do geologists, meteorologists, seismologists, and volcanologists work together to better understand catastrophic events? **5.4 F What are the key features and development of tornadoes, a hurricanes and thunderstorms?** **5.4.6. F.1**Explain the interrelationships between daily temperature, air pressure, and relative humidity data. **5.4.8. F.2** Explain the mechanisms that cause varying daily temperature ranges in a coastal community and in a community located in the interior of the country. **5.4.8. F.3**Create a model of the hydrologic cycle that focuses on the transfer of water in and out of the atmosphere. Apply the model to different climates around the world.	SWDAT: Understand how the surface of the earth reflects and absorbs heat. Describe convection currents specifically that warm air rises and cool air sinks. Explore the layers of the atmosphere and its weather related role. Investigate the development of and key features of a variety of storms.	TLW: Conduct an experiment to observe uneven heating Conduct a lab activity to simulate and observe convection currents Create a chart to describe the functions of the layers of the atmosphere and illustrate components of each layer Observe a model of a vortex Chart the path of a hurricane Use maps to explore the location of Tornado Alley	groups • extended time • reduced number of questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash • Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls • Quiz – Quiz - Trade	• Pre-unit assessment • Class and team discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	2 weeks 2 weeks 1 week 3 weeks

Essential Question	*NJCCCS*	*Instructional Strategies*	*Modifications*	*Assessments*	*Pacing*

Topic/Course: Catastrophic Events Grade: 6 Date Revised: July 2011

NJCCCS Standard	Skills/Objectives/ Areas of Focus	Activities/ Materials /Technology Interdisciplinary Connections Cultural Diversity	ESL / Special Education Academic Support/ G&T	Formative Summative Benchmarks	
Standards: **5.1 Science Practices** **5.4 Earth Systems Science**	SWDAT: Comprehend that energy travels through seismic waves.	TLW: Conduct a lab activity that simulates earthquake waves.	• cooperative learning groups • extended time • reduced number of questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash • Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls	• Pre-unit assessment • Class and team discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	2 – 3 days
Strands/CPIs: **5.1 A How do we build and refine models that describe and explain the natural and designed world?** **5.1.8. A.1** Demonstrate understanding and use interrelationships among central scientific concepts to revise explanations and to consider alternative explanations.	Explore the necessary components of an earthquake – resistant structure.	Design, build, and test earthquake resistant structures.			3 days
5.1.8.A.2 Use mathematical, physical, and computational tools to build conceptual-based models and to pose theories.	Understand the steps of plotting the epicenter of an earthquake.	Using seismographs and analyzing seismograms. Conduct lab activity to plot epicenters of earthquakes.			1 week
5.1 B What constitutes useful scientific evidence? **5.1.8. B.1** Design investigations and use scientific instrumentation to collect, analyze, and evaluate evidence as part of building and revising models and explanations.	Compare / Contrast magnitude and intensity of earthquakes.	Create Venn diagram and/or bowtie.			1 week
5.1.8. B.2 Gather, evaluate, and represent evidence using scientific tools, technologies, and computational strategies.	Compare / Contrast the Richter and Mercalli scales.	Use NOVA video "The Day the Earth Shook" to observe how magnitude does not necessarily dictate intensity.			1 week
	Identify and understand the layers of the Earth's interior.	Create a diagram and/or model of the Earth's interior.			1 week
5.1 D How does scientific knowledge benefit, deepen, and broaden from scientists sharing and debating ideas and	Investigate plate movement and faults.	Use plate models to simulate divergent, convergent, and transform plate boundaries.	• cooperative learning groups • extended time • reduced number of	• Pre-unit assessment • Class and team	1 Week

information with peers? **5.1.8. D.1** Engage in multiple forms of discussion in order to process, make sense of, and learn from others' ideas, observations, and experiences. **5.1.8.D.2** Engage in productive scientific discussion practices during conversations with peers, both face-to-face and virtually, in the context of scientific investigations and model-building **5.1.8. D.3** Demonstrate how to safely use tools, instruments, and supplies. **5.4 B How do geologic events occurring today provide insight into Earth's past?** **5.4.8. B.1** Correlate the evolution of organisms and the environmental conditions on Earth as they changed throughout geologic time. **5.4.8. B.2** Evaluate the appropriateness of increasing the human population in a region (e.g., barrier islands, Midwest United States) based on the region's history of catastrophic events, such as volcanic eruptions, earthquakes, and floods.	Consider the theory of plate tectonics and scientific evidence of Pangaea. Explore how volcanoes are both helpful and hurtful to the earth. Understand the three different types of volcanoes. **5.4 D To what extent does the exchange of energy within the Earth drive geologic events on the surface.** **What are the key features of the layers of the earth?** **5.4.6. D.1** Apply understanding of the motion of lithospheric plates to explain why the Pacific Rim is referred to as the Ring of Fire. **5.4.8. D.1** Model the interactions between the layers of Earth. **5.4.8. D.2** Present evidence to support arguments for the theory of plate motion.	Use CD-ROM to model plate movement throughout earth's history. Cut and arrange paper continents to create a model of Pangaea. Read "Volcanoes: Help or Hindrance" and create a t-chart. Explore the effects of volcanic ash from Mt. St. Helen's pennies. Organize facts on shield, cinder-cone and composite volcanoes. Use volcano pictures to practice classifying volcanoes by their appearance and facts.	questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash • Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls • Quiz – Quiz - Trade	discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	2 Weeks

New Jersey Core Curriculum Content Standard Area: SCIENCE

Topic/Course: Fruitvale: Water Contamination Grade: 6 Date Revised: July 2011 8

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Standards: **5.1 Science Practices** **5.4 Earth Systems Science** **5.1 A How do we build and refine models that describe and explain the natural and designed world?** **5.1.8. A.1Demonstrate** understanding and use interrelationships among central scientific concepts to revise explanations and to consider alternative explanations. **5.1.8. A.2Use** mathematical, physical, and computational tools to build conceptual-based models and to pose theories. **5.1.8. A.3Use** scientific principles and models to frame and synthesize scientific arguments and pose theories. **5. 1 D How does scientific knowledge benefit, deepen and broaden from scientists sharing and debating ideas and information with peers?** **5.1.8. D.1Engage** in multiple	SWDAT: Explore the movement of water through the water cycle. Understand and use street, geologic cross section and topographic maps. Use scientific method to determine which areas are polluted in Fruitvale based on lessons about aquitards and aquifers.	TLW: Create labeled diagrams to illustrate the water cycle. Complete graphic organizer on types of maps. Complete various map reading activities. Conduct lab activity where students test water well samples to determine the concentration levels of pesticide.	• cooperative learning groups • extended time • reduced number of questions • smaller groups • reduced group discussion time • high interest/lower level selections • copies of class notes • anticipatory guides • chapter summaries • books on tape • shorter reading passages assigned • individualized mini-lessons • Include pictograms with definitions • modified rubric • varied notebook entry requirements • Use Inspiration to create graphic organizers • Word splash, Jigsaw • Perfect 10/ Tic Tac Toe • Wonderwheel • Read the Walls • Quiz – Quiz - Trade	• Pre-unit assessment • Class and team discussions • Notebooks • Class discussion • Teacher observation • Anecdotal notes • NJASK • Interactive science notebooks • Frayer models	1 Week 1 Week 2 Weeks

forms of discussion in order to process, make sense of, and learn from others' ideas, observations, and experiences. **5.1.8. D.2Engage** in productive scientific discussion practices during conversations with peers, both face-to-face and virtually, in the context of scientific investigations and model-building. **5.1.8. D.3Demonstrate** how to safely use tools, instruments, and supplies. **5.4 G How do people effect the environment?** **5.4.6. G.2Create** a model of ecosystems in two different locations, and compare and contrast the living and nonliving components. **5.4.8. G.3Describe** ways that humans can improve the health of ecosystems around the world.					