Science A-Z

GRADE 4

Alignment with National Science Standards

Use the chart below to find Science A-Z units that best support the Next Generation Science Standards at grade 4, and several featured resources from those units that provide strong connections. Each Performance Expectation in the chart represents all three dimensions: Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.*

Fourth Grade Storyline: "What are waves and what are some things they can do? How can water, ice, wind and vegetation change the land? What patterns of Earth's features can be determined with the use of maps? How do internal and external structures support the survival, growth, behavior, and reproduction of plants and animals? What is energy and how is it related to motion? How is energy transferred? How can energy be used to solve a problem?"

4. Energy		
Performance Expectations	**Disciplinary Core Ideas**	**Science A-Z Units** (Featured Resources)
4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.	PS3.A: Definitions of Energy	**5-6 Force and Motion** (Nonfiction Books; *Soccer* FOCUS Book; *Racecars* FOCUS Book; *Roller Coasters* FOCUS Book)
4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	PS3.A: Definitions of Energy	**3-4 Heat Energy** (Nonfiction Books; *Campfire Science* FOCUS Book) **3-4 Sound** (Nonfiction Books; *Animal Sounds* FOCUS Book; *Musical Instruments* FOCUS Book; *String Telephones* Process Activity
	PS3.B: Conservation of Energy and Energy Transfer	**3-4 Heat Energy** (Nonfiction Books; *Light Energy Converts to Heat Energy* Science Diagram) **3-4 Machines** (*Waterwheels and Windmills* FOCUS Book)
4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.	PS3.A: Definitions of Energy	**3-4 Machines** (*Wrecking Ball vs. Strong Wall* FOCUS Book)
	PS3.B: Conservation of Energy and Energy Transfer	**3-4 Machines** (*Wrecking Ball vs. Strong Wall* FOCUS Book)
	PS3.C: Relationship Between Energy and Forces	**5-6 Force and Motion** (*Soccer* FOCUS Book)

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4. Energy (continued)		
Performance Expectations	**Disciplinary Core Ideas**	**Science A-Z Units** (Featured Resources)
4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	PS3.B: Conservation of Energy and Energy Transfer	**3-4 Heat Energy** (*Geothermal Energy* Quick Reads) **3-4 Machines** (*Waterwheel and Windmills* FOCUS Book)
	PS3.D: Energy in Chemical Processes and Everyday Life	**5-6 Electricity and Magnetism** (Nonfiction Books; *Electricity from Steam* Science Diagram) **5-6 Light Energy** (Nonfiction Books)
	ETS1.A: Defining Engineering Problems	Resources to be developed
4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	ESS3.A: Natural Resources	**3-4 Heat Energy** (*Geothermal Power* Quick Reads; *Heat Sources Used Around the World* Quick Reads; *Gallon of Gas* Science Video) **5-6 Energy Resources** (Nonfiction Books, *Renewable Energy* Investigation Pack)

4. Waves: Waves and Information		
Performance Expectations	**Disciplinary Core Ideas**	**Science A-Z Units** (Featured Resources)
4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	PS4.A: Wave Properties	**3-4 Sound** (Nonfiction Books; *Seeing Sound* FOCUS Book; *Properties of Sound* Investigation Pack) **5-6 Light Energy** (Nonfiction Books; *Electromagnetic Spectrum* Science Diagram)
4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.	PS4.C: Information Technologies and Instrumentation	**3-4 Sound** (*Seeing Sound* FOCUS Book; *CDs: Sound from Light* Quick Reads; *Properties of Sound* Investigation Pack) **5-6 Light Energy** (Nonfiction Books; *Radiant Energy* Investigation Pack)
	ETS1.C: Optimizing The Design Solution	**3-4 Sound** (*Communicating with Sound Patterns* Project-Based Learning Pack)

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4. Structure, Function, and Information Processing		
Performance Expectations	**Disciplinary Core Ideas**	**Science A-Z Units** (Featured Resources)
4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.	PS4.B: Electromagnetic Radiation	**3-4 The Human Body** (Nonfiction Books; *The Sense of Sight* Science Diagram) **K-2 Senses** (*Properties of Senses* Investigation Pack) **5-6 Inside Living Things** (*Incredible Eyes* FOCUS Book)
4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	LS1.A: Structure and Function	**3-4 Vertebrates** (Nonfiction Books; *Pipe Cleaner Skeletons* Process Activity) **3-4 Invertebrates** (Nonfiction Books; *Observe Invertebrates* Process Activity) **3-4 Plant Life** (*Properties of Plants* Investigation Pack; *Air Plants* FOCUS Book)
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.	LS1.D: Information Processing	**3-4 Invertebrates** (*Arthropods* Investigation Pack) **3-4 Vertebrates** (*Creatures of the Deep: Chimaera* Science Video) **3-4 The Human Body** (*The Sense of Sight* Science Diagram; *The Sense of Smell* Science Diagram)

4. Earth's Systems: Processes that Shape the Earth		
Performance Expectations	**Disciplinary Core Ideas**	**Science A-Z Units** (Featured Resources)
4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	ESS1.C: The History of Planet Earth	**3-4 Minerals, Rocks, and Soil** (Nonfiction Books; *Fossils* FOCUS Book; *Diamonds* FOCUS Book; *Weathering Rocks* Process Activity) **3-4 Habitats/Environment** (*Habitats Then and Now* FOCUS Book)
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.	ESS2.A: Earth Materials and Systems	**3-4 Minerals, Rocks, and Soil** (Nonfiction Books; *Weathering Rocks* Process Activity) **5-6 Changing Landforms** (Nonfiction Books)
	ESS2.E: Biogeology	**K-2 Animals** (*Animals of the Rivers* FOCUS Book, *Animals in the Ground* FOCUS Book)
4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.	ESS2.B: Plate Tectonics and Large-Scale System Interactions	**3-4 Habitats/Environment** (*Habitats Then and Now* FOCUS Book) **5-6 Changing Landforms** (Nonfiction Books)

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4. Earth's Systems: Processes that Shape the Earth (continued)		
Performance Expectations	**Disciplinary Core Ideas**	**Science A-Z Units** (Featured Resources)
4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	ESS3.B: Natural Hazards	**3-4 Clouds, Wind, and Storms** (Nonfiction Books; *Ice Storms* FOCUS Book; *Listen to Weather Warnings* Quick Reads) **K-2 Weather** (*Wind* Investigation Pack) **5-6 Changing Landforms** (*Protecting People from a Volcanic Eruption* Project-Based Learning Pack)
	ETS1.B: Designing Solutions to Engineering Problems	**K-2 Weather** (*Harmful Hurricanes* FOCUS Book) **5-6 Water** (*Tsunami!* FOCUS BOOK) **5-6 Changing Landforms** (*Protecting People from a Volcanic Eruption* Project-Based Learning Pack)

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