Kindergarten: Focus on Patterns; Structure and Function

Physical Sciences: Students explore how their senses can detect light, sound, and vibration and how technology can be used to extend their senses.

Physical Science Standards	Citations from Amplify Science
K.P2U1.1	
Investigate how senses can detect light, sound, and vibrations even when they come from far away; use the collected evidence to **develop and support an explanation**.	***Light and Sound*** unit (grade 1): ● Lesson 4.1 ○ **Activity 3**, Instructional Guide (steps 1–12) ○ **Investigation Notebook**, page 24 ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 4.3 ○ **Activity 1**, Instructional Guide (steps 4–11, 13), and Teacher Support tab ("Instructional Suggestion, and Going Further: Sound Can Cause Vibrations") ○ **Activity 3**, Instructional Guide and Teacher Support tab ("Background, Literacy Note: Using Explanation Language Frames to Write") ○ **Activity 4**, Instructional Guide and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, *I Hear a Sound. What Vibrates?* Mini-Book copymaster ● Lesson 4.2 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Activity 3**, Instructional Guide and On-the-Fly Assessment ○ **Investigation Notebook**, page 25 ○ **Activity 4,** Instructional Guide ○ **Student book**, *What Vibrates?* ● Lesson 4.4 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide ● Lesson 1.2 ○ **Activity 2**, Instructional Guide ○ **Activity: Observing a Dark Place**, Instructional Guide, Cave and Flashlight video ○ **Activity 3**, Instructional Guide ○ **Student book**,*Can You See in the Dark?*

	○ **Activity 4**, Instructional Guide ● Lesson 1.5 ○ **Activity 1**, Instructional Guide (steps 5–10) and Critical Juncture Assessment ○ **Activity 2**, Instructional Guide and Possible Responses tab ○ **Investigation Notebook**, page 6 ○ **Activity 3**, Instructional Guide (steps 3–12) ● Lesson 1.3 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide
K.P2U2.2	
Design and evaluate a tool that helps people extend their senses.	***Pushes and Pulls*** unit: ● Lesson 1.4 ○ **Activity 2,** Instructional Guide (steps 5–7) and Teacher Support tab ("Background, Pedagogical Goals: Developing Models") ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide (steps 3–13) and Possible Responses tab ● Lesson 2.3 ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide (steps 5–11) and Possible Responses tab ● Lesson 3.4 ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide (steps 4–9) and Possible Responses tab ● Lesson 4.3 ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide and Possible Responses tab ***Sunlight and Weather*** unit: ● Lesson 2.1, **Activity 4,** Instructional Guide (steps 2–5) and On-the-Fly Assessment ● Lesson 4.1, **Activity 3,** Instructional Guide (steps 3–9) and On-the-Fly Assessment ● Lesson 5.6 ○ **Activity 1,** Instructional Guide (steps 6–7) ○ **Lesson Brief,** Digital Resources, "Assessment Guide," Rubric 3

Earth and Space Sciences: Students develop an understanding of patterns to understand changes in local weather, seasonal cycles, and daylight.

Earth and Space Standards	Citations from Amplify Science
K.E1U1.3	
Observe, record, and ask questions about temperature, precipitation, and other weather data to identify patterns or changes in local weather.	***Sunlight and Weather*** unit: ● Lesson 3.1 ○ **Activity 1**, Instructional Guide, step 2 ○ **Activity 2,** Instructional Guide ○ **Student book,** *Getting Warm in the Sunlight* ● Lesson 4.1 ○ **Activity 2,** Instructional Guide (steps 1–7) ○ **Student book,** *Getting Warm in the Sunlight* ● Lesson 3.2, **Activity 3,** Instructional Guide (steps 4–8) On-the-Fly Assessment, Teacher Support tab ("Instructional Suggestion, Student Thinking: Looking for Patterns, and Rationale, Pedagogical Goals: Understanding the Nature of Science")
K.E1U1.4	
Observe, describe, ask questions, and predict seasonal weather patterns; and how those patterns impact plants and animals (including humans).	***Spinning Earth*** (grade 1): ● Lesson 5.2 ○ **Activity 1**, Instructional Guide (steps 3–9) ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide (step 3) ○ **Student book**, *Patterns of Earth and Space,* pages 14–17 ● Lesson 5.1 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide, Possible Responses tab, and Teacher Support tab ("Assessment, Assessment Opportunity: Observing, Describing, and Predicting Seasonal Patterns of Sunrise and Sunset") ○ **Activity 4**, Instructional Guide ○ **Investigation Notebook**, page 22 ○ **Student book**, *A Walk Through the Seasons*

	Weather and Climate unit (grade 3): ● Lesson 3.3, **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ● Lesson 3.2 ○ **Activity 1**, Instructional Guide (steps 2–7), Possible Responses tab, and On-the-Fly Assessment ○ **Activity 2**, Instructional Guide ○ **Lesson Brief,** Digital Resources, Anchorage, "Queenstown, and Saint Petersburg Graphs copymaster" ○ **Activity 3**, Instructional Guide ● Lesson 3.5 ○ **Activity 3**, Instructional Guide (steps 1–3), Possible Responses tab, and Critical Juncture Assessment ○ **Investigation Notebook,** page 50 ● Lesson 2.1 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide and Possible Responses tab ● Lesson 2.4 ○ **Activity 3**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Local Weather for the Past 30 Days chart" ● Lesson 4.2 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ○ **Student book,** *Dangerous Weather Ahead* ● Lesson 3.7 ○ **Activity 3**, Instructional Guide (steps 3–7) ○ **Lesson Brief,** Digital Resources, "End-of-Unit Writing: Arguing About Future Island Weather Version A copymaster" and "Assessment Guide" ● Lesson 1.4 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Sky Notebook* ● Lesson 3.6, **Activity 1**, Instructional Guide (steps 3–5), and On-the-Fly Assessment

K.E2U1.5	
Observe and ask questions about patterns of the motion of the sun, moon, and stars in the sky.	***Spinning Earth*** unit (grade 1): ● Lesson 5.3 ○ **Activity 1**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 3.3 ○ **Lesson Brief**, Digital Resources, "Sky Mural (Completed)" ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide ○ **Investigation Notebook**, pages 16–17 ● Lesson 3.4, **Activity 1**, Instructional Guide ● Lesson 4.1 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide ○ **Investigation Notebook**, pages 19–20 ● Lesson 3.1 ○ **Activity: Observing the Sunset**, Instructional Guide, and Sunset video ○ **Activity 3**, Instructional Guide (step 6) and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Home Investigation") ○ **Lesson Brief**, Digital Resources, "Optional: Chapter 3 Home Investigation: Nighttime Sky Observations copymaster" ○ **Student book**, *Patterns of Earth and Space*, pages 26–31 ● Lesson 3.5 ○ **Activity 3**, Instructional Guide (steps 5–10) ○ **Student book,** *Patterns of Earth and Space*, pages 22–25 ● Lesson 4.2 ○ **Activity 2**, Instructional Guide ○ **Student book,** *Nighttime Investigation*, pages 11–19 ● Lesson 2.2, **Activity 4**, Instructional Guide and On-the-Fly Assessment ● Lesson 3.6 ○ **Activity 1**, Instructional Guide (steps 4–10)

	○ **Activity 2**, Instructional Guide and Critical Juncture Assessment ● Lesson 4.4 ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide and Critical Juncture Assessment

Life Sciences: Students develop an understanding that the world is comprised of living and non-living things. They investigate the relationship between structure and function in living things; plants and animals use specialized parts to help them meet their needs and survive.

Life Science Standards	Citations from Amplify Science
K.L1U1.6	
Obtain, evaluate, and communicate information about how organisms use different body parts for survival.	***Animal and Plant Defenses*** unit (grade 1): ● Lesson 1.2 ○ **Activity 1**, Instructional Guide and Teacher Support, Background tab ("About the Book: *Tortoise Parts*") ○ **Student book**, *Tortoise Parts* ● Lesson 1.3 ○ **Lesson Brief,** Lesson Overview ○ **Activity 1**, Instructional Guide and Teacher Support tab ("Rationale, Pedagogical Goals: Structure-Function and Explanation Language Frames") ○ **Student books**, *Tortoise Parts* and *Spikes, Spines, and Shells* ○ **Activity: Observing Animal and Plant Structures**, Instructional Guide, Teacher Support tab ("Instructional Suggestion, Going Further: Other Plant Structures") ○ **Lesson Brief**, Digital Resources, "Video: Sea Turtle Breathing" and "Video: Elephants Drinking" ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide, On-the-Fly Assessment, and Teacher Support tab ("Background, Crosscutting Concept: Structure and Function Across This Unit") ● Lesson 1.5 ○ **Activity: Gathering Evidence About Sea Turtle Structures**, Instructional Guide, "Video: Sea Turtle Breathing," "Video: Sea Turtle Eating," and "Video: Sea Turtle and Sharks" ○ **Activity 1**, Instructional Guide (steps 3–6) and Critical Juncture Assessment

	○ **Activity 2**, Instructional Guide ● Lesson 2.1 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Whose Lunch Is This?* ○ **Activity: Observing Animals Eating,** Instructional Guide (steps 6–11) ● Lesson 2.2, **Activity 4**, Instructional Guide (step 8) ● Lesson 2.7, **Activity 1**, Instructional Guide (steps 4–12) and Critical Juncture Assessment
K.L1U1.7	
Observe, ask questions, and explain how specialized structures found on a variety of plants and animals (including humans) help them sense and respond to their environment.	***Animal and Plant Defenses*** unit (grade 1): ● Lesson 2.1, **Activity: Observing Animals Eating**, Instructional Guide (steps 8–13) ● Lesson 2.2, **Activity 4**, Instructional Guide (step 8) ● Lesson 2.6 ○ **Activity 1,** Instructional Guide (steps 7–8, 10) ○ **Student book**, *Spikes, Spines, and Shells*, pages 6–15 ● Lesson 3.5 ○ **Activity: Videos of Offspring Signaling**, Instructional Guide (steps 5–12 and Bird Signaling video and Wolf Signaling video) ○ **Activity 1**, Instructional Guide ○ **Student book**, *Parents and Offspring* ○ **Activity 2**, Instructional Guide and Teacher Support, Assessment tab ("Assessment Opportunity: Students' Understanding of Animal Responses to External Inputs") ● Lesson 3.4, **Activity: Videos of Young Offspring**, Instructional Guide (steps 6, 10, and Plant Offspring video), and Teacher Support tab ("Background, Science Note: Plants Grow Toward the Light" and "Instructional Suggestion, Going Further: Investigating Plants' Responses to External Inputs")
K.L2U1.8	

Observe, ask questions, and explain the differences between the characteristics of living and non-living things.	***Needs of Plants and Animals*** unit: ● Lesson 1.5 ○ **Activity 1,** Instructional Guide ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ● **Printable Resources,** Print Materials (8.5" x 11"), Animal Habitat Table Cards and Animals and Their Foods Cards, pages 44–58 ● Lesson 2.4 ○ **Lesson Brief,** Lesson Overview ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide ○ **Student book,** *A Plant in the Desert, pages 9–15* ● Lesson 4.3, **Activity 1,** Instructional Guide (steps 3–8), and On-the-Fly Assessment ● Lesson 2.7, **Activity 3,** Instructional Guide ● Lesson 3.4, **Activity 1,** Instructional Guide ● Lesson 4.1, **Activity 3,** Instructional Guide and On-the-Fly Assessment ● Lesson 4.4 ○ **Activity 1,** Instructional Guide (steps 2–4, 6) ○ **Lesson Brief,** Digital Resources, "Assessment Guide," Rubrics 1 and 2

First Grade: Focus on Cause and Effect; Stability and Change (cycles)

Physical Sciences: Students develop an understanding of the effects of forces and waves, and how they can impact or be impacted by objects near and far away. They explore the relationships between sound and vibrating materials, as well as light and materials including the ability of sound and light to travel from place to place.

Physical Science Standards	Citations from Amplify Science
1.P2U1.1	
Plan and carry out investigations demonstrating the effect of placing objects made with different materials in the path of a beam of light and **predict** how objects with similar properties will affect the beam of light.	***Light and Sound*** unit: ● Lesson 3.1 ○ **Activity 2**, Instructional Guide and Possible Responses tab ○ **Investigation Notebook**, page 16 ○ **Activity 3**, Instructional Guide ● Lesson 3.2 ○ **Activity 1**, Instructional Guide ○ **Student book**, *Let's Test!*, pages 6–11 ○ **Activity 4**, Instructional Guide ● Lesson 3.3 ○ **Activity 3**, Instructional Guide ○ **Student book**, *Engineering with Light and Sound*, pages 13–21 ● Lesson 3.4 ○ **Activity 1**, Instructional Guide ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ○ **Activity 3**, Instructional Guide ● Lesson 3.5, **Activity 2**, Instructional Guide ● Lesson 2.3, ○ **Activity 2**, Instructional Guide (steps 3–4) and On-the-Fly Assessment ○ **Activity 2**, Instructional Guide (step 6), and Teacher Support tab ("Instructional Suggestion, Going Further: Mirrors and Additional Blocking and Reflection Activities") ○ **Student book**, *Engineering with Light and Sound*, pages 22–25
1.P2U1.2	

Use models to provide evidence that vibrating matter creates sound and sound can make matter vibrate.	***Light and Sound*** unit: ● Lesson 4.1 ○ **Activity 3**, Instructional Guide (steps 1–12) ○ **Investigation Notebook**, page 24 ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 4.2 ○ **Activity 1**, Instructional Guide (steps 5–11, 13), and Teacher Support tab ("Instructional Suggestion, Going Further: Sound Can Cause Vibrations") ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ○ **Investigation Notebook**, page 25 ○ **Activity 4**, Instructional Guide ○ **Student book**, *What Vibrates?* ● Lesson 4.3 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, *"I Hear a Sound. What Vibrates?* Mini-Book copymaster"
1.P3U1.3	
Plan and carry out investigations which demonstrate how equal forces can balance objects and how unequal forces can push, pull, or twist objects, making them change their speed, direction, or shape.	***Pushes and Pulls*** unit (kindergarten): ● Lesson 2.2 ○ **Lesson Brief,** Lesson Overview ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ○ **Activity 4,** Instructional Guide and Teacher Support tab ("Instructional Suggestion, Going Further: Forces and Speed") ○ **Student book**, *Forces in Ball Games* ○ **Lesson Brief,** Digital Resources, "Chapter 2 Home Investigation: Making a Forces Kit copymaster" ● **Printable Resources,** Print Materials (8.5" x 11"), Force Cards, pages 8–19 ● Lesson 2.3, **Activity 1,** Instructional Guide and Critical Juncture Assessment ● Lesson 3.1 ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide ● Lesson 3.2

	○ **Lesson Brief,** Lesson Overview ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ○ **Student book,** *Building with Forces* ● Lesson 3.3 ○ **Lesson Brief,** Lesson Overview ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide, Teacher Support tab ("Instructional Suggestion, Going Further: Forces and Speed" and "Assessment, Assessment Opportunity: Assessing Student Understanding of Force and Speed") and Critical Juncture Assessment ○ **Lesson Brief,** Digital Resources, "Chapter 3 Home Investigation 1: More Practice with a Forces Kit copymaster" ● Lesson 1.2, ○ **Activity 1,** Instructional Guide (steps 7–13) ○ **Activity 4,** Instructional Guide ○ **Student book,** *Talking About Forces* ● Lesson 4.2 ○ **Activity 1,** Instructional Guide ○ **Student book,** *Forces in Ball Games* ○ **Activity 2,** Instructional Guide ● Lesson 6.2 ○ **Activity 2,** Instructional Guide ○ **Student book,** *A Busy Day in Pushville*

1.P4U2.4	
Design and evaluate ways to increase or reduce heat from friction between two objects.	***Balancing Forces*** unit (grade 3): ● Lesson 2.5, **Activity 1**, Instructional Guide (steps 6–10) and Teacher Support tab ("Rationale, Pedagogical Goals: Developing Models") ● Lesson 3.4 ○ **Activity 1,** Instructional Guide, Possible Responses tab, On-the-Fly Assessment, and Modeling Tool: '3.4 Force Types A-G' ○ **Activity 2**, Instructional Guide (steps 9–13) and On-the-Fly Assessment ● Lesson 4.4, ○ **Activity 1**, Instructional Guide (steps 4–9), Possible Responses tab, and Modeling Tool: '4.4 Floating Paper Clip' ○ **Activity 2**, Instructional Guide ● Lesson 5.4, ○ **Activity 1**, Instructional Guide ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Modeling Tool: '5.4 Floating Train A-B'

Earth and Space Sciences: Students develop an understanding that organisms depend on earth materials and other living organisms for survival.

Earth and Space Standards	Citations from Amplify Science
1.E1U1.5	
Obtain, evaluate, and communicate information about the properties of Earth materials and **investigate** how humans use natural resources in everyday life.	***Changing Landforms*** unit (grade 2) ● Lesson 3.1 ○ **Activity 1,** Instructional Guide ○ **Activity 2,** Instructional Guide, Teacher Support tab ("Rationale, Literacy Note: Exploring Other Maps in the Reference Book" and "Instructional Suggestion, What One Teacher Did: Interpreting Local Maps") ○ **Student book**, *Handbook of Land and Water* ● Lesson 3.3 ○ **Activity 1,** Instructional Guide, Possible Responses tab, and Teacher Support tab ("Background, Literacy Note: About Text Features") ○ **Student book**, *Handbook of Land and Water*

	Plant and Animal Relationships unit (grade 2): ● Lesson 1.5 ○ **Activity 3,** Instructional Guide ○ **Student book**, *Handbook of Habitats* ● Lesson 2.4, **Activity 1,** Instructional Guide, Possible Responses tab, and Modeling Tool: '2.4 Plant Growth, City Park' ● Lesson 3.1 ○ **Activity 3,** Instructional Guide (steps 1–8), Possible Responses tab, and On-the-Fly Assessment ○ **Student book**, *Habitat Scientist* ● Lesson 3.5 ○ **Activity 3,** Instructional Guide ○ **Student book,** *Handbook of Habitats*

Life Sciences: Students develop an understanding that the Earth has supported, and continues to support, a large variety of organisms. These organisms can be distinguished by their physical characteristics, life cycles, and their different resource needs for survival. Different types of organisms live where there are different earth resources such as food, air, and water.

Life Science Standards	**Citations from Amplify Science**
1.L1U1.6	
Observe, describe, and predict life cycles of animals and plants.	***Inheritance and Traits*** unit (grade 3): ● Lesson 1.1 ○ **Activity 4**, Instructional Guide (steps 6–7) ○ **Student book**, *Handbook of Traits* ● Lesson 2.1, **Activity 2**, Instructional Guide (steps 3–4) ● Lesson 2.2, Activity 2, Instructional Guide (steps 9–10) and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Reproduction and Life Cycles")

1.L2U2.7	
Develop and use models about how living things use resources to grow and survive; **design and evaluate** habitats for organisms using earth materials.	***Plant and Animal Relationships*** unit (grade 2): ● Lesson 1.4 ○ **Activity 4,** Instructional Guide and On-the-Fly Assessment ○ **Investigation Notebook**, page 10 ○ **Student book**, *Handbook of Habitats* ● Lesson 1.1 ○ **Activity 2,** Instructional Guide (steps 1, 4–6) ○ **Student book**, *Handbook of Habitats* ● Lesson 1.3 ○ **Activity 2,** Instructional Guide ○ **Investigation Notebook**, page 7 ● Lesson 1.6 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide and On-the-Fly Assessment ○ **Investigation Notebook**, pages 15–19 ● Lesson 3.1 ○ **Activity 3,** Instructional Guide (steps 1–5), Possible Responses tab, and On-the-Fly Assessment ○ **Student book**, *Habitat Scientist* ● Lesson 4.2, **Activity 4,** Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ● Lesson 4.3 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide and On-the-Fly Assessment ○ **Investigation Notebook**, pages 66–69

1.L2U1.8	
Construct an explanation describing how organisms obtain resources from the environment including materials that are used again by other organisms.	***Needs of Plants and Animals*** unit (kindergarten): ● Lesson 1.4, ○ **Activity 3,** Instructional Guide (steps 3–11) ○ **Printable Resources,** Print Materials (8.5" x 11"), Animals Eating Station Cards, pages 21–30 ○ **Activity 4,** Instructional Guide (steps 4–7) ● Lesson 2.3, **Activity 2,** Instructional Guide (steps 4–7) ● Lesson 2.6, **Activity 1,** Instructional Guide (steps 5–9) and On-the-Fly Assessment ● Chapter 3, Ch. Overview ● Lesson 3.1 ○ **Activity 2,** Instructional Guide (steps 3–8) ○ **Activity 3,** Instructional Guide and Possible Responses tab ● Lesson 3.2, **Activity 1,** Instructional Guide (steps 8–9) ● Lesson 3.3, **Activity 4,** Instructional Guide (steps 5–10) and On-the-Fly Assessment ● Lesson 4.4 ○ **Activity 1,** Instructional Guide (steps 2–6) ○ **Lesson Brief,** Digital Resources, "Assessment Guide," Rubric 1
1.L3U1.9	
Obtain, evaluate, and communicate information to **support an evidence-based explanation** that plants and animals produce offspring of the same kind, but offspring are generally not identical to each other or their parents.	***Animal and Plant Defenses*** unit: ● Lesson 3.2 ○ **Activity 1**, Instructional Guide ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ○ **Printable Resources**, Print Materials (8.5" x 11"), Parent and Offspring Cards, pages 36–39 ○ **Student book,** *Parents and Offspring* ● Lesson 3.3 ○ **Activity: Video of Parent and Offspring Defenses**, Instructional Guide (step 5 and Iguana and Hawk video) ○ **Activity 2**, Instructional Guide, Possible Responses tab and Critical Juncture Assessment ● **Printable Resources**, Print Materials (8.5" x 11"), Parent and Offspring Cards ● Lesson 3.4 ○ **Lesson Brief,** Lesson Overview ○ **Activity 1**, Instructional Guide (steps 3–10)

	○ **Student book,** *Parents and Offspring* ○ **Activity 2**, Instructional Guide ○ **Activity: Videos of Young Offspring**, Instructional Guide, Young Fish Offspring video, Young Sea Turtles video, and Plant Offspring video ● Lesson 3.5, **Activity: Videos of Offspring Signals**, Instructional Guide, Bird Signaling video, and Wolf Signaling video
1.L4U1.10	
Develop a model to describe how animals and plants are classified into groups and subgroups according to their similarities.	***Environments and Survival*** unit: ● Lesson 2.3, **Activity 1**, Instructional Guide and Possible Responses tab ● Lesson 2.2 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Mystery Mouths,* pages 6, 14, 18 ○ **Activity 3**, Instructional Guide (steps 5, 9), and Teacher Support tab ("Assessment, Assessment Opportunity: Assessing Student Understanding of Fossils and Extinction" and "Instructional Suggestion, Going Further: Using Fossils as Evidence for Past Environments") ○ **Lesson Brief**, Digital Resources, "Extension: Fossil Skulls: Clues into Past Environments" ○ **Student book**, *Biomimicry Handbook*, pages 34–35 ● Lesson 3.3, **Activity 1**, Instructional Guide (steps 7–12)
1.L4U3.11	
Ask questions and explain how factors can cause species to go extinct.	*Environments and Survival* unit (grade 3): ● Lesson 2.3, **Activity 1**, Instructional Guide and Possible Responses tab ● Lesson 2.2 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Mystery Mouths,* pages 6, 14, 18 ○ **Activity 3**, Instructional Guide (steps 5, 9) and Teacher Support tab ("Assessment, Assessment Opportunity: Assessing Student Understanding of Fossils and Extinction" and "Instructional Suggestion, Going Further: Using Fossils as Evidence for Past Environments") ○ **Lesson Brief**, Digital Resources, "Extension: Fossil Skulls: Clues into Past Environments" ○ **Student book**, *Biomimicry Handbook*, pages 34–35 ● Lesson 3.3, **Activity 1**, Instructional Guide (steps 7–12)

	Weather and Climate unit (grade 3): ● Lesson 3.7 ○ **Activity 3**, Instructional Guide (steps 3–7) ○ **Lesson Brief**, Digital Resources, "End-of-Unit Writing: Arguing About Future Island Weather Version A copymaster" and "Assessment Guide"

Second Grade: Focus on Systems and System Models; Energy and Matter

Physical Sciences: Students develop an understanding of observable properties of matter and how changes in energy (heating or cooling) can affect matter or materials.

Physical Science Standards	Citations from Amplify Science
2.P1U1.1	
Plan and carry out an investigation to determine that matter has mass, takes up space, and is recognized by its observable properties; use the collected evidence to **develop and support an explanation**.	***Properties of Materials*** unit: ● Lesson 2.1 ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide (steps 1–4) ○ **Student book**, *Can You Change It Back?* ● Lesson 2.2 ○ **Activity 3**, Instructional Guide, Sorting Tool: '2.2 Before and After' ○ **Activity 4,** Instructional Guide (steps 1–4), Possible Responses tab, and Critical Juncture Assessment ● Lesson 1.2 ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide (steps 4–7) ○ **Student book**, *What If Rain Boots Were Made of Paper?* ● Lesson 1.3, **Activity 1,** Instructional Guide ● Lesson 1.5 ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ○ **Investigation Notebook**, page 12 ● Lesson 1.9, **Activity 4,** Instructional Guide (steps 3–7), Possible Responses tab, and Critical Juncture Assessment

	● Lesson 4.3, **Activity 2**, Instructional Guide, Teacher Support tab ("Background, Science Note: About Describing and Classifying Matter by its Observable Properties"), and Sorting Tool: '4.3 Ingredient Properties 1–2'
2.P1U1.2	
Plan and carry out investigations to gather evidence to support an explanation on how heating or cooling can cause a phase change in matter.	*Properties of Materials* unit: ● Lesson 2.1 ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide (steps 1–4) ○ **Student book,** *Can You Change It Back?* ● Lesson 2.2 ○ **Activity 2,** Instructional Guide (steps 2–7) and Possible Responses tab ○ **Activity 3,** Instructional Guide, Sorting Tool: 2.2 Before and After ○ **Activity 4,** Instructional Guide (steps 1–4), Possible Responses tab, Critical Juncture Assessment, and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Home Investigation") ○ **Lesson Brief,** Digital Resources, "Optional Chapter 2 Home Investigation: Heating and Cooling copymaster"
2.P4U1.3	
Obtain, evaluate and communicate information about ways heat energy can cause change in objects or materials.	*Properties of Materials* unit: ● Lesson 2.1 ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide (steps 1–4) ○ **Student book,** *Can You Change It Back?* ● Lesson 2.2 ○ **Activity 2,** Instructional Guide (steps 2–7) and Possible Responses tab ○ **Activity 3,** Instructional Guide and Sorting Tool: '2.2 Before and After' ○ **Activity 4,** Instructional Guide (steps 1–4), Possible Responses tab, Critical Juncture Assessment, and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Home Investigation") ○ Lesson Brief, Digital Resources, "Optional Chapter 2 Home Investigation: Heating and Cooling copymaster"

Earth and Space Sciences: Students develop an understanding of the distribution and role of water and wind in weather, shaping the land, and where organisms live. Wind and water can also change environments, and students learn humans and other organisms can change environments too. Students develop an understanding of changing patterns in the sky including the position of Sun, Moon, and stars, and the apparent shape of the Moon.

Earth and Space Standards	Citations from Amplify Science
2.E1U1.4	
Observe and investigate how wind and water change the shape of the land resulting in a variety of landforms.	***Changing Landforms*** unit: ● Lesson 2.2 ○ **Activity 2,** Instructional Guide (steps 3–9) and Possible Responses tab ○ **Activity 3**, Instructional Guide (steps 1–3) and On-the-Fly Assessment ● Lesson 2.3 ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide ○ **Student book**, *What's Stronger? How Water Causes Erosion* ● Lesson 4.2 ○ **Activity 2,** Instructional Guide and Possible Responses tab ○ **Activity 3,** Instructional Guide ● Lesson 2.5 ○ **Activity 3,** Instructional Guide (steps 2–7) and On-the-Fly Assessment ○ **Student book**, *Handbook of Land and Water*, pages 13–14, 17, 21, 29–30, 37, 41–42, 45 ● Lesson 2.6 ○ **Activity 2,** Instructional Guide and Possible Responses tab ○ Activity 3, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment

2.E1U1.5	
Develop and use models to represent that water can exist in different states and is found in oceans, glaciers, lakes, rivers, ponds, and the atmosphere.	***Changing Landforms*** unit: ● Lesson 3.3 ○ **Activity 1,** Instructional Guide (step 12) and Teacher Support tab ("Instructional Suggestion, Going Further: Reading About Changes to Bodies of Water") ○ **Student books,** *Handbook of Land and Water*, pages 23–26, 31–38 and *Landform Postcards*, pages 4, 10–14, 16–17, 20, 23 ● Lesson 2.3 ○ **Activity 1,** Instructional Guide (steps 4–8) and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Forms and Bodies of Water") ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide ○ **Student book**, *What's Stronger? How Water Causes Erosion*, pages 8–13, 18–19 ● Lesson 2.4, **Activity 1,** Instructional Guide (steps 5–6) and Possible Responses tab
2.E1U2.6	
Analyze patterns in weather conditions of various regions of the world and **design, test, and refine solutions** to protect humans from severe weather conditions.	***Weather and Climate*** unit (grade 3): ● Lesson 2.1 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide and Possible Responses tab ● Lesson 2.4 ○ **Activity 3**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Local Weather for the Past 30 Days chart" ● Lesson 3.2 ○ **Activity 1**, Instructional Guide (steps 2–7), Possible Responses tab, and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, "Anchorage, Queenstown, and Saint Petersburg Graphs copymaster" ● Lesson 3.3, **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ● Lesson 1.4 ○ **Activity 3**, Instructional Guide (steps 1–8) ○ **Investigation Notebook,** page 10 ● Lesson 3.5, **Activity 2**, Instructional Guide and Possible Responses tab

2.E1U3.7	
Construct an argument from evidence regarding positive and negative changes in water and land systems that impact humans and the environment.	***Properties of Materials*** unit: ● Lesson 1.7 ○ **Activity 6,** Teacher Support tab ("Instructional Suggestion, Going Further: Discussing the Impacts of Technology on the Natural World") ○ **Student book**, *Ideas and Inventors* ● Lesson 1.5, **Activity 4**, Teacher Support tab ("Instructional Suggestion, Going Further: Discussing Ethics and Regulation of Glue") ● Lesson 1.2, **Activity 1**, Teacher Support tab ("Instructional Suggestion, Nature of Science: Connecting to Engineering, Technology and Applications of Science") ***Changing Landforms*** unit: ● **Student book**, *Handbook of Land and Water*, page 26 ***Ecosystem Restoration*** (grade 5) unit: ● Lesson 2.5 ○ **Activity 3**, Instructional Guide (steps 3–9) ○ **Student book**, *Restoration Case Studies* ● Lesson 3.5 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Teacher Support tab ("Assessment, Assessment Opportunity: Assessing Student Understanding of Human Impacts on Earth's Systems") ● Lesson 2.6 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Why Do Scientists Argue?*, green (even) pages ○ **Unit Guide**, Unit Overview, What's in This Unit? ● Lesson 1.2, **Activity 1**, Instructional Guide (steps 4–11) ● Lesson 1.8 ○ **Activity 4,** Instructional Guide ○ **Lesson Brief**, Digital Resources, "Rain Forest Restoration Plan 1 Action Steps chart" ● Lesson 2.7, **Activity 4**, Instructional Guide and Possible Responses tab ● Lesson 3.6, **Activity 3**, Instructional Guide and Possible Responses tab

	The Earth System unit (grade 5): ● Lesson 1.2 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide and Possible Responses tab ○ **Student books**, *Water Shortages, Water Solutions* and *Water Encyclopedia*, pages 30–31, 9–10, 40 ***Patterns of Earth and Sky*** unit (grade 5): ● Lesson 1.3, **Activity 3**, Instructional Guide (step 4) and Teacher Support tab ("Instructional Suggestion, Going Further: Discussing Human Impacts on Outer Space")
2.E2U1.8	
Observe and explain the Sun's position at different times during a twenty-four-hour period and changes in the apparent shape of the Moon from one night to another.	***Spinning Earth*** unit (grade 1): ● Lesson 5.3 ○ **Activity 1**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 3.3 ○ **Lesson Brief**, Digital Resources, "Sky Mural (Completed)" ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide ○ **Investigation Notebook**, pages 16–17 ● Lesson 3.4, **Activity 1**, Instructional Guide ● Lesson 4.1 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide ○ **Investigation Notebook**, pages 19–20 ● Lesson 3.1 ○ **Activity: Observing the Sunset**, Instructional Guide, and Sunset video ○ **Activity 3**, Instructional Guide (step 6) and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Home Investigation") ○ **Lesson Brief**, Digital Resources, "Optional: Chapter 3 Home Investigation: Nighttime Sky Observations copymaster" ○ **Student book**, *Patterns of Earth and Space*, pages 26–31

	● Lesson 3.5 ○ **Activity 3**, Instructional Guide (steps 5–10) ○ **Student book,** *Patterns of Earth and Space*, pages 22–25 ● Lesson 4.2 ○ **Activity 2**, Instructional Guide ○ **Student book,** *Nighttime Investigation*, pages 11–19 ● Lesson 2.2 ○ **Activity 4**, Instructional Guide and On-the-Fly Assessment ● Lesson 3.6 ○ **Activity 1**, Instructional Guide (steps 4–10) ○ **Activity 2**, Instructional Guide and Critical Juncture Assessment ● Lesson 4.4 ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide and Critical Juncture Assessment

Life Sciences: Students develop an understanding that life on Earth depends on energy from the Sun or energy from other organisms to survive.

Life Science Standards	Citations from Amplify Science
2.L2U1.9	
Obtain, analyze, and communicate evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive.	***Plant and Animal Relationships*** unit: ● Lesson 1.6 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide ○ **Investigation Notebook**, pages 15–19 ● Lesson 1.7 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ○ **Activity 3**, Instructional Guide ● Lesson 2.2, **Activity 2**, Instructional Guide (steps 4–12) and Possible Responses tab ● **Student book**, *A Plant is a System*

2.L2U1.10	
Develop a model representing how life on Earth depends on energy from the Sun and energy from other organisms.	***Plant and Animal Relationships*** *unit:* ● Lesson 1.6 ○ **Activity 2,** Instructional Guide and Teacher Support tab ("Background, Crosscutting Concept: Cause and Effect") ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide ○ **Investigation Notebook,** pages 15–19 ● Lesson 1.7 ○ **Activity 2,** Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ○ **Activity 3,** Instructional Guide ● Lesson 2.2 ○ **Activity 2,** Instructional Guide (steps 4–12) and Possible Responses tab ○ **Student book**, *A Plant Is a System* ● Lesson 4.2 ○ **Activity 3,** Instructional Guide ○ **Activity 4,** Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ● Lesson 4.3 ○ **Activity 2,** Instructional Guide ○ **Activity 3,** Instructional Guide and On-the-Fly Assessment ○ **Activity 4,** Instructional Guide, Possible Responses tab ○ **Lesson Brief,** Digital Resources, "Assessment Guide," Rubric 1

Third Grade: Focus on Systems and System Models; Structure and Function

Physical Sciences: Students develop an understanding of the sources, properties, and characteristics of energy along with the relationship between energy transfer and the human body.

Physical Science Standards	**Citations from Amplify Science**
3.P2U1.1	
Ask questions and investigate the relationship between light,-objects, and the human eye.	***Vision and Light*** unit (grade 4): ● Lesson 2.3 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide (steps 1–5)

	○ **Student book**, *I See What You Mean* ● Lesson 2.5, **Activity 3**, Instructional Guide (steps 2–5) and Critical Juncture Assessment ● Lesson 2.4, **Activity 1**, Instructional Guide, Possible Responses tab, and simulation
3.P2U1.2	
Plan and carry out an investigation to explore how sound waves affect objects at varying distances.	***Waves, Energy, and Information*** unit (grade 4): ● Lesson 2.5, **Activity 1**, Instructional Guide and Teacher Support tab ("Background, Pedagogical Goals: Developing Models") ● Lesson 1.5, **Activity 3**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ● Lesson 2.2, **Activity 3**, Instructional Guide, On-the-Fly Assessment, and Possible Responses tab ● Lesson 2.4, **Activity 2**, Instructional Guide and Possible Responses tab ● Lesson 3.3, **Activity 4**, Instructional Guide (steps 1–6) and On-the-Fly Assessment ● Lesson 3.7, **Activity 1**, Instructional Guide (steps 3–7) and Possible Responses tab ● Lesson 3.1 ○ **Activity 2**, Instructional Guide (steps 4–8) and On-the-Fly Assessment ○ **Activity 3**, Instructional Guide and Sound Waves simulation ● Lesson 3.2, **Activity 3**, Instructional Guide, On-the-Fly Assessment, and Sound Waves simulation ● **Student book**, *Patterns in Communication,* pages 6–7 ● Lesson 1.4 ○ **Activity 1**, Instructional Guide (steps 1, 4) ○ **Student book**, *Warning: Tsunami!* ○ **Activity 2,** Instructional Guide, On-the-Fly Assessment, and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Waves in Water") ● Lesson 3.6, **Activity 1**, Instructional Guide, Possible Responses tab, On-the-Fly Assessment, and Sound Waves simulation ● Lesson 3.5 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide and On-the-Fly Assessment ○ **Student book**, *The Scientist Who Cracked the Dolphin Code*

3.P4U1.3	
Develop and use models to describe how light and sound waves transfer energy.	**Energy Conversions** unit (grade 4): ● Ch. 4, Lesson 4.2 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Student book**, *It's All Energy*, pages 42–45 ***Waves, Energy, and Information*** unit (grade 4): ● Lesson 2.5, **Activity 2**, Instructional Guide (steps 2–6), Possible Responses tab, On-the-Fly Assessment, and Sorting Tool: '2.5 Particle Model' ● Lesson 2.4, **Activity 3**, Instructional Guide and Possible Responses tab

Earth and Space Sciences: Students develop an understanding of how the Sun provides light and energy for ~~the~~ Earth systems.

Earth and Space Standards	**Citations from Amplify Science**
3.E1U1.4	
Construct an explanation describing how the Sun is the primary source of energy impacting Earth systems.	***Energy Conversions*** unit (grade 4): ● Lesson 3.1 ○ **Activity 2**, Instructional Guide (step 8), Teacher Support tab ("Instructional Suggestion, Providing More Support: The Sun as an Energy Source" and "Assessment, Assessment Opportunity: Assessing Student Understanding of Energy Transferred by Light") ○ **Student book**, *It's All Energy*, pages 12, 45 ● Lesson 4.2, **Activity 2**, Instructional Guide (step 14) and Teacher Support tab ("Instructional Suggestion, Going Further: Exploring Energy Transfer")

Life Sciences: Students develop an understanding of the flow of energy in a system beginning with the Sun to and among organisms They also understand that plants and animals (including humans) have specialized internal and external structures and can respond to stimuli to increase survival.

Life Science Standards	Citations from Amplify Science
3.L1U1.5	
Develop and use models to explain that plants and animals (including humans) have internal and external structures that serve various functions that aid in growth, survival, behavior, and reproduction.	***Vision and Light*** unit (Grade 4) ● Lesson 4.1, ○ **Activity 2,** Instructional Guide (steps 3–8) ○ **Activity 3,** Instructional Guide (steps 1–2) ○ **Student book**, *Seeing Like a Shrimp and Smelling Like a Snake* ● Lesson 1.2, **Activity 3,** Instructional Guide (steps 8–14) and On-the-Fly Assessment ● Lesson 3.3, ○ **Activity 2,** Instructional Guide, Possible Responses tab, On-the-Fly Assessment, and simulation ○ **Activity 3,** Instructional Guide (steps 1–3) ● Lesson 1.4 ○ **Activity: Observing Animals and Plants,** Instructional Guide (steps 2–12) and Teacher Support tab ("Instructional Suggestion, Going Further: Observing Plant Structures and Discussing Function" and "Background, Science Note: Plants' Internal Structures") ○ **Activity 1,** Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ● Lesson 3.1 ○ **Activity 1,** Instructional Guide (steps 4–8), Possible Responses tab, and simulation ○ **Activity 2,** Instructional Guide ● Lesson 3.5 ○ **Activity 4,** Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ○ **Student book**, *Handbook of Animal Eyes* ● Lesson 4.2, **Activity 3,** Instructional Guide

3.L2U1.6	
Plan and carry out investigations to demonstrate ways plants and animals react to stimuli.	***Vision and Light*** unit (grade 4): ● Lesson 3.4, **Activity 1**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment, and Sorting Tool: 3.4 Catching a Cricket ● Lesson 3.2 ○ **Activity 1**, Instructional Guide (steps 3–6) ○ **Activity 2**, Instructional Guide ○ **Student book**, *Crow Scientist*, pages 8–9, 14 ● Lesson 3.3, **Activity 2**, Instructional Guide, Possible Responses tab, On-the-Fly Assessment, and simulation
3.L2U1.7	
Develop and use system models to describe the flow of energy from the Sun to and among living organisms.	***Ecosystem Restoration*** unit (grade 5): ● Lesson 2.3 ○ **Activity 1**, Instructional Guide ○ **Activity** 2, Instructional Guide ○ **Activity 4**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ○ **Printable Resources**, Print Materials (8.5” x 11”), Leaves and Roots Game Board, and Leaves and Roots Game Cards, pages 22–28 ● Lesson 2.1, **Activity 3**, Instructional Guide, Possible Responses tab, and simulation ● Lesson 2.2 ○ **Activity 1**, Instructional Guide ○ **Student book,** *Energy Makes It All Go*, page 8 ● Lesson 2.7, **Activity 3**, Instructional Guide, steps 5–6, Possible Responses tab, and Critical Juncture Assessment

3.L2U1.8	
Construct an argument from evidence that organisms are interdependent.	***Ecosystem Restoration*** unit (grade 5): ● Lesson 1.8, **Activity 3**, Instructional Guide (steps 6–8) and Possible Responses tab ● Lesson 3.6, **Activity 2**, Instructional Guide (steps 4–5), Possible Responses tab, and Critical Juncture Assessment ● Lesson 1.6 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Modeling Tool: 1.6 Healthy Ecosystem Model ○ **Activity 3**, Instructional Guide (steps 2–3), Possible Responses tab, and Critical Juncture Assessment ● Lesson 2.3, **Activity 3**, Instructional Guide (steps 1–4), Possible Responses tab, and Modeling Tool: '2.3 Plant Needs Model' ● Lesson 3.7, **Activity 1**, Instructional Guide, Possible Responses tab, and Modeling Tool: '3.7 No Decomposers Model' ● Lesson 2.5 ○ **Activity 3**, Instructional Guide ○ **Student book**, *Restoration Case Studies* ● Lesson 3.5 ○ **Activity 2**, Instructional Guide, and Teacher Support tab ("Instructional Suggestion, Going Further: Balance and Interdependence of Ecosystems: Impacts of Invasive Species") ● Lesson 1.7 ○ **Activity 2**, Instructional Guide, ○ **Activity 3**, Instructional Guide (steps 3–7) and On-the-Fly Assessment ○ **Printable Resources**, Print Materials (8.5" x 11"), Organism Name Cards: Set 1, pages 12–17 ● Lesson 3.2, **Activity 2**, Instructional Guide ● **Student books**, *Walk in the Woods*, pages 6–10 and *Restoration Case Studies*, pages 11, 31, and 47 ● Lesson 3.3, **Activity 4**, Instructional Guide and simulation ● Lesson 3.4, **Activity 2**, Instructional Guide, Possible Responses tab, On-the-Fly Assessment, and simulation

Fourth Grade: Systems and System Models; Energy and Matter; Stability and Change

Physical Sciences: Students develop an understanding of how Earth's resources can be transformed into different forms of energy. Students develop a better understanding of electricity and magnetism.

Physical Science Standards	Citations from Amplify Science
4.P4U1.1	
Develop and use a model to demonstrate how a system transfers energy from one object to another even when the objects are not touching.	***Energy Conversions*** unit: ● Lesson 1.5 ● **Activity 3**, Instructional Guide (steps 6–12) and On-the-Fly Assessment ● **Student book**, *It's All Energy*, pages 6–7 ● Lesson 2.1 ○ **Activity 2**, Instructional Guide (steps 8–13), On-the-Fly Assessment, and simulation ○ **Investigation Notebook**, page 23 ○ **Student book**, *It's All Energy*, page 45 ○ **Activity 3**, Instructional Guide (steps 3–8) ● Lesson 3.1 ○ **Activity 2**, Instructional Guide (step 8) and Teacher Support tab ("Instructional Suggestion, Providing More Support: The Sun as an Energy Source" and "Assessment, Assessment Opportunity: Assessing Student Understanding of Energy Transferred by Light") ○ **Student book**, *It's All Energy*, pages 12, 45 ● Lesson 4.2, **Activity 2**, Instructional Guide (step 8–14), Teacher Support tab ("Instructional Suggestion, Going Further: Exploring Energy Transfer") and On-the-Fly Assessment ● Lesson 3.2 ○ **Activity 1**, Instructional Guide ○ **Student book**, *It's All Energy*, pages 17–18, 20 ○ **Activity 2**, Instructional Guide, On-the-Fly Assessment, and Sorting Tool: '3.2 Energy Converters' ***Waves, Energy, and Information*** unit: ● Lesson 2.6, **Activity 3**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment

	● Lesson 2.4 ○ **Activity 3**, Instructional Guide and Teacher Support tab ("Instructional Suggestion, Going Further: Using Balls to Represent Collisions") ○ **Activity 4**, Instructional Guide ● Lesson 2.5, **Activity 1**, Instructional Guide
4.P4U1.2	
Develop and use a model that explains how energy is moved from place to place through electric currents.	***Energy Conversions*** unit: ● Lesson 4.2 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Student book**, *It's All Energy*, pages 42–45 ***Waves, Energy, and Information*** unit: ● Lesson 1.4 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Activity 4**, Instructional Guide ● Lesson 2.4 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide
4.P2U1.3	
Develop and use a model to demonstrate magnetic forces.	***Balancing Forces*** unit (grade 3): ● Lesson 5.1 ○ **Activity 3**, Instructional Guide ○ **Investigation Notebook,** pages 57–59 ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 2.4 ○ **Activity 2**, Instructional Guide ○ **Activity 3,** Instructional Guide (step 3) ○ **Student book**, *What My Sister Taught Me About Magnets* ● Lesson 5.3 ○ **Activity 1**, Instructional Guide (steps 5–8) and Teacher Support tab ("Instructional Suggestion, Going Further: Exploring Electric Forces") ● Lesson 2.3 ○ **Activity 1**, Instructional Guide

	○ **Activity 4**, Instructional Guide (steps 2–4), Possible Responses tab, and On-the-Fly Assessment ● Lesson 2.1 ○ **Activity 1**, Instructional Guide (steps 5–8) ○ **Activity 2**, Instructional Guide (steps 3–9), Possible Responses tab, and On-the Fly Assessment ● Lesson 5.3 ○ **Activity: Introducing Electromagnets**, Instructional Guide and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Investigate the Strength of Electromagnets") ○ **Student book**, *Handbook of Forces*, pages 16–17
4.P4U3.4	
Engage in argument from evidence on the use and impact of renewable and nonrenewable resources to generate electricity.	***Energy Conversions*** unit: ● Lesson 3.1 ○ **Activity 4**, Instructional Guide ○ **Student book**, *It's All Energy*, pages 26–41 ● Lesson 3.3, **Activity 1**, Instructional Guide and Critical Juncture Assessment ● Lesson 4.5, **Activity 2**, Instructional Guide

Earth and Space Sciences: Students develop an understanding of the different Earth systems and how they interact with each other. They understand how geological systems change and shape the Earth and the evidence that is used to understand these changes. They also understand how weather, climate, and human interactions can impact the environment.

Earth and Space Standards	Citations from Amplify Science
4.E1U1.5	
Use models to explain seismic waves and their effect on the Earth.	***Waves, Energy, and Information*** unit: ● Lesson 1.3 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Warning: Tsunami!* ○ **Activity 3**, Instructional Guide (step 7) and Teacher Support tab ("Instructional Suggestion, Going Further: Discussing Earthquake Waves and Warning Systems" and "Assessment, Assessment Opportunity: Assessing Student Understanding of Responses to Natural Hazards") ***Earth's Features*** unit: ● Lesson 4.3 ○ **Activity 3,** Instructional Guide, steps 1–2, 8 ○ **Student book,** *Rocky Wonders*, pages 8, 12, 17, 21
4.E1U1.6	
Plan and carry out an investigation to explore and explain the interactions between Earth's major systems and the impact on Earth's surface materials and processes.	***Earth's Features*** unit: ● Lesson 4.5 ○ **Lesson Brief**, Digital Resources, "Patterns on a World Map copymaster" and "Dynamic Planet Map" ○ **Activity 4**, Instructional Guide, Possible Responses tab, and Teacher Support tab ("Assessment, Assessment Opportunity: Assessing Student Understanding of Patterns in Earth's Features") ● Lesson 4.1 ○ **Activity 2**, Instructional Guide (step 2) ○ **Activity 4,** Instructional Guide (steps 1–2) ● Lesson 1.4, **Activity 1**, Instructional Guide (steps 2–3)

4.E1U1.7	
Develop and/or revise a model using various rock types, fossil location, and landforms to show evidence that Earth's surface has changed over time.	***Earth's Features*** unit: ● **Unit Guide**, Unit Overview ● Lesson 3.4 ○ **Activity 2**, Instructional Guide and Critical Juncture Assessment ○ **Investigation Notebook**, pages 60–61 ● Lesson 3.3 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Arguing to Solve a Mystery*, pages 8–13 ● Lesson 3.2 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ○ **Student book**, *Fossil Hunter's Handbook*, pages 41, 43 ● Lesson 4.5, **Activity 4,** Instructional Guide (step 3) ● Lesson 1.6, **Activity 3**, Instructional Guide (steps 4–6) ● Lesson 2.6 ○ **Activity 3**, Instructional Guide (steps 3–6) and Critical Juncture Assessment ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 3.5 ○ **Activity 2**, Instructional Guide (steps 4–7) ○ **Lesson Brief,** Digital Resources, "Assessment Guide"
4.E1U1.8	
Collect, analyze, and interpret data to explain weather and climate patterns.	***Weather and Climate*** unit: ● Lesson 2.1 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide and Possible Responses tab ● Lesson 2.4 ○ **Activity 3**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Local Weather for the Past 30 Days chart" ● Lesson 3.2 ○ **Activity 1**, Instructional Guide (steps 2–7), Possible Responses tab, and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, "Anchorage, Queenstown, and Saint Petersburg Graphs copymaster"

	● Lesson 3.3, **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ● Lesson 1.4 ○ **Activity 3**, Instructional Guide (steps 1–8) ○ **Investigation Notebook,** page 10 ● Lesson 3.5, **Activity 2**, Instructional Guide and Possible Responses tab
4.E1U3.9	
Construct and support an evidence-based argument about the availability of water and its impact on life. Vertical Alignment: 2.E1U1.5, 2.E1U3.7	***Earth's Features*** unit: ● Lesson 2.2, **Activity 3**, Teacher Support tab ("Instructional Suggestion, Going Further: How Organisms Affect Their Environments") ● Lesson 4.1 ○ **Activity 3**, Instructional Guide ○ **Student book,** *Rocky Wonders* ● Lesson 4.5 ○ **Activity 3**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 4.2 ○ **Activity 3**, Instructional Guide and simulation ○ **Investigation Notebook**, page 73 ● Lesson 4.3 ○ **Activity 3**, Instructional Guide (steps 3–11) ○ **Investigation Notebook**, page 76 ● Lesson 4.4 ○ **Activity 1**, Instructional Guide (step 7) and Teacher Support tab ("Instructional Suggestion, Going Further: Erosion by Gravity") ○ **Activity 2**, Instructional Guide ○ **Investigation Notebook**, page 78

4.E1U2.10	
Define problem(s) and design solution(s) to minimize the effects of natural hazards.	***Waves, Energy, and Information*** unit: ● Lesson 1.3 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Warning: Tsunami!* ○ **Activity 3**, Instructional Guide (step 7) and Teacher Support tab ("Instructional Suggestion, Going Further: Discussing Earthquake Waves and Warning Systems" and "Assessment, Assessment Opportunity: Assessing Student Understanding of Responses to Natural Hazards") ***Earth's Features*** unit: ● Lesson 4.3 ○ **Activity 3,** Instructional Guide (steps 1–2, 8) ○ **Student book,** *Rocky Wonders*, pages 8, 12, 17, 21

Life Sciences: Students develop an understanding of the diversity of past and present organisms, factors impacting organism diversity, and evidence of change of organisms over time.

Life Science Standards	Citations from Amplify Science
4.L4U1.11	
Analyze and interpret environmental **data** to demonstrate that species either adapt and survive, or go extinct over time.	***Environments and Survival*** unit (grade 3): ● Lesson 1.2 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide (steps 7–11), Possible Responses tab, and On-the-Fly Assessment ○ **Investigation Notebook,** pages 4–5 ● **Printable Resources**, Print Materials (8.5" x 11"), Needs for Survival Environment, and Needs for Survival Organism Cards, pages 12–17 ● Lesson 1.4 ○ **Activity 3**, Instructional Guide and Possible Responses tab ○ **Activity 4**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ● Lesson 2.5

	○ **Activity 1**, Instructional Guide (steps 3–11), Possible Responses tab, On-the-Fly Assessment, and Modeling Tool: '2.5 Traits and Survival A-B' ● Lesson 2.1 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide

Fifth Grade: Patterns; Scale, Proportion, and Quantity

Physical Sciences: Students develop an understanding that changes can occur to matter/objects on Earth or in space, but both energy and matter follow the pattern of being conserved during those changes.

Physical Science Standards	Citations from Amplify Science
5.P1U1.1	
Analyze and interpret data to explain that matter of any type can be subdivided into particles too small to see and, in a closed system, if properties change or chemical reactions occur, the amount of matter stays the same.	***Modeling Matter*** unit: ● Lesson 1.3 ○ **Activity 2**, Instructional Guide ○ **Activity 3**, Instructional Guide and On-the-Fly Assessment ○ **Student book**, *Made of Matter* ● Lesson 1.8 ○ **Activity 1**, Instructional Guide ○ **Student book**, *Break It Down: How Scientists Separate Mixtures*, pages 5–6, 11, 18–19, 23 ● Lesson 2.3 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Solving Dissolving*, pages 5–8, 12–13 ● Lesson 2.2, **Activity 4**, Instructional Guide, Possible Responses tab, and simulation ● Lesson 3.7 ○ **Activity 2**, Instructional Guide ○ **Lesson Brief,** Digital Resources, "Assessment Guide"

	● Lesson 1.3, **Activity 1**, Teacher Support tab ("Rationale, Pedagogical Goals: Particles vs. Molecules") ***Ecosystem Restoration*** unit: ● Lesson 2.1, **Activity 4**, Instructional Guide ***The Earth System*** unit: ● Lesson 2.2, **Activity 2**, Instructional Guide (step 1) and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Gathering Evidence that Air is Something") ● Lesson 2.3 ○ **Activity 1**, Instructional Guide (steps 4–8) ○ **Activity 2**, Instructional Guide ○ **Activity 3,** Instructional Guide, Possible Responses tab, and simulation ○ **Student book**, *Water Encyclopedia*, pages 28–29 ● Lesson 2.5 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide, Possible Responses tab, and Teacher Support tab ("Assessment, Assessment Opportunity: Assessing Student Understanding of Conservation of Matter") ○ **Student book,** *Drinking Cleopatra's Tears* ● Lesson 1.3, **Activity 1**, Teacher Support tab ("Rationale, Pedagogical Goals: Particles vs. Molecules")

5.P1U1.2	
Plan and carry out investigations to demonstrate that some substances combine to form new substances with different properties and others can be mixed without taking on new properties.	***The Earth System*** unit: ● Lesson 5.2 ○ **Activity 1**, Instructional Guide ○ **Activity 2**, Instructional Guide ○ **Activity 4**, Instructional Guide ○ **Student book,** *Chemical Reactions Everywhere* ● Lesson 5.5 ○ **Activity 3**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 5.4 ○ **Activity 2**, Instructional Guide ○ **Investigation Notebook,** pages 106–107 ● Lesson 5.3 ○ **Activity 1**, Instructional Guide, Possible Responses tab, and Teacher Support tab ("Instructional Suggestion, Providing More Experience: Connecting to Other Models") ○ **Investigation Notebook,** pages 101–102 ● Lesson 2.3, **Activity 1**, Teacher Support tab ("Rationale, Pedagogical Goals: Particles vs. Molecules") ***Modeling Matter*** unit: ● Lesson 1.3 ○ **Student book,** *Food Scientist's Handbook*, pages 34, 36, 40–41, 44 ○ **Activity 1**, Teacher Support tab ("Rationale, Pedagogical Goals: Particles vs. Molecules")

5.P2U1.3	
Construct an explanation using evidence to demonstrate that objects can affect other objects even when they are not touching.	***Patterns of Earth and Sky*** unit: ● Lesson 2.4 ○ **Activity 1**, Instructional Guide (steps 4–6) ○ **Investigation Notebook,** page 33 and 34 ○ **Activity: Observing The Way Things Fall**, Instructional Guide and The Way Things Fall video ○ **Activity 2**, Instructional Guide ○ **Student book,** *Which Way Is Up?* ○ **Activity 3**, Instructional Guide ● Lesson 3.6 ○ **Activity 2**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "End-of-Unit Writing: Explaining the Artifact Version A copymaster," Section 4, and "Assessment Guide" ● Lesson 2.5, **Activity 1**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment
5.P3U1.4	
Obtain, analyze, and communicate evidence of the effects that balanced and unbalanced forces have on the motion of objects.	***Force and Motion*** unit (middle school): ● Lesson 1.6 ○ **Activity 3,** Instructional Guide (steps 3–11), Student View, Possible Responses tab, and On-the-Fly Assessment ○ **Activity 4,** Student View ● Lesson 2.3, **Activity 3,** Instructional Guide (steps 1–13), Student View, Possible Responses tab, Modeling Tool activity: 'Claim 1, Ch. 2,' Modeling Tool activity: 'Claim 2, Ch. 2' and On-the-Fly Assessment ● Lesson 2.1 ○ **Activity 2,** Instructional Guide (steps 1–16), Student View, and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Assessing Students' Investigations of Forces on Different Objects" ***Thermal Energy*** unit (middle school): ● Lesson 2.4, **Activity 4,** Instructional Guide (steps 1–4), Student View, and On-the-Fly Assessment ● Lesson 3.3

	○ **Lesson Brief**, ■ Materials and Preparation, Preparation Before the Day of the Lesson, step 10, ■ Digital Resources, "Planning and Conducting Investigations of Thermal Energy Transfer copymaster" and "Rubrics for Assessing Students' Investigations of Thermal Energy Transfer" ○ **Activity 4,** "Dumpling Dilemma: Oil or Water?" article ***Magnetic Fields*** unit (middle school): ● Lesson 3.1, **Activity 2,** Instructional Guide (steps 1–13) and Student View ***Phase Change*** unit (middle school): ● Lesson 3.2 ○ **Activity 3,** Instructional Guide (steps 2–8), Student View, and "Liquid Oxygen" article ○ **Activity 4,** Instructional Guide (steps 1–9), Student View, and simulation
5.P3U2.5	
Define problems and **design solutions** pertaining to force and motion.	***Force and Motion Engineering Internship*** unit (middle school): ● **Unit Guide**, Unit Overview ● Lesson 1.4 ○ **Activity: Investigating SupplyDrop,** Instructional Guide (steps 1–8) and SupplyDrop Design Tool ○ **Lesson Brief**, Digital Resources, "SupplyDrop Data copymaster" ● Lesson 1.5 ○ **Activity: Analyzing Results**, Instructional Guide (step 1–4) and Engineering Tip: Analyzing Data Video ○ **Lesson Brief**, Digital Resources, "Results Analysis copymaster" ● Lesson 1.6 ○ **Activity: Testing Final Designs,** Instructional Guide (steps 1–5) and SupplyDrop Design Tool ○ **Lesson Brief**, Digital Resources, "SupplyDrop Data copymaster"

5.P4U1.6	
Analyze and interpret data to determine how and where energy is transferred when objects move.	***Thermal Energy*** unit (middle school): ● Lesson 2.3, ○ **Activity 4,** Instructional Guide (steps 4–12) ○ **Activity 5,** Teacher Support tab ("Rationale, Pedagogical Goals: Discussing the Everyday and Scientific Meanings of Heat") ● Lesson 3.3 ○ **Activity: Setting Up the Thermal Energy and Size Demo,** Instructional Guide (steps 1–10) ○ **Activity 2,** Instructional Guide (steps 1–11), Student View, Possible Responses tab, and simulation ○ **Activity 4,** screen 2 of 2, Student View, Possible Responses tab, and "Dumpling Dilemma: Oil or Water?" article ○ **Lesson Brief,** Digital Resources, "Planning and Conducting Investigations of Thermal Energy Transfer copymaster" and "Rubrics for Assessing Students' Investigations of Thermal Energy Transfer" ● Lesson 3.2 ○ **Activity 2,** Instructional Guide (steps 1–8), Student View, and "Thermal Energy is NOT Temperature" article ***Phase Change*** unit (middle school): ● Lesson 2.1, **Activity 2,** screen 2 of 2, Instructional Guide (step 13) ● Lesson 2.2 ○ **Activity 3,** Instructional Guide (steps 1–5), Student View, and simulation. ○ **Activity: Playing Zooming in on Phase Change**, Zooming in on Phase Change video ○ **Activity 4,** screen 1–2 of 2, Instructional Guide (steps 1–8) and Student View ***Phase Change Engineering Internship*** unit (middle school): ● Lesson 1.2, **Activity 2,** Instructional Guide (steps 5–12) and *Futura Chemical Engineer's Dossier*, Ch. 3, "Temperature Plateau" article ***Harnessing Human Energy*** unit (middle school): ● Lesson 2.2, **Activity 4,** Instructional Guide (steps 1–8) and Sorting Tool activity: 'Introducing Energy Transfer'

	Light Waves unit (middle school): ● Lesson 1.2, **Activity 3,** Instructional Guide (steps 1–15) and Student View

Earth and Space Sciences: Students develop an understanding of the how forces (gravity) in space cause observable patterns due to the position of the Earth, Sun, Moon, and stars.

Earth and Space Standards	**Citations from Amplify Science**
5.E2U1.7	
Develop, revise, and use models based on evidence to **construct explanations** about the movement of the Earth and Moon within our solar system.	***Patterns of Earth and Sky*** unit: ● Lesson 2.2 ○ **Activity 2**, Instructional Guide and Possible Responses tab ○ **Activity 3**, Instructional Guide, Possible Responses tab, and simulation ● Lesson 2.3 ○ **Activity 1**, Teacher Support tab (“Instructional Suggestion, Going Further: Investigating How Shadows Change”) ○ **Lesson Brief**, Digital Resources, “Extension: Investigating Shadows copymaster” ● Lesson 3.3 ○ **Activity 2**, Instructional Guide (steps 6–8) ○ **Activity 3**, Instructional Guide, Possible Responses tab, On-the-Fly Assessment, and simulation ○ **Activity 4**, Instructional Guide ○ **Activity 5**, Instructional Guide ● Lesson 3.6 ○ **Activity 2**, Instructional Guide (steps 2–6) ○ **Lesson Brief**, Digital Resources, “End-of-Unit Writing: Explaining the Artifact Version A copymaster,” Sections 2 –3, and “Assessment Guide” ● Lesson 3.2**, Activity 3**, Instructional Guide and On-the-Fly Assessment ● Lesson 2.5, **Activity 3**, Instructional Guide ● Lesson 3.1 ○ **Activity 4**, Teacher Support tab (“Instructional Suggestion, Going Further: Investigating the Sun Throughout the Year”) ○ **Lesson Brief**, Digital Resources, “Extension: Investigating the Sun Throughout the Year copymaster”

5.E2U1.8	
Obtain, analyze, and communicate evidence to support an explanation that the gravitational force of Earth on objects is directed toward the planet's center.	***Patterns of Earth and Sky*** unit: ● Lesson 2.4 ○ **Activity 1**, Instructional Guide (steps 4–6) ○ **Activity 2**, Instructional Guide ○ **Investigation Notebook,** page 33 and 34 ○ **Activity: Observing The Way Things Fall**, Instructional Guide and The Way Things Fall video ○ **Student book,** *Which Way Is Up?* ○ **Activity 3**, Instructional Guide ● Lesson 3.6 ○ **Activity 2**, Instructional Guide ○ **Lesson Brief**, Digital Resources, "End-of-Unit Writing: Explaining the Artifact Version A copymaster," Section 4, and "Assessment Guide" ● Lesson 2.5, **Activity 1**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment

Life Sciences: Students develop an understanding of patterns and how genetic information is passed from generation to generation. They also develop the understanding of how genetic information and environmental features impact the survival of an organism.

Life Science Standards	**Citations from Amplify Science**
5.L3U1.9	
Obtain, evaluate, and communicate information about patterns between the offspring of plants, and the offspring of animals (including humans); **construct an explanation** of how genetic information is passed from one generation to the next.	***Inheritance and Traits*** unit (grade 3): ● Lesson 2.6 ○ **Activity 1**, Instructional Guide (steps 5–11) ○ **Activity 2**, Instructional Guide (steps 2–4) and Possible Responses tab ○ **Activity 3**, Instructional Guide (steps 7–8) and Critical Juncture Assessment ● Lesson 2.3 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Student book**, *The Code* ● Lesson 2.5, **Activity 1**, Instructional Guide (steps 2–5), Possible Responses tab, On-the-Fly Assessment, and Modeling Tool: '2.5 Instructions for Traits Model' ● Lesson 2.2

	○ **Activity 3**, Instructional Guide, Possible Responses tab, and Modeling Tool: '2.2 Parent and Offspring Traits Model' ○ **Activity 2**, Instructional Guide ○ **Activity 1**, Instructional Guide and On-the-Fly Assessment ○ **Student book**, *Handbook of Traits*
5.L3U1.10	
Construct an explanation based on evidence that the changes in an environment can affect the development of the traits in a population of organisms.	***Inheritance and Traits*** unit (grade 3): ● Lesson 3.2 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Activity 3**, Instructional Guide (steps 1–7) ○ **Student book**, *How the Sparrow Learned Its Song* ● Lesson 3.6 ○ **Activity 3**, Instructional Guide (steps 2–3) ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 3.5 ○ **Activity 1**, Instructional Guide and Possible Responses tab ○ **Modeling Tool**: '3.5 Environments and Traits Model' ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ● Lesson 3.1 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ○ **Activity 3**, Instructional Guide (steps 1–2) ○ **Printable Resources**, Print Materials (8.5" x 11"), Flamingo Family Data Cards ● Lesson 3.3, **Activity 2**, Instructional Guide
5.L4U3.11	
Obtain, evaluate, and communicate evidence about how natural and human-caused changes to habitats or climate can impact populations.	***Ecosystem Restoration*** unit: ● Lesson 2.5 ○ **Activity 3**, Instructional Guide, steps 3–9 ○ **Student book**, *Restoration Case Studies* ● Lesson 3.5 ○ **Activity 2**, Instructional Guide, Possible Responses, and Teacher Support, Assessment, Assessment Opportunity: Assessing Student Understanding of Human Impacts on Earth's Systems ○ **Student book**, *Restoration Case Studies*

	● Lesson 2.6 ○ **Activity 2**, Instructional Guide ○ **Student book**, *Why Do Scientists Argue?*, green (even) pages ○ **Unit Guide**, Unit Overview, What's in This Unit? ● Lesson 1.2, **Activity 1**, Instructional Guide (steps 4–11) ● Lesson 1.8 ○ **Activity 4,** Instructional Guide ○ **Lesson Brief**, Digital Resources, "Rain Forest Restoration Plan 1 Action Steps chart" ● Lesson 2.7, **Activity 4**, Instructional Guide, and Possible Responses tab ● Lesson 3.6, **Activity 3**, Instructional Guide, and Possible Responses tab ***The Earth System*** unit: ● Lesson 1.2 ○ **Activity 3**, Instructional Guide ○ **Activity 4**, Instructional Guide and Possible Responses tab ○ **Student book**, *Water Shortages, Water Solutions* ○ **Student book** *Water Encyclopedia*, pages 30–31, 9–10, 40
5.L4U3.12	
Construct an argument based on evidence that inherited characteristics can be affected by behavior and/or environmental conditions.	***Inheritance and Traits*** unit (grade 3): ● Lesson 3.2 ○ **Activity 2**, Instructional Guide and On-the-Fly Assessment ○ **Activity 3**, Instructional Guide (steps 1–7) ○ **Student book**, *How the Sparrow Learned Its Song* ● Lesson 3.6 ○ **Activity 3**, Instructional Guide (steps 2–3) ○ **Lesson Brief**, Digital Resources, "Assessment Guide" ● Lesson 3.5 ○ **Activity 1**, Instructional Guide and Possible Responses tab ○ **Modeling Tool**: '3.5 Environments and Traits Model' ○ **Activity 2**, Instructional Guide, Possible Responses tab, and Critical Juncture Assessment ● Lesson 3.1 ○ **Activity 2**, Instructional Guide, Possible Responses tab, and On-the-Fly Assessment ○ **Activity 3**, Instructional Guide (steps 1–2) ● **Printable Resources**, Print Materials (8.5" x 11"), Flamingo Family Data Cards

	● Lesson 3.3, **Activity 2**, Instructional Guide

Sixth Grade: Focus on Patterns; Scale, Proportion, and Quantity; Systems and System Models; Energy and Matter

Physical Sciences: Students develop an understanding of forces and energy and how energy can transfer from one object to another or be converted from one form to another. They also develop an understanding of the nature of matter.

Physical Science Standards	Citations from Amplify Science
6.P1U1.1	
Analyze and interpret data to show that changes in states of matter are caused by different rates of movement of atoms in solids, liquids, and gases (Kinetic Theory).	***Phase Change*** unit: ● Lesson 1.3 ○ **Activity 4,** screens 1–2 of 2, Instructional Guide (steps 3–13), Student View, Possible Responses tab, and simulation ○ **Activity 2**, screen 1 of 2, Teacher Support tab ("Background, Science Note: About Molecules and Atoms") ○ **Activity 3**, Instructional Guide (step 7) and simulation ● Lesson 1.5 ○ **Activity 2,** screen 2 of 2, Instructional Guide (steps 4–7), Student View, and "Weird Water Events" article ○ **Activity 4,** Instructional Guide (steps 1–6), Student View, and Modeling Tool activity: Ice Pop ● Lesson 3.3, **Activity 4**, screen 2 of 2, Student View, and "Pressure and Temperature: Evaporating Water on Mars" article
6.P1U1.2	

Plan and carry out an investigation to demonstrate that variations in temperature and/or pressure affect changes in state of matter.	***Phase Change*** unit: ● Lesson 1.3 ○ **Activity 4,** screens 1–2 of 2, Instructional Guide (steps 3–13), Student View, Possible Responses tab, and simulation ○ **Activity 2**, screen 1 of 2, Teacher Support tab ("Background, Science Note: About Molecules and Atoms") ○ **Activity 3**, Instructional Guide (step 7) and simulation ● Lesson 1.5 ○ **Activity 2,** screen 2 of 2, Instructional Guide (steps 4–7), Student View, and "Weird Water Events" article ○ **Activity 4,** Instructional Guide (steps 1–6), Student View, and Modeling Tool activity: Ice Pop ● Lesson 3.3, **Activity 4**, screen 2 of 2, Student View, and "Pressure and Temperature: Evaporating Water on Mars" article
6.P1U1.3	
Develop and use models to represent that matter is made up of smaller particles called atoms.	***Chemical Reactions*** unit: ● Lesson 1.5 ○ **Activity 2,** screen 3 of 3, Student View and simulation ○ **Activity 3,** screen 2 of 2, Instructional Guide (steps 9–10), Student View, and "Atomic Zoom-In: Comparing Substances at a Very Small Scale" article
6.P2U1.4	
Develop and use a model to predict how forces act on objects at a distance.	***Magnetic Fields*** unit: ● Lesson 1.4, **Activity 2,** "Earth's Geomagnetism" article, paragraphs 1 and 2 ● Lesson 1.5 ○ **Activity 1,** Student View. Possible Responses tab, and simulation ○ **Activity 2,** screen 2 of 2, Instructional Guide (step 10) and Student View ○ **Activity 3,** Student View, simulation ○ **Activity 4** Instructional Guide (steps 1–5) and Student View ○ Digital Resources, Modeling Tool: Attracting and Repelling Magnets copymaster ○ **Activity 5,** Student View, "Painting with Static Electricity" article ● Lesson 3.2, **Activity 4,** screen 2 of 2, Student View and "Escaping a Black Hole" article ***Force and Motion Engineering Internship*** unit:

	● Lesson 1.1, **Lesson Brief**, Digital Resources, Futura Mechanical Engineer's Dossier, Ch. 6, "Additional Resources: Physics of Falling" article
6.P4U2.5	
Analyze how humans use technology to store (potential) and/or use (kinetic) energy.	***Harnessing Human Energy*** unit: ● Lesson 1.4, **Activity 3**, "Energy Inventions" article ***Force and Motion Engineering Internship*** unit: ● Lesson 1.1, **Activity: Introducing Futura**, Instructional Guide (steps 2–3) and Welcome to Futura video ***Phase Change Engineering Internship*** unit: ● Lesson 1.1, **Activity: Introducing Futura**, Instructional Guide (steps 2–5) and Welcome to Futura video

Earth and Space Sciences: Students develop an understanding of the scale and properties of objects in the solar system and how forces (gravity) and energy cause observable patterns in the Sun-Earth-Moon system.

Earth and Space Standards	Citations from Amplify Science
6.E1U1.6	
Investigate and construct an explanation demonstrating that radiation from the Sun provides energy and is absorbed to warm the Earth's surface and atmosphere.	***Weather Patterns*** unit: ● Lesson 2.3, **Activity 3**, Instructional Guide (steps 1–12), Student View, simulation and On-the-Fly Assessment ● Lesson 2.1, **Activity 3,** Instructional Guide (steps 1–9), Student View and Teacher Support tab ● Lesson 1.2, **Activity 1**, Instructional Guide (steps 1–5) and Student View ***Earth's Changing Climate*** unit: ● Lesson 1.3, **Activity 3**, Instructional Guide (steps 5–9) and Student View

6.E2U1.7	
Use ratios and proportions to **analyze and interpret data** related to scale, properties, and relationships among objects in our solar system.	***Geology on Mars*** unit: ● Lesson 1.3, **Activity 4**, Instructional Guide (step 2) and On-the-Fly Assessment ● Lesson 1.1, **Activity 5**, screen 2 of 2, Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of the Scale Properties of Objects in the Solar System") ***Plate Motion*** unit: ● Lesson 3.2, **Activity 5**, screens 1–2, Student View, Possible Responses tab, Sorting Tool activity: 'Earth's History', "Steno and the Shark" article, and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Rock Strata and Geologic Time") ***Earth's Changing Climate*** unit: ● Lesson 1.5, **Activity 2**, screen 6 of 7, Instructional Guide (step 14) and On-the-Fly Assessment ***Weather Patterns*** unit: ● Lesson 3.2 ○ **Activity 3**, Instructional Guide (steps 1–8) and Student View ○ **Lesson Brief**, Digital Resources, **"**Storm Evidence Cards A–G copymaster"
6.E2U1.8	
Develop and use models to explain how constellations and other night sky patterns appear to move due to Earth's rotation and revolution.	***Earth, Moon, and Sun*** unit: ● Lesson 2.3 ○ **Activity 2**, Instructional Guide (steps 1–6), Student View, Modeling Tool: 'Predict Moon Phase' and Possible Responses tab ○ **Activity: Seeing the Earth, Moon, and Sun from Different Angles**, Instructional Guide (steps 1–4) ○ **Activity 3**, screen 1 of 2, Instructional Guide (steps 1–6) and simulation ○ **Activity 4**,Instructional Guide (steps 1–3), Student View, Modeling Tool: 'Predict Moon Phase' and Possible Responses tab ● Lesson 2.2, **Activity 2**, Instructional Guide (steps 1–14) and Student View ● Lesson 1.3, **Activity 4**, Instructional Guide (step 3)

	● Lesson 1.3, **Activity 4**, Instructional Guide (step 3) ● Lesson 4.1, **Activity 5,** Student View and Possible Responses tab
6.E2U1.9	
Develop and use models to construct an explanation of how eclipses, moon phases, and tides occur within the SunEarth-Moon system.	***Earth, Moon, and Sun*** unit: ● Lesson 1.3, **Activity 3**, screen 2 of 2, Instructional Guide (step 7) and On-the-Fly Assessment ● Lesson 2.4, **Activity 3**, Instructional Guide (step 9) and On-the-Fly Assessment ● Lesson 4.4 ○ **Activity 1**, Student View ○ **Activity 2**, Student View ○ **Activity 3**, Student View ● Lesson 4.3 ○ **Activity 4**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument" ● Lesson 3.1, **Activity 5**, screen 2 of 2, Instructional Guide, Student View, Possible Responses tab, "The Endless Summer of the Arctic Tern" article and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of the Cause of Earth's Seasons") ***Earth's Changing Climate*** unit: ● Lesson 1.3, **Activity 3**, Instructional Guide (steps 5–9), Student View, and Teacher Support tab ("Background, Pedagogical Goals: Developing Models") ***Geology on Mars*** unit: ● Lesson 1.1, **Activity: Introducing the Student Planetary Geologist Role,** Meet a Planetary Geologist video
6.E2U1.10	
Use a model to show how the tilt of Earth's axis causes variations in the length of the day and gives rise to seasons.	***Earth, Moon, and Sun*** unit: ● Lesson 3.1 ○ **Activity 4**, Instructional Guide, steps 4–5, Teacher Support tab ("Instructional Suggestion, Providing More Experience: Modeling Seasons" and "Assessment, Assessment Opportunity: Student Understanding of the Cause of Earth's Seasons") ○ **Activity 5**, screen 2 of 2, Instructional Guide, Student View, Possible Responses tab, and "The Endless Summer of the Arctic Tern" article

	Ocean, Atmosphere, and Climate unit: ● Lesson 1.4, **Activity 2**, Instructional Guide and Student View

Life Sciences: Students develop an understanding of how energy from the Sun is transferred through ecosystems.

Life Science Standards	Citations from Amplify Science
6.L2U3.11	
Use evidence to **construct an argument** regarding the impact of human activities on the environment and how they positively and negatively affect the competition for energy and resources in ecosystems.	***Populations and Resources*** unit: ● Lesson 1.3, **Activity 3**, Student View, and "How Ecosystems Clean Earth's Water" article ● Lesson 3.1, **Lesson Brief**, Digital Resources, "Jelly Population Explosion" article ***Matter and Energy in Ecosystems*** unit: ● Lesson 3.1, **Lesson Brief**, Digital Resources, "Carbon in the Global Ecosystem" article ● Lesson 4.1 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–7) and Student View ○ **Lesson Brief**, Digital Resources, "Science Seminar Evidence Cards A-D copymaster" ***Metabolism Engineering Internship*** unit: ● Lesson 1.10, **Activity: Defining New Engineering Problems and Criteria**, Instructional Guide (steps 1–10) and Teacher Support tab ("Rationale, Pedagogical Goals: Understanding the Nature of Science") ● Lesson 1.1, **Activity: Introducing Futura**, Instructional Guide (steps 3–6 and 10–11 and Welcome to Futura video) ***Natural Selection Engineering Internship*** unit: ● Lesson 1.1, **Activity: Introducing Futura**, Instructional Guide (steps 3–7 and 11–12, Welcome to Futura video), and Teacher Support tab ("Instructional Suggestion, Nature of Science: Connecting to Engineering, Technology and Applications of Science")

6.L2U3.12	
Engage in argument from evidence to support a claim about the factors that cause species to change and how humans can impact those factors.	***Natural Selection*** unit: ● **Unit Guide**, Unit Overview ● Lesson 2.2 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–15), Student View, Possible Responses tab, and simulation ○ **Activity 3**, Instructional Guide (steps 1–9), Student View, and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Beak Strength Explanation copymaster" ● Lesson 2.4 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–14), Student View, and "The Deadly Dare" article ○ **Activity 3**, Instructional Guide (steps 1–8), Student View, and Possible Responses tab ○ **Activity 4**, Student View and Possible Responses tab ● Lesson 3.2, **Activity 5**, Student View, and "How to Make a Venomous Cabbage" article ***Traits and Reproduction*** unit: ● Lesson 3.6, **Activity 4,** Instructional Guide (steps 1–4), Student View, and simulation ● Lesson 3.1, **Activity 2,** Instructional Guide (steps 1–2) ● Lesson 4.1 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–6) and Student View ○ **Activity 3**, Instructional Guide (steps 1–8) and Student View ○ **Lesson Brief**, Digital Resources, "Stickleback Evidence Cards copymaster" ○ **Activity 4**, Instructional Guide (steps 1–7) and Student View ○ **Lesson Brief**, Digital Resources, "Argument Organizer copymaster" ● Lesson 1.4, **Activity 2**, Instructional Guide (steps 1–7) and simulation ***Evolutionary History*** unit: ● Lesson 2.3 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–6), Student View, and "Where Do Species Come From?" article

	○ **Activity 3**, Instructional Guide (steps 1–17), Student View, Possible Responses tab, and *Natural Selection* simulation
6.L2U1.13	
Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors.	***Populations and Resources*** unit: ● Lesson 2.7 ○ **Activity 2**, Instructional Guide (steps 1–13), Student View, and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Increasing Births in the Moon Jelly Population copymaster" and "Modeling Tool: Decreasing Deaths in the Moon Jelly Population copymaster" ○ **Activity 3**, Instructional Guide (step 13) ● Lesson 2.4 ○ **Activity 3**, Instructional Guide (steps 1–9), Student View, Possible Responses tab, and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, "2.4 Write and Share copymaster" ● Lesson 3.3, **Activity 4**, Student View,"The Ant and the Acacia" article, and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Mutually Beneficial Relationships among Organisms") ***Natural Selection*** unit: ● Lesson 1.4, **Activity 2**, Instructional Guide (steps 1–6), Student View, simulation, and On-the-Fly Assessment ● Lesson 2.2, **Activity 2**, Instructional Guide (steps 6–15), Student View, and simulation ***Evolutionary History*** unit: ● Lesson 4.3 ○ **Activity 3**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument"

6.L2U1.14	
Construct a model that shows the cycling of matter and flow of energy in ecosystems.	***Matter and Energy in Ecosystems*** unit: ● Lesson 3.4, **Activity 2**, Instructional Guide (steps 1–8), Student View, Possible Responses tab, and Sorting Tool: 'Cause and Effect in the Biodome' ***Populations and Resources*** unit: ● Lesson 2.3, **Activity 3**, Instructional Guide (steps 1–3), Student View, and On-the-Fly Assessment ● Lesson 1.2, **Activity 4**, Student View, and *Arctic Ecosystem* article set, and Teacher Support tab ("Instructional Suggestion, Going Further: Gathering Initial Models for Future Reflection") ● Lesson 2.2, **Activity 3**, Instructional Guide (steps 8–15) and Teacher Support tab ("Background, Crosscutting Concept: Energy and Matter")

Seventh Grade: Focus on Patterns; Cause and Effect; Structure and Function

Physical Sciences: Students will explore how cause and effect take place within and between a wide variety of force and motion systems from forces on individual objects to the forces that shape our Earth.

Physical Science Standards	Citations from Amplify Science
7.P2U1.1	
Collect and analyze data demonstrating how electromagnetic forces can be attractive or repulsive and can vary in strength.	***Magnetic Fields*** unit: ● Lesson 1.2 ○ **Activity 3,** Instructional Guide (steps 4–7) and Student View ○ **Activity 4,** screen 2 of 2, Instructional Guide (steps 4–5), Student View, and simulation ○ **Lesson Brief**, Digital Resources, "Exploring and Simulating Magnets copymaster" ○ **Activity 5,** screens 1–2 of 2, Instructional Guide (steps 1–7) ● Lesson 3.2 ○ **Activity 2,** Instructional Guide (steps 1–10), Student View and simulation

	○ **Activity 4,** "Escaping a Black Hole" article, paragraph 3 ● Lesson 3.5 ○ **Activity: How an Electromagnet Works,** Instructional Guide (steps 1–2 and "How an Electromagnet Works" Video) ○ **Activity 2,** Instructional Guide (steps 1–4) ○ **Activity 3**, Student View and simulation ● Lesson 1.5, **Activity 5,** Student View and "Painting with Static Electricity" article ● Lesson 4.1 ○ **Activity 3,** Instructional Guide (steps 1–8) and Student View ○ **Lesson Brief**, Digital Resources, "Roller Coaster Design Claims copymaster"
7.P2U1.2	
Develop and use a model to predict how forces act on objects at a distance.	***Magnetic Fields*** unit: ● Lesson 2.4 ○ **Activity 4,** Instructional Guide (steps 1–8), Student View, Possible Responses tab, and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Spacecraft Launch Energy copymaster" ● Lesson 3.3 ○ **Activity 3,** Instructional Guide (steps 1–5), Student View, Possible Responses tab, and On-the-Fly Assessment ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Spacecraft Launches copymaster" ● Lesson 4.3, ○ **Activity 4,** Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument" ***Force and Motion*** unit: ● Lesson 3.3, **Activity 4,** Student View, "Wrecking Ball" article, and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Mass and Speed in Relation to Kinetic Energy")

7.P3U1.3	
Plan and carry out an investigation that can support an evidence-based explanation of how objects on Earth are affected by gravitational force.	***Magnetic Fields*** unit: ● Lesson 1.3, **Activity 4,** screen 1 of 2, Instructional Guide (steps 1–5) and Teacher Support tab ("Background, Crosscutting Concepts: Systems and System Models") ● Lesson 3.2, **Activity 4,** screen 2 of 2, Student View, "Escaping a Black Hole" article, and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Mass and Gravity") ● Lesson 4.3 ○ **Activity 4,** Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument" ***Force and Motion*** unit: ● Lesson 4.3 ○ **Activity 4,** Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument"
7.P3U1.4	
Use non-algebraic **mathematics and computational thinking** to explain Newton's laws of motion.	***Light Waves*** unit: ● Lesson 2.2, **Activity 4,** Student View, Possible Responses tab, and simulation ● Lesson 2.3 ○ **Activity 3,** Instructional Guide (steps 1–9), Student View, Possible Responses tab, and simulation ○ **Activity: Video: The Shape of Waves**, The Shape of Waves video ○ **Activity 4,** Instructional Guide (steps 1–7), Student View, and Teacher Support tab ("Background, Pedagogical Goals: Reflecting on How Light Waves are Different") ***Force and Motion*** unit: ● Lesson 4.3, **Activity 5,** Instructional Guide (steps 1–9) and Student View ***Force and Motion Engineering Internship*** unit: ● Lesson 1.7, **Activity: Outlining Design Decisions,** Instructional Guide (steps 1–6) and Possible Responses tab

	Thermal Energy unit: ● Lesson 2.4, **Activity 3,** Instructional Guide (steps 1–10) and Student View ● Lesson 3.4 ○ **Activity 2,** Instructional Guide (steps 1–5), Student View, and Possible Responses tab ○ **Lesson Brief,** Digital Resources, "Modeling Tool: Differences in Temperature Change copymaster"

Earth and Space Sciences: Students develop an understanding of the patterns of energy flow~~ing~~ along with matter cycling within and among the Earth's systems.

Earth and Space Standards	Citations from Amplify Science
7.E1U1.5	
Construct a model that shows the cycling of matter and flow of energy in the atmosphere, hydrosphere, and geosphere.	***Rock Transformations*** unit: ● Lesson 3.4 ○ **Activity 2**, Instructional Guide (steps 1–8), Student View and On-the-Fly Assessment ○ **Lesson Brief,** Digital Resources, "Write and Share Routine: Student 1–3 copymaster" ● Lesson 4.3: ○ **Activity 2**, Instructional Guide (steps 1–13) ○ **Activity: Introducing the Homework Assignment**, Instructional Guide (steps 1–5) ○ **Activity 3,** Student View ○ **Lesson Brief,** Digital Resources, "Rubrics for Final Written Arguments" ● Lesson 2.1, **Activity 2**, Instructional Guide (steps 8–14), Student View and simulation ● Lesson 2.4 ○ **Activity 2**, Instructional Guide (steps 1–9) and Student View, ○ **Lesson Brief,** Digital Resources, "Write and Share Routine: Student 1–4 copymaster" ***Plate Motion*** unit: ● Lesson 2.4

	○ **Activity 4**, Instructional Guide (steps 1–5), Student View, and On-the-Fly Assessment ○ **Lesson Brief,** Digital Resources, "Modeling Tool: Modeling Convergent and Divergent Plate Boundaries copymaster " ***Earth's Changing Climate*** unit: ● Lesson 2.3, **Activity 1**, Instructional Guide (steps 1–2), Student View and On-the-Fly Assessment ● Lesson 1.3, **Activity 3**, Instructional Guide (steps 5–9), Student View and Teacher Support tab ("Background, Pedagogical Goals: Developing Models") ***Weather Patterns*** unit: ● Lesson 2.1, **Activity 3**, Instructional Guide (steps 1–9), Student View, and Teacher Support tab ("Instructional Suggestion, Crosscutting Concepts: Making Connections Across Science Topics") ***Ocean, Atmosphere, and Climate*** unit: ● Lesson 3.2, **Activity 4**, "What Causes Prevailing Winds?" article ● Lesson 3.3, **Activity 4**, "Deep Ocean Currents: Driven by Density" article

7.E1U1.6	
Construct a model to explain how the distribution of fossils and rocks, continental shapes, and seafloor structures provides evidence of the past plate motions.	***Plate Motion*** unit: ● Lesson 4.3 ○ **Activity 3**, Instructional Guide (steps 1–5), Student View and On-the-Fly Assessment ○ **Activity 4**, Instructional Guide (steps 1–6) and Student View ○ **Lesson Brief,** Digital Resources, "Rubrics for Final Written Argument and Science Seminar Reasoning Tool copymaster" ○ **Activity 6**, Student View ● Lesson 3.3, **Activity 3**, Instructional Guide (steps 1–17), Student View, and On-the-Fly Assessment ● Lesson 2.5, **Activity 2**, Instructional Guide (steps 1–10), Student View, and On-the-Fly Assessment ● Lesson 3.1, **Activity 2**, Instructional Guide (steps 1–16), Student View, and simulation
7.E1U2.7	
Analyze and interpret data to construct an explanation for how advances in technology has improved weather prediction.	***Weather Patterns*** unit: ● Lesson 3.2, **Activity 4,** Student View, "How We Predict the Weather" article and Possible Responses tab

Life Sciences: Students develop an understanding of the structure and function of cells.

Life Science Standards	Citations from Amplify Science
7.L1U1.8	
Obtain, evaluate, and communicate information to provide evidence that all living things are made of cells, cells come from existing cells, and cells are the basic structural and functional unit of all living things.	***Microbiome*** unit: ● Ch. 1, Lesson 1.2 ○ **Activity: Introducing Cells,** Instructional Guide (steps 1–5), Student View, and How Small Is a Cell? video ○ **Activity 2**, Instructional Guide (steps 1–11), Student View and Scale Tool ○ **Activity 4**, Instructional Guide (steps 1–2) and Student View ○ **Activity 5**, Instructional Guide (steps 1–2), Student View and "Cells" article ● **Printable Resources,** Print Materials (8.5" x 11"), Scale Cards Sets #1 and #2, pages 22–25 ● Lesson 1.3, **Activity 3**, Instructional Guide (steps 1–11) and Student View ● Lesson 2.1, **Activity 3**, "The Human Microbiome" article ***Metabolism*** unit: ● Lesson 2.1, **Activity: Playing Body Systems Model Video**, Instructional Guide (steps 1–2 and Body Systems Model video) ● Lesson 1.2, **Activity 2**, Instructional Guide (step 12) and simulation ● Lesson 3.3 ○ **Activity 2**, Instructional Guide (steps 1–7), "Growth and Repair" article, and simulation ○ **Activity 5**, Student View and "The Big Climb" article

7.L1U1.9	
Construct an explanation to demonstrate the relationship between major cell structures and cell functions (plant and animal).	***Microbiome*** unit: ● Lesson 1.2 ○ **Activity: Introducing Cells,** Instructional Guide (steps 1–5), Student View, and How Small Is a Cell? video ○ **Activity 2**, Instructional Guide (steps 1–11), Student View and Scale Tool ● **Printable Resources,** Print Materials (8.5" x 11"), Scale Cards Sets #1 and #2, pages 22–25 ● Lesson 1.2 ○ **Activity 4**, Instructional Guide (steps 1–2) and Student View ○ **Activity 5**, Instructional Guide (steps 1–2), Student View and "Cells" article ● Lesson 1.3, **Activity 3**, Instructional Guide (steps 1–11) and Student View ● Lesson 2.1, **Activity 3**, "The Human Microbiome" article ***Metabolism*** unit: ● Lesson 2.1, **Activity: Playing Body Systems Model Video**, Instructional Guide (steps 1–2 and Body Systems Model Video) ● Lesson 1.2, **Activity 2**, Instructional Guide (step 12) and simulation ● Lesson 3.3 ○ **Activity 2**, Instructional Guide (steps 1–7), "Growth and Repair" article, and simulation ○ **Activity 5**, Student View and "The Big Climb" article
7.L1U1.10	
Develop and use a model to explain how cells, tissues, and organ systems maintain life (animals).	***Metabolism*** unit: ● Lesson 3.3, **Activity 5**, Student View and "The Big Climb" article ● Lesson 2.6, **Activity 5**, Student View and *Systems of the Human Body* article set ● Lesson 2.1 ○ **Activity 2**, Instructional Guide (steps 1–6) and Student View ○ **Activity: Playing Body Systems Model Video**, Instructional Guide (steps 1–2 and Body Systems Model Video) ○ **Activity 3**, Instructional Guide (steps 1–2) ● Lesson 2.2, **Activity 2**, *Patient Stories* article set

	● Lesson 3.4, **Activity 4**, *Odd Organisms and How They Get the Molecules They Need* article set
7.L1U1.11	
Explain how organisms maintain internal stability and evaluate the effect of the external factors on organisms' internal stability.	***Metabolism*** unit: ● Lesson 2.1, **Activity 2**, Instructional Guide, "Playing Body System Model Video" ● Lesson 1.3, **Activity 2**, Student View and "Molecules Cells Need" article ***Matter and Energy in Ecosystems*** unit: ● Lesson 2.2, **Activity 2**, Student View and Matter and Energy and Ecosystems simulation ***Microbiome*** unit: ● Lesson 1.2, **Activity 5**, Student View and the "Cells: The Basic Unit of Life" article.
7.L2U1.12	
Construct an explanation for how some plant cells convert light energy into food energy.	***Matter and Energy in Ecosystems*** unit: ● Chapter 1, Chapter Overview ● Lesson 1.4 ○ **Activity 1**, Instructional Guide (steps 1–2) and Student View ○ **Printable Resources**, Print Materials (8.5" x 11"), Energy Storage Molecule cards, page 26 ○ **Activity 2**, Instructional Guide (steps 1–10), Student View, and *Sunlight and Life* article set ○ **Activity 3**, Instructional Guide (steps 1–10), Student View, and simulation ● Lesson 1.5: ○ **Activity 2**, Instructional Guide (steps 1–9), Student View, and Modeling Tool: 'Energy Storage Molecules' ○ **Activity 3**, Instructional Guide (steps 1–10), Student View, and simulation

	● Lesson 2.2, **Activity 5**, Student View, "Mulberry Tree and the Silkworm" article and simulation

Eighth Grade: Focus on Cause and Effect; Energy and Matter; Stability and Change

Physical Sciences: Students apply stability and change to explore chemical properties of matter and chemical reactions to further understand energy and matter.

Physical Science Standards	Citations from Amplify Science
8.P1U1.1	
Develop and use a model to demonstrate that atoms and molecules can be combined or rearranged in chemical reactions to form new compounds with the total number of each type of atom conserved.	***Chemical Reactions*** unit: ● Lesson 3.4 ○ **Activity 3,** Instructional Guide (steps 1–5) and Student View ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Products of the Reaction copymaster" ● Lesson 4.3 ○ **Activity 4,** Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Assessing Students' Final Written Arguments" ● Lesson 4.4 ○ **Activity 2,** Student View and Possible Responses tab ○ **Activity 3,** Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "End-of-Unit Assessment Answer Key and Scoring Guide" ***Phase Change*** unit: ● Lesson 1.6, **Activity 4,** Instructional Guide (steps 1–9), Student View, Possible Responses tab, Modeling Tool activity: 'Methane Lake Freezing', Modeling Tool activity: 'Methane Lake Evaporating', and On-the-Fly Assessment
8.P1U1.2	
Obtain and evaluate information regarding how scientists identify substances based on unique physical and chemical properties.	***Chemical Reactions*** unit: ● Lesson 1.3, **Activity 3,** screen 2 of 2, Instructional Guide and Student View ● Lesson 1.5, **Activity 2,** screen 3 of 3, Instructional Guide, Student View, and simulation (Chemical Stockroom mode)

	● Lesson 1.4, **Activity 3**, screen 2 of 3, Instructional Guide (steps 9–11), and Teacher Support tab ("Background Science Note: About (Pure) Substances")
8.P4U1.3	
Construct an explanation on how energy can be transferred from one energy store to another.	***Harnessing Human Energy*** unit: ● Lesson 2.2, **Activity 4,** Instructional Guide (steps 1–8) and Sorting Tool activity: Introducing Energy Transfer ***Light Waves*** unit: ● Lesson 1.2, **Activity 3,** Instructional Guide (steps 1–15) and Student View ***Thermal Energy*** unit: ● Lesson 2.3, **Activity 4,** Instructional Guide (steps 4–12)
8.P4U1.4	
Develop and use mathematical models to explain wave characteristics and interactions.	***Light Waves*** unit: ● Lesson 2.2, **Activity 4,** Student View, Possible Responses tab, and simulation ● Lesson 2.3 ○ **Activity 3,** Instructional Guide (steps 1–9), Student View, Possible Responses tab, and simulation ○ **Activity: Video: The Shape of Waves**, The Shape of Waves video ○ **Activity 4,** Instructional Guide (steps 1–7), Student View, and Teacher Support tab (" Background, Pedagogical Goals: Reflecting on How Light Waves are Different") ***Force and Motion*** unit: ● Lesson 4.3, **Activity 5,** Instructional Guide (steps 1–9) and Student View ***Force and Motion Engineering Internship*** unit: ● Lesson 1.7, **Activity: Outlining Design Decisions,** Instructional Guide (steps 1–6) and Possible Responses tab ***Thermal Energy*** unit:

	● Lesson 2.4, **Activity 3,** Instructional Guide (steps 1–10) and Student View ● Lesson 3.4 ○ **Activity 2,** Instructional Guide (steps 1–5), Student View, and Possible Responses tab ○ **Lesson Brief**, Digital Resources, “Modeling Tool: Differences in Temperature Change copymaster”
8.P4U2.5	
Develop a solution to increase efficiency when transferring energy from one source to another.	***Thermal Energy*** unit: ● Lesson 3.3, **Activity 4,** screens 1–2 of 2, Student View, Possible Responses tab, “Dumpling Dilemma: Oil or Water?” article, and Teacher Support tab (“Rationale, Pedagogical Goals: Additional Reading About Thermal Energy and Temperature” and “Assessment, Assessment Opportunity: Student Understanding of How the Nature of a Material Affects Energy Transfer”) ● Lesson 4.3 ○ **Activity 4,** Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, “Thermal Energy Rubrics for Assessing Students' Final Written Arguments” ***Force and Motion Engineering Internship*** unit: ● Lesson 1.9 ○ **Activity: Finalizing the Proposal,** Possible Responses tab ○ **Lesson Brief**, Digital Resources, “Printable Proposal Rubric copymaster” ***Phase Change Engineering Internship*** unit: ● Lesson 1.4: ○ **Activity: Analyzing Incubator Materials,** Instructional Guide (steps 8–11), Possible Responses tab, and BabyWarmer Design Tool ○ **Lesson Brief**, Digital Resources, “Insulating Materials Analysis copymaster” ○ **Activity 2,** Instructional Guide (steps 1–6) and *Futura Chemical Engineer’s Dossier*, Ch. 4, "Insulating Materials" article ● Lesson 1.9, **Activity: Finalizing the Proposal,** Possible Responses tab ● Lesson 1.7, **Lesson Brief**, Digital Resources, “Printable Proposal Rubric” ***Light Waves*** unit: ● Lesson 3.3, **Activity 3,** Instructional Guide (steps 1–5), Student View, Possible Responses tab, and On-the-Fly Assessment

	Harnessing Human Energy unit: ● Lesson 2.2, **Activity 4,** Instructional Guide (steps 1–8) and Sorting Tool activity: 'Introducing Energy Transfer'

Earth and Space Sciences: Students explore natural and human-induced cause-and-effect changes in Earth systems over time.

Earth and Space Standards	Citations from Amplify Science
8.E1U1.6	
Analyze and interpret data about the Earth's geological column to **communicate** relative ages of rock layers and fossils.	***Plate Motion*** unit: ● Lesson 3.2 ○ **Activity 5**, Student View, Possible Responses tab, Sorting Tool activity: 'Earth's History', "Steno and the Shark" article and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Rock Strata and Geologic Time") ● Lesson 4.2, **Activity 2**, Instructional Guide (step 6) and On-the-Fly Assessment ● Lesson 3.1, **Activity 3**, Instructional Guide (step 6) and On-the-Fly Assessment ● Lesson 3.4 ○ **Activity 3**, Instructional Guide (step 7) ○ **Activity 4**, Student View and Possible Responses tab ***Earth, Moon, and Sun*** unit: ● Lesson 1.3, **Activity 3**, Instructional Guide (steps 1–7), Student View and On-the-Fly Assessment ● Lesson 2.4 ○ **Activity 3**, Instructional Guide (steps 1–9), Student View and On-the-Fly Assessment ○ **Lesson Brief,** Digital Resources, "Write and Share Routine: #1, #2 and #3 copymaster"

8.E1U3.7	
Obtain, evaluate, and communicate information about data and historical patterns to predict natural hazards and other geological events.	***Plate Motion Engineering Internship*** unit: ● Lesson 1.9 ○ **Activity: Finalizing the Proposal**, Possible Responses tab ○ **Lesson Brief,** Digital Resources, "Printable Proposal Rubric" ***Plate Motion*** unit: ● Lesson 1.3 ○ **Activity 3**, Instructional Guide (steps 1–24), Student View, and On-the-Fly Assessment ○ **Printable Resources,** Print Materials (8.5" x 11"), Earthquake Map and Plate Boundary Map, pages 24–27 ● Lesson 4.3 ○ **Activity 3**, Instructional Guide (steps 1–5), Student View, and On-the-Fly Assessment ○ **Lesson Brief,** Digital Resources, "Science Seminar Reasoning Tool copymaster" ***Ocean, Atmosphere, and Climate*** unit: ● Lesson 2.3, **Activity 3**, Instructional Guide (steps 1–7), Student View, simulation and On-the-Fly Assessment

8.E1U3.8	
Construct and support an argument about how human consumption of limited resources impacts the biosphere.	***Earth's Changing Climate*** unit: ● Lesson 1.2, **Activity 5**, Student View and "The Effects of Climate Change" article ● Lesson 1.3, **Activity 2**, screen 1 of 4, Instructional Guide, step 2 ● Lesson 3.1 ○ **Activity 2**, Instructional Guide (steps 1–10), Student View and simulation ○ **Activity: Video About Combustion**, Instructional Guide (steps 1–3) and Combustion video ○ **Activity 3**, Instructional Guide (steps 1–19) and Student View ○ **Activity 4**, Student View and Modeling Tool: 'Climate Change Cause' ● **Printable Resources,** Print Materials (8.5" x 11"), Human Activities Evidence Cards, page 36–37 ● Lesson 1.4, **Activity 5**, "A Hole in Earth's Ozone Layer" article

Life Sciences: Students develop an understanding of patterns and how genetic information is passed from generation to generation. They also develop the understanding of how traits within populations change over time.

Life Science Standards	Citations from Amplify Science
8.L3U1.9	
Construct an explanation of how genetic variations occur in offspring through the inheritance of traits or through mutations.	***Natural Selection*** unit: ● Lesson 4.3 ○ **Activity 4**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument" ● Lesson 4.4 ○ **Activity 1**, screens 1-–8 of 18, Student View and Possible Responses tab ○ **Activity 2**, Student View and Possible Responses tab ○ **Activity 3**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "End-of-Unit Assessment Answer Key and Scoring Guide" ● Lesson 2.4, **Activity 2**, Instructional Guide (steps 1–6), and On-the-Fly Assessment ● Lesson 3.2, **Activity 2**, Instructional Guide (steps 1–10), Student View, "Mutations: Not Just for Superheroes" article, and On-the-Fly Assessment ***Populations and Resources*** unit: ● Lesson 2.7 ○ **Activity 2**, Instructional Guide (steps 1–12), Student View, and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Increasing Births in the Moon Jelly Population copymaster" and "Modeling Tool: Decreasing Deaths in the Moon Jelly Population copymaster" ○ **Activity 3**, Instructional Guide (step 13) ***Traits and Reproduction*** unit: ● Lesson 2.4 ○ **Activity 2**, screen 2 of 2, Instructional Guide (steps 3–10), Student View, Possible Responses tab, and On-the-Fly Assessment

	○ **Lesson Brief**, Digital Resources, "Modeling Tool: Variation in Spider Offspring Model copymaster" ● Lesson 4.3 ○ **Activity 4**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubrics for Final Written Argument" ● Lesson 4.4 ○ **Activity 1**, screens 1–18 of 18, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "End-of-Unit Assessment Answer Key and Scoring Guide" ● Lesson 1.3 ○ **Activity 2**, Instructional Guide (steps 1–2) and *Surprising Spider Silk* article set ○ **Activity 3**, Instructional Guide (steps 1–15), Student View, and Teacher Support tab ("Background, Crosscutting Concept: Structure and Function") ***Evolutionary History*** unit: ● Lesson 2.5, **Activity 2**, Instructional Guide (steps 1–7), Modeling Tool: 'Population Changes', Possible Responses tab, and On-the-Fly Assessment

8.L3U3.10	
Communicate how advancements in technology have furthered the field of genetic research and use evidence to support an argument about the positive and negative effects of genetic research on human lives.	***Natural Selection*** unit: ● Lesson 3.2 ○ **Activity 2**, Instructional Guide (steps 1–9), Student View, Possible Responses tab, and On-the-Fly Assessment ○ **Activity 5**, Student View, "How to Make a Venomous Cabbage" article, and Teacher Support tab ("Assessment, Assessment Opportunity: Student Understanding of Artificial Selection") ● Lesson 4.3 ○ **Activity 4**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Rubric for Final Written Argument" ***Traits and Reproduction*** unit: ● Lesson 2.1, **Activity 3**, Instructional Guide (steps 1–10), "Hemophilia, Proteins, and Genes" article, and On-the-Fly Assessment ● Lesson 3.5 ○ **Lesson Brief**, Digital Resources, "Cloning Mammoths: A Mammoth Task" article ○ **Activity 3**, Instructional Guide and Student View ***Microbiome*** unit: ● Lesson 2.1, **Activity 5**, Instructional Guide (steps 1–5), "The Human Microbiome" article, and On-the-Fly Assessment ***Natural Selection Engineering Internship*** unit: ● Lesson 1.1, **Activity 2**, *Futura Biomedical Engineer's Dossier*, Ch. 2, "Basic Facts About Malaria" article ● Lesson 1.10, **Activity: Applying Engineering Skills**, Instructional Guide (step 2)
8.L4U1.11	

Develop and use a model to explain how natural selection may lead to increases and decreases of specific traits in populations over time.	***Natural Selection*** unit: ● Lesson 4.3 ○ **Activity 4**, Student View and Possible Responses tab ○ **Lesson Brief**, Digital Resources, Rubrics for Final Written Argument ● Lesson 2.4, **Activity 2**, Instructional Guide (steps 1–6), Student View, Possible Responses tab, "The Deadly Dare" article, and On-the-Fly Assessment ● Lesson 1.3, **Activity 4**, Instructional Guide (steps 1–4), Student View, and On-the-Fly Assessment ● Lesson 1.4, **Activity 2**, Instructional Guide (steps 1–6), Student View, Possible Responses tab, and simulation ***Natural Selection Engineering Internship*** unit: ● Lesson 1.9, **Activity: Finalizing the Proposal**, Possible Responses tab ● Lesson 1.8, **Lesson Brief**, Digital Resources, "Proposal Rubric copymaster" ● Lesson 1.2, **Activity: Modeling Population Shifts**, Instructional Guide (step 12) and Teacher Support tab ("Instructional Suggestion, Crosscutting Concepts: Making Connections Across Science Topics") ● Lesson 1.5 ○ **Activity: Testing Malaria Treatments**, Instructional Guide (steps 1–2) and MalariaMed Design Tool ○ **Lesson Brief**, Digital Resources, "MalariaMed Data copymaster" ***Evolutionary History*** unit: ● Lesson 2.3, **Activity 2**, Instructional Guide (steps 1–6), Student View, "Where Do Species Come From?" article, and On-the-Fly Assessment

8.L4U1.12	
Gather and communicate evidence on how the process of natural selection provides an explanation of how new species can evolve.	***Natural Selection*** unit: ● **Unit Guide**, Unit Overview ● Lesson 2.2 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–15), Student View, Possible Responses tab, and simulation ○ **Activity 3**, Instructional Guide (steps 1–9), Student View, and Possible Responses tab ○ **Lesson Brief**, Digital Resources, "Modeling Tool: Beak Strength Explanation copymaster" ● Lesson 2.4 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–14), Student View, and "The Deadly Dare" article ○ **Activity 3**, Instructional Guide (steps 1–8), Student View, and Possible Responses tab ○ **Activity 4**, Student View and Possible Responses tab ● Lesson 4.1 ○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–6) and Student View ○ **Activity 3**, Instructional Guide (steps 1–8) and Student View ○ **Lesson Brief**, Digital Resources, "Stickleback Evidence Cards copymaster" ○ **Activity 4**, Instructional Guide (steps 1–7) and Student View ○ **Lesson Brief**, Digital Resources, "Argument Organizer copymaster" ● Lesson 1.4, **Activity 2**, Instructional Guide (steps 1–7) and simulation ***Evolutionary History*** unit: ● Lesson 2.3

	○ **Activity 1**, Student View ○ **Activity 2**, Instructional Guide (steps 1–6), Student View, and "Where Do Species Come From?" article ○ **Activity 3**, Instructional Guide (steps 1–17), Student View, Possible Responses tab, and *Natural Selection* simulation