



Science Standards – Topics and Pacing Guide

First Grade

First grade science students will develop an understanding of the structure, function, and information processing of plants and animals. They will also develop an understanding of light and sound waves. Students will explore the patterns and cycles in space systems and seasons. Students are expected to demonstrate grade appropriate proficiency in planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, and obtaining, evaluating, and communicating information.

First Grade Disciplinary Core Ideas

Waves: Light and Sound	Structure, Function, & Information Processing	Space Systems: Patterns and Cycles	Engineering Design
<u>1-PS4-1:</u> Plan and conduct investigations to provide evidence that vibrating materials can make sound & that sound can make materials vibrate.	<u>1-LS1-1:</u> Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	<u>1-ESS1-1:</u> Use observations of the sun, moon, and the stars to describe patterns that can be predicted.	<u>K-2-ETS1-1:</u> Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
<u>1-PS4-2:</u> Make observations to construct an evidence-based account that objects can be seen only when illuminated.	<u>1-LS1-2:</u> Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	<u>1-ESS1-2:</u> Make observations at different times of year to relate the amount of daylight to the time of year.	<u>K-2-ETS1-2:</u> Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
<u>1-PS4-3:</u> Plan & conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	<u>1-LS3-1:</u> Make observations to construct an evidence-based account that your plants & animals are like, but not exactly like, their parents.		<u>K-2ETS1-3:</u> Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
<u>1-PS4-4:</u> Use tools & materials to design & build a device that uses light or sound to solve the problem of communicating over a distance.			
<u>Cross Cutting Concepts:</u> Patterns; cause and effect; structure and function; and the influence of engineering, technology, and science in society and the natural world.			

Alignment and integration has been made to the current science series, “Harcourt Science” and the current reading series, “Houghton Mifflin Harcourt: Journeys”. Scientific inquiry and engineering activities have been suggested for the purpose of addressing the skills in the context of the standards. Teachers have the flexibility to adjust within a trimester as they determine appropriate but should keep with the identified science topics and standards that have been specified within that trimester. This alignment ensures that skills are not missed and that all elementary schools are following the same path.

When	Content Standards	Topics	Key Concepts/ Vocabulary	Alignment and Integration	Suggested Scientific Inquiry Activities	Suggested Engineering Activities
1 st Trimester	<p><u>1-PS4-4:</u> Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</p> <p><u>1-PS4-2:</u> Make observations to construct an evidence-based account that objects can be seen only when illuminated.</p> <p><u>1-PS4-3:</u> Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.</p> <p><u>1-LS1-2:</u> Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive</p> <p><u>1-PS4-1:</u> Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</p>	<p>Communicating Over A Distance</p> <p>Light Waves</p> <p>Light Waves</p> <p>Patterns of Behavior: Animal Communication</p> <p>Sound Vibrations</p>	<p>communicate, sound, observe, distance, device, solve, problem</p> <p>illuminate, shadow, beam, light source</p> <p>transparent, translucent, opaque, reflective</p> <p>communicate, survive, grow, needs, offspring, parents, behavior, pattern, observe, protect, input, information, respond</p> <p>sound, vibrate, materials, investigate</p>	<p><u>-Harcourt Science: Unit E, Ch. 2, Lesson 1&2:</u> What Are Sounds? How Are Sounds Different?</p> <p><u>-Journeys: Unit 2, Lesson 6:</u> Jack and the Wolf</p> <p>There is not a story in Journeys that addresses these standards. Suggestions: Halloween, Groundhog Day</p> <p><u>-Journeys: Unit 2, Lesson 7:</u> How Animals Communicate</p> <p><u>-Harcourt Science: Unit E, Ch. 2, Lesson 3:</u> What Sounds Do Instruments Make?</p> <p><u>-Journeys: Unit 2, Lesson 8:</u> A Musical Day</p>	<p><u>Unit E Ch. 2 Lesson 1, Investigation:</u> What Are Sounds?</p> <p>Darken a room and ask students if they can see without a light source.</p> <p>Shine a flashlight on different materials: plastic wrap, foil, white paper, wax paper, solid colored cup.</p> <p>Investigate the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).</p> <p><u>Harcourt Unit E Ch. 2, Lesson 3, Investigation:</u> What Sounds Do Instruments Make?</p> <p>Investigate using tuning forks and plucking a stretched string.</p> <p>Hold a piece of paper near a speaker making sound. Hold an object near a vibrating tuning fork.</p> <p>Drop a ping pong ball in a bowl of water.</p> <p>Place plastic wrap tightly over a bowl and put salt on the plastic. Make a loud noise close to the bowl.</p>	<p>Build cup and string telephones</p> <p>Make a Kazoo</p> <p>Create a sound box of different sized rubber bands stretched over an open shoe box.</p>

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2 nd Trimester	1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year.	Seasonal Patterns: Daylight	pattern, cycle, rise, set, visible, observe, change, daylight, describe, predict, seasons, spring, summer, fall, winter	-Harcourt Science: <u>Unit D, Ch,2, Lessons 3-6:</u> What Is Spring What Is Summer? What Is Fall? What Is Winter? - <u>Journeys: Unit 3, Lesson 13:</u> Seasons	Compare the amount of daylight in the winter to the amount in the spring, fall, or summer. Record sunrise and sunset for each season and compare the number of daylight hours. How does that affect people, animals and plants? Make an apple tree showing seasonal changes.	
	1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Animal Solutions	patterns, mimic, grow, survive, protect, observe, solution, design, function	-Harcourt Science: <u>Unit B, Ch.2, Lesson 4:</u> What Lives in the Ocean? - <u>Journeys: Unit 3, Lesson 15:</u> Animal Groups	Identify key features that help animals survive.	Design clothing or equipment to protect bicyclists by mimicking shells for protection, tails to help stabilize, keeping out intruders by mimicking animal quills; and, detecting intruders by mimicking eyes and ears.
	1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Patterns: Sun, Moon, Stars	sun, moon, stars, pattern, motion, visible, observe, describe, predict	-Harcourt Science: <u>Unit D, Chapter 2, Lesson 1&2:</u> What Can We See in the Sky? Why Do We Have Day and Night? - <u>Journeys: Unit 4, Lesson 16:</u> Let's Go to the Moon!	<u>Unit E Ch. 2, Lesson 1, Investigation:</u> The Sky <u>Lesson 2, Investigation:</u> Day and Night Observe the patterns of the sun and moon appearing to rise in one part of the sky, move across the sky, and set. Observe and record moon phases. Observe that stars other than our sun are visible at night but not during the day.	
	1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Plants: Inheritance and Variation of Traits Animals: Compare Animal Parents and Their Young	parents, offspring, compare	<u>Journeys: Unit 4, Lesson 18:</u> Where Does Food Come From? -Harcourt Science: <u>Unit A, Ch.3, Lessons 4, 5 & 6:</u> How Do Animals Grow? How Does A Butterfly Grow? How Does a Frog Grow? - <u>Journeys: Unit 5, Lesson 22:</u> Amazing Animals	Leaves from the same kind of plant are the same shape but can differ in size <u>Unit A Ch.3, Lesson 4, Investigation:</u> Animals and Their Young	

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3 rd Trimester	1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Use Plant Structures to Solve Problems Geometry of a Kite Math/Engineering	mimic, external, patterns, observe, solution, design, organisms, function, roots, leaves, flowers, fruit, stem, protect design, geometry, engineer	-Harcourt Science: <u>Unit A, Ch. 2 Lesson 1</u> : What Are the Parts of a Plant? <u>Unit B, Ch. 2, Lesson 2</u> : What Lives in the Desert? - Journeys: <u>Unit 5, Lesson 24</u> : A Tree Is A Plant <u>Journeys: Unit 6, Lesson 28</u> : The Kite -Harcourt Science: <u>Unit A, Ch.3 Lesson 3</u> : What Are Insects? - Journeys: <u>Unit 6, Lesson 29</u> : Hi! Fly Guy	<u>Unit B, Ch. 2, Lesson 2: Investigation</u> : Desert Leaves Identify key features that help insects survive.	Design clothing, or equipment by mimicking plant solutions such as acorn shells for protection; stabilizing structures by mimicking roots on plants; keeping out intruders by mimicking thorns on branches. Design a kite. Design clothing or equipment by mimicking insect solutions to solve a human problem. Exoskeleton, stingers, wings, pinchers, compound eyes for protection.