Fourth Grade NGSS/Benchmark Alignment

Life Science





4-Life Science1 (4-LS1) From Molecules to Organisms: Structures and Processes

Benchmark Unit 3 Life Science: Observing Nature

NGSS Standard				Benchmark	
4-LS1-1 Construct an argument that plants, and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.		Benchmark Essential Question How do we respond to nature?			
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Engaging in Argument from Evidence Construct an argument with evidence, data, and/or a model. (4-LS1-1)	LS 1.A: Structure and Function Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)	Systems and System Models A system can be described in terms of its components and their interactions. (4-LS1-1)	NOT ADDRESSED	 Whole Group Text: A Bird's Free Lunch pp. 4-5 (Texts for Close Reading) The Writing of John Burroughs pp.12-19 (Texts for Close Reading) Birches pp.22-27 (Texts for Close Reading) Birch Bark Canoes p. 30 (Texts for Close Reading) Small Group Text: Doomed to Disappear: Endangered Species Habitats of South America How Animals Change and Grow My Whale of a Tale On the Move: animal Migration Opinions About Ocean Health 	NOT ADDRESSED

Fourth Grade Life Science (cont'd)

The information below cites correlations to FOSS CA to address what is missing from the standard(s) listed in Benchmark. The complete fourth grade NGSS standards can be found at: https://tinyurl.com/4thGradeCANGSS

FOSS CA: Environments: Investigation 5

Science and Engineering Practices Engaging in Argument from Evidence	Disciplinary Core Ideas Structure and Function	Crosscutting Concepts Systems and System Models
Investigation 5 Part 2 Science Notebook Sheet, No. 18 "Response Sheet – Range of Tolerance" (Step 10)	Investigation 5 Range of Tolerance	Investigation 5 Part 2 Focus Question (after Step 9): When ecosystems change, what happens to the organisms in the ecosystem?

NGSS Standard	Benchmark Unit 3 Life Science Observing Nature
4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	NOT ADDRESSED Benchmark covers different habitats that students could compare, but does not include students making observations of plants and animals to compare the diversity of life in different habitats.

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FOSS CA: Environments: Investigations 2

Science and Engineering Practices Developing and Using Models Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2)	Disciplinary Core Ideas LS 1.D: Information Processing Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)	Crosscutting Concepts Systems and System Models A system can be described in terms of its components and their interactions. (4-LS1-2)
Investigation 2 Part 2 Focus Question (after Step 21): How can you determine what type of environment isopods and beetles prefer?	Investigation 2 Isopods and Beetles	Investigation 2 Part 3 Focus Question (after Step 7): How do animals depend on plants for survival? How do plants depend on animals for survival?

Fourth Grade NGSS/Benchmark Alignment

Earth and Space Sciences



- 4- Earth and Space Sciences1 (4-ESS1) Earth's Place in the Universe
- 4 Earth and Space Sciences2 (4-ESS2) Earth's Systems
- 4 Earth and Space Sciences3 (4-ESS3) Earth and Human Activity



Benchmark Unit 8 Earth and Space Sciences: Earth Changes

NGSS Standard			Benchmark		
4-ESS 1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.			Benchmark Esse How do Earth's na	ential Question atural processes impact our lives?	
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions Identify the evidence that supports particular points in an explanation. (4-ESS1-1)	ESS1.C: The History of Planet Earth Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)	Patterns Patterns can be used as evidence to support an explanation. (4-ESS1-1)	NOT ADDRESSED	 Whole Group Text: Earthquakes pp. 4-5 (Texts for Close Reading) Volcanos pp. 12-19 (Texts for Close Reading) The Mount St. Helens Volcano p. 20 (Texts for Close Reading) Interview with an Earthquake Expert pp. 120-121 (Read Aloud Handbook) Small Group Text: Earth: Fast Changes Earth: Slow Changes Earth: Measuring Its Changes The Seven Natural Wonders Trackers of Dynamic Earth Tsunamis Unit Opener Video: Earth Changes 	NOT ADDRESSED

	Fourth Grade Earth and Space Sciences (cont'd)					
		FOSS CA: Solid Ea	rth: Investigatio	n 5		
Science and Engi	neering Practices	Disciplinary	Core Ideas		Crosscutting Concepts	S
Constructing Explanation Solutions	ns and Designing	The History of Planet Ear	rth		Patterns	
What is the role of erosion and deposition in the rock What are some ways that		Investigation 5 Part 4 Focus Question (after St What are some ways that quickly?		ange	Investigation 5 Part 4 Science Notebook Sheet, Nos. 25-27 "Response Sheet – Landforms" Step 19	
4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.		•	Benchmark Unit 8 Earth and Space Sciences: Earth Changes			
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices		Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out an Investigation Make observations and measurements to produce data to serve as a basis for evidence. (4-ESS2-1)	ESS1.C: Earth Materials and Systems Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1)	Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS2-1)	NOT ADDRESSED	• V • M Ha Small • E • E • T • T • T • T • Content	Group Text: olcanos pp. 12-19 (Texts for Close Reading) lapping Disaster pp. 134-135 (Read Aloud andbook) I Group Text: arth: Fast Changes arth: Slow Changes arth: Measuring Its Changes he Seven Natural Wonders rackers of Dynamic Earth sunamis t Across Disciplines Inquiry Projects IONAL RESOURCES tab): Report	NOT ADDRESSED

Fourth Grade Earth and Space Sciences (cont'd)

FOSS CA: Solid Earth: Investigations 5

Science and Engineering Practices Planning and Carrying Out an Investigation	Disciplinary Core Ideas Earth Materials and Systems	Crosscutting Concepts Cause and Effect
Investigation 5 Part 5 Focus Question (Step 4): How would you set up an investigation using a stream table to find out how water flow, landforms, or structures affect erosion and deposition?	Investigation 5 Landforms	Investigation 5 Part 2 Focus Question (Step 13): What are some of the landforms that erosion can create?

4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.				Benchmark Unit 8 Earth and Space Sciences: Earth Changes	
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning. (4-ESS2-2)	ESS2.B: Plate Tectonics and Large-Scale System Interactions The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2)	Patterns Patterns can be used as evidence to support an explanation. (4-ESS2-2)	NOT ADDRESSED	 Whole Group Text: Volcanos pp. 12-19 (Texts for Close Reading) Mapping Disaster pp. 134-135 (Read Aloud Handbook) Small Group Text: Earth: Fast Changes Earth: Slow Changes Earth: Measuring Its Changes The Seven Natural Wonders Trackers of Dynamic Earth Tsunamis Content Across Disciplines Inquiry Projects (ADDITIONAL RESOURCES tab): Report Drought Data 	NOT ADDRESSED

Fourth Grade Earth and Space Sciences (cont'd)					
	FOSS CA: Solid Ear	th: Investigations 5			
Science and Engineering Practices	Disciplinary Core Ideas Crosscutting Concepts				
Analyzing and Interpreting Data	Plate Tectonics and Large-Scale System Interactions		Patterns		
Investigation 5 Part 4 Focus Question (After Step 9): Which of the two factors investigated would have greater effect on the creation of the Grand Canyon?	Investigation 5 Part 4 Science Resource Book (Step 17): It Happened So Fast		Investigation 5 Part 4 Focus Questions (Step 16) What effect does slope have on erosion? What effect does flood have on erosion?		
NGSS Standard		В	enchmark Unit 3 Life Science Earth Changes		
4-ESS3-1 . Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment.			NOT ADDRESSED		

FOSS CA: Solid Earth: Investigations 5

Science and Engineering Practices Obtaining, Evaluating, and Communicating Information Obtain and combine information from books and/or other reliable media to explain phenomena. (4-ESS3-1)	Disciplinary Core Ideas Natural Resources Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3-1)	Crosscutting Concepts Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (4-ESS3-1)
Investigation 5 Part 4 Focus Question (after Step 18): What are some ways that landforms can change quickly?	 Investigation 5 Part 13 Focus Question (after Step 15) How do the earth materials eroded by a river affect the environment? How do the earth materials deposited by a river affect the environment? 	Investigation 5 Part 2 Focus Question (Step 13): What are some of the landforms that erosion can create?

	Fourth Grade Earth and Space Sciences (cont'd)				
4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.			Benchmark Unit 8 Earth and Space Sciences: Earth Changes		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. (4-ESS3-2)	ESS3.B: Natural Hazards A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4-ESS3-2)	Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS3-2)	NOT ADDRESSED	 Small Group Text: Earth: Measuring Its Changes Trackers of Dynamic Earth Tsunamis Content Across Disciplines Inquiry Projects (ADDITIONAL RESOURCES tab): Report Drought Data, Design an Earthquake Resistant Building 	NOT ADDRESSED

FOSS CA: Solid Earth:	Investigations 3 and 5
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Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions	Natural Hazards	Cause and Effect
Investigation 5 Part 4 Rapid Changes	Investigation 5 Part 4 Science Resource Book (Step 17) It Happened So Fast	Investigation 5 Part 1 Weathering (Step 6) Discuss Results"

Fourth Grade NGSS/Benchmark Alignment

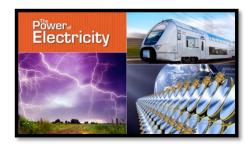
Physical Science



4-Physical Science3 (4-PS3) Energy

4-Physical Science4 (4-PS4) Waves and their Applications in Technologies for Information Transfer

Engineering, Technology, and Applications of Science (3-5-ETS1) Engineering Design



Benchmark Unit 10 Physical Science: The Power of Electricity

NGSS Standard

Benchmark

Benchmark Essential Question

4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.

In this unit, students will read and compare selections about electricity to understand how scientific discoveries change our world.

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Science and Engineering Practices Constructing Explanations and Designing Solutions Use evidence to construct an explanation. (4-PS3-1)	Disciplinary Core Ideas Definitions of Energy The faster a given object is moving, the more energy it possesses. (4-PS3-1)	Crosscutting Concepts Energy and Matter Energy can be transferred in various ways and between objects. (4-PS3-1)
Investigation 2 Part 5 Mystery Boards	Not available at this time.	Investigation 2 Part 4 Focus Question (After Step 10): How do you know if a material is a conductor or an insulator?

		Fourth Grade Physi	cal Science (con	ťd)	
	NGSS Standard				
	s to provide evidence that end, light, heat, and electric c			sential Question ific discoveries lead us?	
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out an Investigation Make observations and measurements to produce data to serve as a basis for evidence. (4-PS3-2)	Definitions of Energy Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2)	Energy and Matter Energy can be transferred in various ways and between objects. (4-PS3-2)	NOT ADDRESSED	 Whole Group Text: Benjamin Franklin: The Dawn of Electrical Technology pp. 6-9 (Texts for Close Reading) The Power of Electricity pp. 12-19 (Texts for Close Reading) Hoover Dam p. 20 (Texts for Close Reading) Nikola Tesla: Electrifying Inventor pp. 22-29 (Texts for Close Reading) Turning on the Light pp.154-155 (Read Aloud Handbook) Winds of Hope pp. 156-159 (Read Aloud Handbook) The Rise of Solar Farms pp. 162-163 (Read Aloud Handbook) Let there be light pp. 166-167 (Read Aloud Handbook) Small Group Text: Electricity Adds Up Electricity Adds Up Electrifying Personalities Snap, Crackle, and Flow Working with Electricity and Magnetism Unit Opener Video: The Power of Electricity Content Across Disciplines Inquiry Projects (ADDITIONAL RESOURCES tab): Show Cause and Effect, Record Radio Interviews 	NOT ADDRESSED

Fourth Grade Physical Science (cont'd)

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FOSS CA: Magnetism and Electricity: Investigations 2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations	Definitions of Energy	Energy and Matter
Investigation 2 Part 5 Focus Question (Step): What procedure did you use to determine the wire locations in each of the mystery boards?	Investigation 2 Making Connections	Investigation 2 Part 4 Focus Question (After Step 10): What kinds of energy conversion did you observe when you made electric circuits?

4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide. **Benchmark Unit 10 Physical Science**The Power of Electricity

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Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Asking Questions and Defining Problems Ask questions that can be investigated and predict reasonable outcomes. (4-PS3-3)	Relationship between Energy and Forces When objects collide, the contact forces transfer energy so as to change the object's motions. (4-PS3-3)	Energy and Matter Energy can be transferred in various ways and between objects. (4-PS3-3)	NOT ADDRESSED	Whole Group Text: • Let There Be Light pp. 166-167 (Read Aloud Handbook)	NOT ADDRESSED

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Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Asking Questions and Defining Problems	Relationship between Energy and Forces	Energy and Matter
Investigation 4 Part 2	Not available at this time.	Investigation 4 Part 1
Step 8 "Use the Graph to Make Predictions"		Focus Question (Step 15): How can you make a magnet that turns on and off?

4-PS3-4. Apply scientific id energy from one form to ar	eas to design, test, and refination	ne a device that converts		Benchmark Unit 10 Physical Science The Power of Electricity	
Science and Engineering Practices Constructing Explanations and Designing Solutions Apply scientific ideas to solve design problems. (4-PS3-4)	Conservation of Energy and Energy Transfer Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-4)	Energy and Matter Energy can be transferred in various ways and between objects. (4-PS3-4)	Science and Engineering Practices NOT ADDRESSED	 Disciplinary Core Ideas Whole Group Text: The Power of Electricity pp. 12-19 (Texts for Close Reading) Hoover Dam p. 20 (Texts for Close Reading) Winds of Hope pp. 156-159 (Read Aloud Handbook) Sweat Power p. 160 (Read Aloud Handbook) Student Gym Rats Help Power Texas State University Campus p. 161 (Read Aloud Handbook) The Rise of Solar Farms pp. 162-163 (Read Aloud Handbook) Elon Musk: Exploring Earth, Space, and the Internet pp. 164-165 (Read Aloud Handbook) Let there be light pp. 166-167 (Read Aloud Handbook) Small Group Text: Electricity Adds Up Electrifying Personalities Snap, Crackle, and Flow Working with Electricity and Magnetism 	Crosscutting Concepts NOT ADDRESSED

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing	Conservation of Energy and Energy Transfer	Energy and Matter
Solutions		
Investigation 3 Part 3	Investigation 3	Investigation 3 Part 2
Focus Question (Step 15):	Advanced Connections	Focus Question (After Step 6):
The String-of-Lights Problem		How you make the two lights in a series circuit
		brighter?

	Fourth Grade Physical Science (cont'd)				
· ·	of waves to describe patter vaves can cause objects to n	•		Benchmark Unit 10 Physical Science The Power of Electricity	
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Develop a model using an abstract representation. (4-PS4-1)	Wave Properties Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between wave peaks). (4-PS4-1)	Patterns Similarities and differences in patterns can be used to sort, classify, and analyze simple rates of change for natural phenomena (4-PS4-1)	NOT ADDRESSED	Small Group Text: • Electrifying Personalities • Looking at Light	NOT ADDRESSED

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing	Conservation of Energy and Energy Transfer	Patterns
Solutions		
Investigation 2 Part 3	Not available at this time.	Investigation 2 Part 1
Step 14		Focus Question (After Step 9):
"Introduce Schematic Drawings"		What is a general rule for how charged objects
-		interact?

	Fourth Grade Physical Science (cont'd)				
4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.			Benchmark Unit 10 Physical Science The Power of Electricity		
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Develop a model to describe phenomena. (4-PS4-2)	Electromagnetic Radiation An object can be seen when light reflected from its surface enters the eyes. (4-PS4-2)	Cause and Effect Cause and effect relationships are routinely identified. (4-PS4-2)	NOT ADDRESSED	Small Group Text: • Looking at Light	NOT ADDRESSED

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions	Conservation of Energy and Energy Transfer	Cause and Effect
Investigation 3 Part 2 Science Notebook Sheet, No. 19 "Response Sheet – Advanced Connections" Step 15	Not available at this time.	Investigation 3 Part 2 Focus Question (Step 12): Which circuit can run more components from one D-cell? Why is that so?

Fourth Grade Physical Science (cont'd)						
4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.			Benchmark Unit 10 Physical Science The Power of Electricity			
Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
Constructing Explanations and Designing Solutions Generate and compare multiple solutions to a problem. (4-PS4-3)	Information Technologies and Instrumentation Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information— convert it from digitized form to voice—and vice versa. (4-PS4-3)	Patterns Similarities and differences in patterns can be used to sort and classify designed products. (4-PS4-3)	NOT ADDRESSED	 Small Group Text: Electrifying Personalities Great Inventions and Where They Came From 	NOT ADDRESSED	

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	
Constructing Explanations and Designing Solutions	Information Technologies and Instrumentation	Patterns	
Investigation 5 Part 3 Investigation and Experimentation	Investigation 5 Parts 1, 2, and 3 Click It	Investigation 5 Part 1 Step 8 "Invent a Code"	

NGSS Standard 3–ETS1 Engineering Design	Benchmark Unit 3 Observing Nature Unit 8 Earth Changes Unit 10 The Power of Electricity
ETS1.A: Defining and Delimiting an Engineering Problem Asking questions, making observations, and gathering information are helpful in thinking about problems. (secondary to K-ESS3-2)	NOT ADDRESSED Benchmark does not provide students opportunities to define an engineering problem within this standard band
ETS 1.BDevloping Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people	NOT ADDRESSED Benchmark does not provide students opportunities to design solutions for a problem within this standard band
ETS 1.C – Optimizing the Design Solution Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	NOT ADDRESSED Benchmark does not provide students opportunities to optimize design solutions for a problem within this standard band.