Science 4, 5th Edition
Lesson Plan Overview

Chapter 1: Plant Structures and Functions

Act. Activities • EV ExamView • IA Instructional Aid • WL Web Link

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 1 Overview of External Plant Structures				
2–11	1.1 Identify five external structures of a plant. 1.2 Label the location of external plant structures.	**Activities** • Plant Parts (p. 1) **Materials** • solar system model • slips of paper	**Teacher Tools Online** • Video: Plants • Video: Botanist • WL: Crying Child	Quick Check (p. 9)
Lesson 2 Roots and Stems				
12–17	2.1 Identify two kinds of roots and two kinds of stems. 2.2 Explain the structures and functions of roots and stems.	**Activities** • Roots and Stems (p. 3) **Materials** • plants for taproot and fibrous root examples		Quick Check (p. 13) Quick Check (p. 17)
Lesson 3 Leaves				
18–24	3.1 Identify the internal and external structures used in photosynthesis and the functions of each. 3.2 Relate photosynthesis to God's design for living things. **BWS** Design in Nature (explain)	**Teacher Edition** • IA 1.1: Photosynthesis • IA 1.2: Photosynthesis Cards **Activities** • Study Guide (pp. 5–7) **Assessments** • Quiz 1A	**Teacher Tools Online** • IA 1.1: Photosynthesis • IA 1.2: Photosynthesis Cards • WL: Photosynthesis	Quick Check (p. 21) Quick Check (p. 24) Quiz 1A
Lesson 4 Exploration: Leaf Detective				
25	4.1 Classify leaves by a chosen characteristic. 4.2 Analyze similarities and differences between leaf classifications.	**Teacher Edition** • IA 1.3: Science Inquiry Skills • IA 1.4: Science Safety Tips **Activities** • Science Inquiry Skills (p. 9) • Science Safety Tips (p. 10) • Exploration: Leaf Detective (pp. 11–13) **Assessments** • Exploration Rubric **Materials** • supplies for leaf classification; see Activities p. 11 for materials	**Teacher Tools Online** • IA 1.3: Science Inquiry Skills • IA 1.4: Science Safety Tips • WL: Types of Leaves	Exploration Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 5 Other Plant Structures				
26–31	5.1 Identify two external parts of a plant that help with reproduction. 5.2 Evaluate different views of the origin of thorns. **BWS** History of Nature (evaluate) 5.3 Explain how thorns benefit some plants. **BWS** Design in Nature (explain)	**Teacher Edition** • IA 1.5: Plant Terms **Activities** • Origin of Thorns (p. 15) **Materials** • plant or stem with thorns, spines, or prickles • sunglasses	**Teacher Tools Online** • Video: Wearing Our Bible Glasses • Video: Plant Protection • IA 1.5: Plant Terms • WL: The Grand Canyon	Quick Check (p. 29) Quick Check (p. 31)
Lesson 6 Investigation: Stalked!				
32	6.1 Predict how temperature affects the movement of water in a plant. 6.2 Measure and record data. 6.3 Identify controlled, independent, and dependent variables. 6.4 Draw conclusions about how temperature affects the movement of water in plants.	**Teacher Edition** • IA 1.6: Scientific Investigation • IA 1.7: Scientific Variables **Activities** • Scientific Investigation (p. 17) • Scientific Variables (p. 18) • Investigation: Stalked! (pp. 19–21) **Assessments** • Investigation Rubric **Materials** • supplies for celery Investigation; see Activities p. 19 for materials	**Teacher Tools Online** • Video: Hypothesis • IA 1.6: Scientific Investigation • IA 1.7: Scientific Variables	Investigation Rubric
Lesson 7 Uses of Plants				
33–37	7.1 Give an example of an edible food for each part of a plant. 7.2 Describe ways that plants are beneficial.	**Teacher Edition** • IA 1.8: Plant Part Web **Activities** • Edible Plant Parts (p. 23) **Materials** • variety of edible plant parts • cotton stalk, clothing	**Teacher Tools Online** • IA 1.8: Plant Part Web • WL: Planting a Garden Plant • WL: Sod House • WL: From Field to Fabric	Quick Check (p. 34) Quick Check (p. 37)
Lesson 8 Responses of Plants				
38–41	8.1 Identify four ways plants respond to the environment. **BWS** Design in Nature (explain) 8.2 Give an example of a way that plants respond to light, touch, gravity, or water.	**Activities** • Study Guide (pp. 25–26) **Assessments** • Quiz 1B **Materials** • plant pot, soil, seeds, water	**Teachers Tools Online** • WL: Venus Flytrap • WL: Vines Growing	Quick Check (p. 41) Quiz 1B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 9 Review				
	9.1 Recall terms and concepts from Chapter 1.	**Teacher Edition** • IA 1.9: Plant Game Parts	**Teacher Tools Online** • IA 1.9: Plant Game Parts	
Lesson 10 Test				
	10.1 Apply terms and concepts from Chapter 1.	**Assessments** • Test 1	**Teacher Tools Online** • EV: Chapter 1 Test Bank	Test 1 EV: Chapter 1 Test Bank

Chapter 2: Plant Reproduction

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 11–12 Flower Structures and Pollination				
42–48	11–12.1 Identify the structures of a flower and their functions. 11–12.2 Explain what pollination is. 11–12.3 Identify how pollination occurs. 11–12.4 Explain how God designed the structures and functions of a flowering plant to help the plant reproduce. **BWS** Design in Nature (explain)	**Teacher Edition** • IA 2.1: Parts of a Flower **Activities** • Parts of a Flower (p. 27) **Materials** • wooden pencil • pictures of a blooming skunk cabbage and a blooming rose	**Teacher Tools Online** • Video: Plant Reproduction • WL: United States Botanic Garden • IA 2.1: Parts of a Flower	Quick Check (p. 45) Quick Check (p. 48)
Lesson 13 Exploration: Find That Seed!				
49	13.1 Compare a variety of fruit seeds. 13.2 Measure the seeds. 13.3 Collect and record data about various fruit seeds. 13.4 Communicate conclusions about the seeds observed.	**Activities** • Exploration: Find That Seed! (pp. 29–30) **Assessments** • Exploration Rubric **Materials** • supplies for seed location exploration; see Activities p. 29 for materials		Exploration Rubric
Lesson 14 Plant Reproduction with Seeds and Fruit				
50–54	14.1 Identify the plant structure that contains seeds. 14.2 Identify the parts of a seed. 14.3 Explain how seeds can be dispersed. 14.4 Explain how the structures of fruit and seeds are designed to help the flowering plant survive, grow, and reproduce. **BWS** Design in Nature (explain)	**Activities** • Study Guide (pp. 31–33) **Assessments** • Quiz 2A **Materials** • fruit examples • seeds from Lesson 13	**Teacher Tools Online** • Video: Pomologist	Quick Check (p. 53) Study Guide (Act. pp. 31–33) Quiz 2A

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 15–16 STEM: Up, Up, and Away!				
55	15–16.1 Design a model of a tool that will disperse seeds by wind, using the engineering design process. 15–16.2 Create a tool that will disperse seeds by wind. 15–16.3 Test and compare models to improve the original design. 15–16.4 Communicate how the design solves the problem. **BWS** Purpose of Science (explain)	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM: The Engineering Design Process (p. 35) • STEM: Up, Up, and Away! (pp. 37–39) **Assessments** • STEM Rubric **Materials** • supplies for designing seed dispersion tool; see Teacher Edition p. 55 for materials	**Teacher Tools Online** • IA 2.2: STEM: The Engineering Design Process	STEM Rubric
Lesson 17 Flowering Plant Life Cycle				
56–59	17.1 Identify the conditions needed for a seed to germinate. 17.2 Explain how the design of a flowering plant's life cycle allows it to survive, grow, and reproduce. **BWS** Design in Nature (explain) 17.3 Differentiate between the seed location of flowering plants and of conifers.	**Teacher Edition** • IA 2.3: Flowering Plant Stages **Activities** • Measure Up: Measuring Length (pp. 41–42) **Materials** • ears of corn, dried	**Teacher Tools Online** • WL: Lima Bean Time Lapse • IA 2.3: Flowering Plant Stages	Quick Check (p. 59)
Lesson 18 Investigation: Pinecone Pondering				
60	18.1 Predict the condition under which a pinecone will open and under which condition it will close. 18.2 Observe and record data. 18.3 Draw conclusions about the open-and-close trait of a pinecone and the tree's ability to reproduce. **BWS** Design in Nature (explain)	**Activities** • Investigation: Pinecone Pondering (pp. 43–45) **Assessments** • Investigation Rubric **Materials** • pinecones, various shapes and sizes • supplies for pinecone investigation; see Activities p. 43 for materials		Investigation Rubric
Lesson 19 Other Ways Plants Reproduce				
61–63	19.1 Identify ways plants can reproduce without seeds. 19.2 Explain God's design for plant reproduction. **BWS** Design in Nature (explain)	**Activities** • Study Guide (pp. 47–48) **Assessments** • Quiz 2B **Materials** • banner paper • green onion, fresh	**Teacher Tools Online** • WL: Strawberry Plants • WL: Moss Releasing Spores	Quick Check (p. 63) Study Guide (Act. pp. 47–48) Quiz 2B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 20 Review				
	20.1 Recall terms and concepts from Chapter 2.	**Materials** • supplies for review game		
Lesson 21 Test				
	21.1 Apply terms and concepts from Chapter 2.	**Assessment** • Test 2	**Teacher Tools Online** • EV: Chapter 2 Test Bank	Test 2 EV: Chapter 2 Test Bank

Chapter 3: Invertebrates

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 22 Arthropods and Insects				
64–70	22.1 Explain why insects are arthropods. 22.2 Explain how insects use external structures to survive and grow. 22.3 Compare and contrast complete and incomplete metamorphosis.	**Teacher Edition** • IA 3.1: Insects **Activities** • Insects (p. 49) • Metamorphosis (p. 50) **Materials** • supplies for making a hornet model • 5 index cards	**Teacher Tools Online** • Video: Invertebrates • IA 3.1: Insects • WL: Metamorphosis	Quick Check (p. 70)
Lesson 23 External Insect Structures and Their Functions				
71–76	23.1 Evaluate explanations for external insect structures. **BWS** History of Nature (evaluate) 23.2 Describe the external insect structures used for protection and sensing and their functions. 23.3 Compare and contrast compound eyes and simple eyes.	**Teacher Edition** • IA 3.2: Insect Structures • IA 3.3: External Insect Structures 1 • IA 3.4: External Insect Structures 2 • IA 3.6: Be a Detective 1 • IA 3.7: Be a Detective 2 **Activities** • External Insect Structures (pp. 51–53) • Be a Detective (pp. 55–56) • Study Guide (pp. 57–59) **Assessments** • Quiz 3A **Materials** • hand lenses • hornet model from Lesson 22 • sticky notes (tabs) • cilantro in sandwich bag	**Teacher Tools Online** • Video: Stingers • IA 3.2: Insect Structures • IA 3.3: External Insect Structures 1 • IA 3.4: External Insect Structures 2 • IA 3.6: Be a Detective 1 • IA 3.7: Be a Detective 2 • WL: How Dragonflies See the World	Quick Check (p. 76) Study Guide (Act. pp. 57–59) Quiz 3A
Lesson 24 Investigation: What Big Eyes You Have!				
77	24.1 Create a model of a compound eye. 24.2 Predict similarities and differences between simple- and compound-eye vision. 24.3 Observe objects and motion when using the compound-eye model. 24.4 Infer a benefit of a compound eye for an insect. 24.5 Relate scientific modeling to describing God's world. **BWS** Modeling in Science (explain)	**Teacher Edition** • IA 1.3: Science Inquiry Skills **Activities** • Investigation: What Big Eyes You Have! (pp. 61–63) **Assessments** • Investigation Rubric **Materials** • supplies for compound-eye model; see Activities (p. 61)	**Teacher Tools Online** • IA 1.3: Science Inquiry Skills	Investigation Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 25 Structures for Eating and Moving				
78–82	25.1 Identify the main types of insect mouthparts. 25.2 Explain the relationship between insect mouth structures and what insects eat. 25.3 Describe the external insect structures for movement and their functions.	**Teacher Edition** • IA 3.5: External Insect Structures 3 • IA 3.6: Be a Detective 1 • IA 3.8: Siphoning **Activities** • External Insect Structures (pp. 51–53) • Be a Detective (pp. 55–56) **Materials** • supplies representing insect mouthparts • sticky notes • hand lenses	**Teacher Tools Online** • IA 3.5: External Insect Structures 3 • IA 3.6: Be a Detective 1 • IA 3.8: Siphoning	Quick Check (p. 82)
Lesson 26 Butterflies and Moths				
83–86	26.1 Compare and contrast the external structures and behaviors of butterflies and moths. 26.2 Compare and contrast the pupa stage of metamorphosis in butterflies and moths.	**Activities** • Study Guide (pp. 67–68) **Assessments** • Quiz 3B **Materials** • 7 assorted pictures of butterflies and moths	**Teacher Tools Online** • WL: Day-Flying Moths • WL: Butterfly or Moth?	Quick Check (p. 86) Study Guide (Act. pp. 67–68) Quiz 3B
Lessons 27–28 Exploration: Arthropod Architecture				
87	27–28.1 Design a model of an imaginary insect using scientific terms for structures and functions. 27–28.2 Create a model of an imaginary insect. 27–28.3 Communicate how the imaginary insect lives and survives in its environment.	**Teacher Edition** • IA 1.3: Science Inquiry Skills • IA 3.9: Environment **Activities** • Exploration: Arthropod Architecture (pp. 69–71) **Assessments** • Exploration Rubric **Materials** • supplies for imaginary-insect model; see Activities (p. 69)	**Teacher Tools Online** • IA 1.3: Science Inquiry Skills • IA 3.9: Environment	Exploration Rubric
Lessons 29–30 Social Insects				
88–96	29–30.1 Explain the instincts God has given all social insects. **BWS** Design in Nature (explain) 29–30.2 Describe how social insects work together to survive and grow. 29–30.3 Describe how social insects communicate.	**Activities** • Study Guide (pp. 73–75) **Assessments** • Quiz 3C **Materials** • piece of wrapped candy	**Teacher Tools Online** • Video: Bees and Honeycombs • Video: Beekeeper • WL: Ant Hill	Quick Check (p. 90) Quick Check (p. 96) Study Guide (Act. pp. 73–75) Quiz 3C

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 31–32 Exploration: Insect Collection				
97	31–32.1 Create an insect collection. 31–32.2 Observe insects and record data. 31–32.3 Identify insects. 31–32.4 Communicate insect structures and their functions by using the collection.	**Teacher Edition** • IA 1.3: Science Inquiry Skills **Activities** • Exploration: Insect Collection (pp. 77–81) **Assessments** • Exploration Rubric **Materials** • supplies for insect collection; see Activities page 77 for list of materials	**Teacher Tools Online** • IA 1.3: Science Inquiry Skills • WL: Insects	Exploration Rubric
Lesson 33 Review				
	33.1 Recall terms and concepts from Chapter 3.	**Materials** • supplies for review game		
Lesson 34 Test				
	34.1 Apply terms and concepts from Chapter 3.	**Assessments** • Test 3	**Teacher Tools Online** • EV: Chapter 3 Test Bank	Test 3 EV: Chapter 3 Test Bank

Chapter 4: Vertebrates

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 35 External Structures and Functions				
98–105	35.1 Compare and contrast external vertebrate structures and their functions for covering or for moving and how they affect vertebrate survival and behavior. 35.2 Identify an animal's environment based on its external structures. 35.3 Compare and contrast different views regarding the origin of some vertebrates. **BWS** History of Nature (evaluate)	**Teacher Edition** • IA 4.1: Movement Structures **Activities** • Covering and Moving (pp. 83–84) **Materials** • supplies for a bat wing demonstration	**Teacher Tools Online** • Video: Vertebrates • IA 4.1: Movement Structures • WL: Flight • WL: Coverings	Quick Check (p. 105)
Lessons 36–37 External Structures for Sensing				
106–14	36–37.1 Relate vertebrate mouthparts to vertebrate diets. 36–37.2 Explain how vertebrates use sensory structures to survive and grow.	**Teacher Edition** • IA 3.6: Be a Detective 1 • IA 3.7: Be a Detective 2 **Activities** • Answers in Genesis: Big Sharp Teeth (pp. 85–86) • Study Guide (pp. 87–90) **Assessments** • Quiz 4A **Materials** • supplies for the Sensing hands-on activity • sticky notes • supplies for the Worldview Expansion demonstration	**Teacher Tools Online** • Video: Hummingbird Tongues • IA 3.6: Be a Detective 1 • IA 3.7: Be a Detective 2 • WL: Dive Bomb • WL: Frog's Tongue • WL: Bats and Echolocation	Quick Check (p. 111) Quick Check (p. 114) Study Guide (Act. pp. 87–90) Quiz 4A
Lesson 38 Investigation: Bird Beak Buffet				
115	38.1 Predict which beak is most efficient for a given food. 38.2 Experiment with imitation beaks and given food sources. 38.3 Infer the relationship between the shape of bird beaks and bird diet. 38.4 Infer why different kinds of birds can live in the same environment. 38.5 Infer what will happen to all the birds in one area if they all had the same type of beak.	**Activities** • Investigation: Bird Beak Buffet (pp. 91–94) **Assessments** • Investigation Rubric **Materials** • supplies for modeling bird beaks; see Teacher Edition p. 115 for materials	**Teacher Tools Online** • WL: Bird Beaks	Investigation Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 39 External Structures for Defense				
116–18	39.1 Explain how God's design helps vertebrates adapt to a world with predators. **BWS** Design in Nature (explain) 39.2 Relate external vertebrate structures to how vertebrates defend themselves.	**Teacher Edition** • IA 4.2: Defending against Predators • IA 4.3: For Defense **Activities** • For Defense (p. 95) • Study Guide (p. 97) **Assessments** • Quiz 4B **Materials** • sticky notes	**Teacher Tools Online** • Video: Antivenin • IA 4.2: Defending against Predators • IA 4.3: For Defense • WL: Defense Structures • WL: Horned Lizard	Quick Check (p. 118) Study Guide (Act. p. 97) Quiz 4B
Lessons 40–41 STEM: Mimic the Master Designer and Engineer				
119	40–41.1 Design a device that will use biomimicry, using the engineering design process. 40–41.2 Create a device that will use biomimicry. 40–41.3 Test and compare models to improve the original design. 40–41.4 Communicate how the design solves the problem. **BWS** Design in Nature (apply)	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM: Mimic the Master Designer and Engineer (pp. 99–101) **Assessments** • STEM Rubric **Materials** • supplies for the biomimicry design model; see Teacher Edition p. 119 for materials	**Teacher Tools Online** • WL: Natural Design • WL: Kingfisher and Bullet Train	STEM Rubric
Lesson 42 Internal Vertebrate Body Systems				
120–25	42.1 Relate internal vertebrate structures and functions to the body system for survival. 42.2 Explain how vertebrates use internal structures to survive and grow.	**Teacher Edition** • IA 4.4: Structures • IA 4.5: Skeletal System • IA 4.6: Circulatory System • IA 4.7: Respiratory System • IA 4.8: Digestive System **Activities** • Vertebrate Systems (pp. 103–5) **Materials** • sticky notes	**Teacher Tools Online** • Video: Wildlife Photographer • IA 4.4: Structures • IA 4.5: Skeletal System • IA 4.6: Circulatory System • IA 4.7: Respiratory System • IA 4.8: Digestive System	Quick Check (p. 124) Sticky Note Matching Game

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 43 Vertebrate Nervous System and Responses				
126–28	43.1 Identify the vertebrate nervous system structures and functions. 43.2 Distinguish between internal and external stimuli. 43.3 Identify ways an animal responds to stimuli.	**Teacher Edition** • IA 4.9: Stimulus **Activities** • Study Guide (pp. 107–8) **Assessments** • Quiz 4C **Materials** • supplies for Responses demonstration; see Teacher Edition p. 126 for materials • slips of paper	**Teacher Tools Online** • IA 4.9: Stimulus	Quick Check (p. 128) Study Guide (Act. pp. 107–8) Quiz 4C
Lessons 44–45 Exploration: Creature Feature WebQuest				
129	44–45.1 Research data about vertebrate structures, functions, and responses, using a WebQuest. 44–45.2 Record data about animal structures, functions, and responses. 44–45.3 Create a poster with two structures or responses. 44–45.4 Communicate structures, functions, and responses by using the poster.	**Activities** • Exploration: Creature Feature WebQuest (pp. 109–11) **Assessments** • Exploration Rubric **Materials** • supplies for the WebQuest; see Activities p. 109 for materials	**Teacher Tools Online** • WL: Creature Feature WebQuest Journey	Exploration Rubric
Lesson 46 Review				
	46.1 Recall terms and concepts from Chapter 4.	**Teacher Edition** • IA 4.10: Stimuli Game	**Teacher Tools Online** • IA 4.10: Stimuli Game	
Lesson 47 Test				
	47.1 Apply terms and concepts from Chapter 4.	**Assessments** • Test 4	**Teacher Tools Online** • EV: Chapter 4 Test Bank	Test 4 EV: Chapter 4 Test Bank

Chapter 5: Human Digestive System

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 48 The Digestive System				
130–36	48.1 Compare and contrast how humans, animals, and plants get their energy. **BWS** Design in Nature (explain) 48.2 Identify the structures and functions in the mouth that aid in digestion. 48.3 Identify the hard covering that protects teeth. 48.4 Describe the five tastes that taste buds respond to.	**Teacher Edition** • IA 5.1: Learning Progress Grid • IA 5.2: Digestive System **Activities** • Digestion (p. 113) **Materials** • materials for taste bud demonstration	**Teacher Tools Online** • Video: Human Digestive System • IA 5.1: Learning Progress Grid • IA 5.2: Digestive System • WL: Your Teeth	Quick Check (p. 134) Quick Check (p. 136)
Lesson 49 Investigation: Does Smell Affect Taste?				
137	49.1 Predict whether smell affects taste. 49.2 Record data and observations. 49.3 Identify controlled, independent, and dependent variables. 49.4 Relate the sense of smell to the sense of taste.	**Teacher Edition** • IA 1.3: Science Inquiry Skills **Activities** • Investigation: Does Smell Affect Taste? **Assessments** • Investigation Rubric **Materials** • supplies for smell and taste identification; see Activities p. 115 for materials	**Teacher Tools Online** • IA 1.3: Science Inquiry Skills	Investigation Rubric
Lesson 50 Upper Digestive Tract				
138–41	50.1 Identify the structures and functions of the throat and the stomach that aid in digestion. 50.2 Explain two ways that the stomach works to digest food.	**Teacher Edition** • IA 5.2: Digestive System **Activities** • Digestion (p. 113) **Materials** • balloon, uninflated	**Teacher Tools Online** • IA 5.2: Digestive System	Quick Check (p. 141)
Lesson 51 Lower Digestive Tract & Other Digestive Organs				
142–45	51.1 Identify functions of the small and large intestines that aid in digestion. 51.2 Identify three organs outside the digestive tract that aid in digestion. 51.3 Explain how the three organs outside the digestive tract aid in digestion.	**Teacher Edition** • IA 5.2: Digestive System **Activities** • Digestion (p. 113) • Study Guide (pp. 119–21) **Assessments** • Quiz 5A **Materials** • meter stick • masking tape	**Teacher Tools Online** • IA 5.2: Digestive System • WL: Diabetes	Quick Check (p. 145) Study Guide (Act. pp. 119–21) Quiz 5A

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 52 Exploration: Where Does Food Go?				
146	52.1 Model the organs that make up the digestive system. **BWS** Modeling in Science (explain) 52.2 Illustrate the path that food follows through the digestive tract.	**Activities** • Exploration: Where Does Food Go? (pp. 123–27) **Assessments** • Exploration Rubric **Materials** • supplies for digestive system model; see Activities p. 123 for materials • supplies for the demonstration of the digestive system	**Teacher Tools Online** • WL: Journey through the Digestive System	Exploration Rubric
Lesson 53 Nutrition				
147–51	53.1 Explain the relationship among food, calories, and energy. 53.2 Classify foods using the five basic food groups. 53.3 Summarize the benefits of eating meals together as a family. **BWS** Importance of Humans (explain)	**Activities** • Five Food Groups (p. 129)	**Teacher Tools Online** • Video: Colors of Vegetables • Video: Nutritionist	Quick Check (p. 149) Quick Check (p. 150)
Lesson 54 Exploration: What's on Your Plate?				
152	54.1 Record daily food intake for one day. 54.2 Compare daily food intake with the recommended daily servings for each food group. 54.3 Recommend one way to improve healthy food choices. **BWS** Importance of Humans (apply)	**Activities** • Exploration: What's on Your Plate? (pp. 131–34) **Assessments** • Exploration Rubric	**Teacher Tools Online** • WL: Healthy Eating	Exploration Rubric
Lesson 55 Nutrients				
153–58	55.1 Identify types of nutrients the body needs. **BWS** Importance of Humans (explain) 55.2 Analyze various food labels. 55.3 Classify foods by nutritional content.	**Activities** • Study Guide (pp. 135–37) **Assessments** • Quiz 5B **Materials** • supplies for fruit-infused water • supplies for water demonstration	**Teacher Tools Online** • Video: Vitamins and Minerals	Quick Check (p. 156) Quick Check (p. 158) Study Guide (Act. pp. 135–37) Quiz 5B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 56 Investigation: Starchy Foods				
159	56.1 Predict which foods contain starch. 56.1 Identify the foods that contain starch, using iodine. 56.1 Draw conclusions about the starch content of the foods tested.	**Activities** • Investigation: Starchy Foods (pp. 139–40) **Assessments** • Investigation Rubric **Materials** • supplies for starchy foods Investigation; see Activities p. 139 for materials		Investigation Rubric
Lesson 57 Review				
	57.1 Recall terms and concepts from Chapter 5.	**Materials** • supplies for review game		
Lesson 58 Test				
	58.1 Apply terms and concepts from Chapter 5.	**Assessments** • Test 5	**Teacher Tools Online** • EV: Chapter 5 Test Bank	Test 5 EV: Chapter 5 Test Bank

Chapter 6: Human Skeletal and Muscular Systems

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 59 Bones				
160–67	59.1 Identify several bones in the human body. 59.2 Explain how the bones of the human body support and protect. 59.3 Identify the parts of a bone and the purpose of marrow. 59.4 Explain why it is important for bones to store minerals. **BWS** Design in Nature (explain)	**Teacher Edition** • IA 6.1: The Skeleton **Activities** • The Skeleton (p. 141) **Materials** • large marshmallow, per student • straws • chenille stems	**Teacher Tools Online** • Video: Human Skeletal and Muscular Systems • IA 6.1: The Skeleton	Quick Check (p. 164) Quick Check (p. 167)
Lesson 60 Exploration: A Bone to Pick				
168	60.1 Research the human skeleton using an internet keyword search. 60.2 Observe the structure and location of the main bones of the human body, using diagrams from the internet research. 60.3 Create a model of the human skeleton. 60.4 Draw conclusions about bones of the human skeleton using the model. **BWS** Modeling in Science (explain)	**Activities** • Exploration: A Bone to Pick (pp. 143–44) **Assessments** • Exploration Rubric **Materials** • x-ray image of human bones • supplies for human skeleton model; see Activities p. 143 for materials		Exploration Rubric
Lesson 61 Joints				
169–71	61.1 Differentiate between immovable and movable joints. 61.2 Compare three types of movable joints. 61.3 Identify the location and function of ligaments and cartilage. 61.4 Explain how bones, ligaments, and cartilage work together according to God's design. **BWS** Design in Nature (explain)	**Activities** • Study Guide (pp. 145–47) **Assessments** • Quiz 6A **Materials** • index card, per student • sticky notes	**Teacher Tools Online** • Video: Double-Jointedness	Quick Check (p. 171) Study Guide (Act. pp. 145–47) Quiz 6A

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 62 Exploration: X-Ray Vision				
172	62.1 Create a model to demonstrate the bones in the hand and wrist and the movement of these bones. 62.2 Evaluate the model's representation of the bones and their movement. **BWS** Modeling in Science (evaluate) 62.3 Draw conclusions about the movement of the hand and wrist.	**Activities** • Exploration: X-Ray Vision (pp. 149–51) **Assessments** • Exploration Rubric **Materials** • supplies for hand-and-wrist bone exploration; see Activities p. 149 for materials		Exploration Rubric
Lesson 63 Exploration: Moving Muscles				
173	63.1 Create a model of the bones and muscles of the upper and lower arm. 63.2 Demonstrate how the bones and muscles work together, using the model. 63.3 Draw conclusions about how bones and muscles work together. **BWS** Design in Nature (explain)	**Activities** • Exploration: Moving Muscles (pp. 153–55) **Assessments** • Exploration Rubric **Materials** • supplies for bones-and-muscles exploration; see Activities p. 153 for materials	**Teacher Tools Online** • WL: The Muscular System	Exploration Rubric
Lesson 64 Muscles				
174–77	64.1 Explain how muscles and bones work together according to God's design. **BWS** Design in Nature (explain) 64.2 Differentiate between voluntary and involuntary muscles. 64.3 Identify examples of voluntary and involuntary muscles. 64.4 Evaluate explanations about why humans have bones, muscles, and joints. **BWS** Design in Nature (evaluate)	**Activities** • Answers in Genesis: The Master Designer (pp. 157–58) **Materials** • banner paper • bone-and-muscle model from Lesson 63	**Teacher Tools Online** • Video: Muscle Names	Quick Check (p. 177)
Lesson 65 Diet and Exercise				
178–81	65.1 Explain how healthy bones and muscles are maintained. 65.2 Formulate a plan to maintain healthy bones and muscles. **BWS** Design in Nature (apply) 65.3 Differentiate between fracture, strain, and sprain.	**Activities** • Meal Plan for Healthy and Strong Bones and Muscles (p. 159) • Exercise Plan for Healthy and Strong Bones and Muscles (p. 161) • Study Guide (pp. 163–64) **Assessments** • Quiz 6B	**Teacher Tools Online** • Video: The Astronaut's Muscles • Video: Physical Therapist	Quick Check (p. 181) Study Guide (Act. pp. 163–64) Quiz 6B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 66 Review				
160–81	66.1 Recall terms and concepts from Chapter 6.	**Materials** • supplies for review game		
Lesson 67 Test				
	67.1 Apply terms and concepts from Chapter 6.	**Assessments** • Test 6	**Teacher Tools Online** • EV: Chapter 6 Test Bank	Test 6 EV: Chapter 6 Test Bank

Chapter 7: Energy and Motion

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 68 Potential and Kinetic Energy				
182–89	68.1 Identify what energy is and where it came from. **BWS** History of Nature (explain) 68.2 Distinguish between potential energy and kinetic energy. 68.3 Explain how energy changes from one form to another. 68.4 Identify cause-and-effect relationships of energy.	**Teacher Edition** • IA 7.1: Frayer Model • IA 7.2: Vocabulary 1 • IA 7.3: Vocabulary 2 • IA 7.4: Graphs • IA 7.5: Cause and Effect **Activities** • Cause and Effect (pp. 165–66) • Study Guide (p. 167) **Assessments** • Quiz 7A **Materials** • supplies for potential and kinetic energy demonstration • 3 dominoes • kickball or soccer ball	**Teacher Tools Online** • Video: Energy and Motion • IA 7.1: Frayer Model • IA 7.2: Vocabulary 1 • IA 7.3: Vocabulary 2 • IA 7.4: Graphs • IA 7.5: Cause and Effect • WL: Watermelon • WL: Roller Coaster	Quick Check (p. 189) Study Guide (Act. p. 167) Quiz 7A
Lesson 69 Investigation: Zoom Racer 500				
190	69.1 Construct a spool racer. 69.2 Use scientific terms while testing a spool racer. 69.3 Identify the variables. 69.4 Infer design changes to the spool racer to effect different outcomes.	**Teacher Edition** • IA 1.7: Scientific Variables **Activities** • Investigation: Zoom Racer 500 (pp. 169–71) **Assessments** • Investigation Rubric **Materials** • supplies for Zoom Racer Investigation; see Activities p. 169 for materials • marker	**Teacher Tools Online** IA 1.7: Scientific Variables WL: Spool Racer	Investigation Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 70 Inquiry: Zoom Racer 500				
190	70.1 Construct a spool racer with a change in one material from the Investigation. 70.2 Use scientific terms while designing, constructing, and testing a spool racer. 70.3 Draw conclusions about how a change in design affects the kinetic energy of the spool racer.	**Teacher Edition** • IA 1.7: Scientific Variables **Activities** • Investigation: Zoom Racer 500 (pp. 169–71) • Inquiry: Zoom Racer 500 (pp. 173–75) **Assessments** • Inquiry Rubric **Materials** • Zoom Racers from Lesson 69 • supplies for Zoom Racers; see Activities p. 173 for materials • different sizes of rubber bands, metal washers, and pencils	**Teacher Tools Online** • IA 1.7: Scientific Variables	Inquiry Rubric
Lesson 71 Force, Weight, Speed				
191–93	71.1 Relate motion, force, and energy. 71.2 Explain how weight affects the energy of motion. 71.3 Relate an object's speed to that object's energy. **BWS** Design in Nature (explain) 71.4 Create a rocket design that shows the relationship between speed and energy. 71.5 Determine the rocket design by using the available materials.	**Teacher Edition** • IA 7.3: Vocabulary 2 • IA 7.7: Applying Force • IA 7.8: Vocabulary 3 **Activities** • Force, Weight, Speed (p. 177) **Materials** • toy car • supplies for rocket demonstration	**Teacher Tools Online** • IA 7.3: Vocabulary 2 • IA 7.7: Applying Force • IA 7.8: Vocabulary 3 • WL: Falcon 9 Launch	Quick Check (p. 193)
Lesson 72 Energy Transfer				
194–98	72.1 Describe how energy transfers from one place to another or from one form to another. 72.2 Use science vocabulary terms in various scenarios. 72.3 Experiment to find out how energy can be transferred from one object to another.	**Teacher Edition** • IA 7.8: Vocabulary 3 • IA 7.9: Vocabulary 4 **Activities** • Energy Transfer (pp. 179–80) **Materials** • tennis ball, small bouncy ball, or racquetball • supplies for energy transfer demonstrations • rubber popper toys • goggles	**Teacher Tools Online** • Video: HVAC Technician • IA 7.8: Vocabulary 3 • IA 7.9: Vocabulary 4 • WL: Newton's Cradle	Quick Check (p. 197)

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 73 Energy Transfer and Collisions				
199–203	73.1 Experiment with marbles of different sizes to see how collisions transfer energy from one object to another. 73.2 Explain how energy is transferred from one object to another during a collision. 73.3 Analyze energy and motion before, during, and after a collision. 73.4 Compose a statement that shows how you could use the knowledge of motion and energy to obey God's commands. **BWS** Purpose of Science (apply)	**Teacher Edition** • IA 7.9: Vocabulary 4 **Activities** • Study Guide (pp. 181–83) **Assessments** • Quiz 7B **Materials** • supplies for a marble activity • Newton's cradle	**Teacher Tools Online** • IA 7.9: Vocabulary 4 • WL: Newton's Cradle	Quick Check (p. 203) Study Guide (Act. pp. 181–83) Quiz 7B
Lesson 74 Exploration: Copper Caper				
204	74.1 Explore to find out how energy can be transferred from one object to another using pennies. 74.2 Record outcomes about the changes in energy that occur when objects collide. 74.3 Compose an explanation relating an object's speed to that object's energy.	**Activities** • Exploration: Copper Caper (pp. 185–87) **Assessments** • Exploration Rubric **Materials** • supplies for the copper caper exploration; see Activities p. 185 for materials		Exploration Rubric
Lessons 75–76 STEM Whirlwind of Wheels				
205	75–76.1 Design a sail car that will use wind energy using the engineering design process. 75–76.2 Create a sail car with available materials. 75–76.3 Test and compare models to improve the original design. 75–76.4 Communicate how the design solves the problem. **BWS** Purpose of Science (explain) 75–76.5 Discuss what the best performing sail cars have in common.	**Activities** • STEM: Whirlwind of Wheels (pp. 189–91) **Assessments** • STEM Rubric **Materials** • supplies for the STEM activity; see Teacher Edition p. 205 for materials	**Teacher Tools Online** • WL: Sail Cars	STEM Rubric
Lesson 77 Review				
	77.1 Recall terms and concepts from Chapter 7.	**Teacher Edition** • IA 7.10: Roller Coaster Cars	**Teacher Tools Online** • IA 7.10: Roller Coaster Cars	
Lesson 78 Test				
	78.1 Apply terms and concepts from Chapter 7.	**Assessments** • Test 7	**Teacher Tools Online** • EV: Chapter 7 Test Bank	Test 7 EV: Chapter 7 Test Bank

Chapter 8: Energy and Work

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 79 Forces				
206–12	79.1 Identify what the forces of gravity and friction are. 79.2 Explain how gravity and friction can be beneficial. **BWS** Design in Nature (explain) 79.3 Relate force, weight, and motion. 79.4 Relate work and energy. 79.5 Relate the amount of work done to force and distance.	**Teacher Edition** • IA 8.1: Anticipation Guide: Energy and Work **Materials** • rope	**Teacher Tools Online** • Video: Energy and Work • IA 8.1: Anticipation Guide: Energy and Work	Quick Check (p. 209) Quick Check (p. 212)
Lesson 80 Investigation: Friction Fun				
213	80.1 Predict which surface has the most friction. 80.2 Measure the distance that a ball rolls on various surfaces. 80.3 Record and graph data. 80.4 Infer why knowing about the friction of various surfaces is beneficial. **BWS** Importance of Humans (explain)	**Activities** • Investigation: Friction Fun (pp. 193–95) **Assessments** • Investigation Rubric **Materials** • picture of a bowling alley lane • supplies for friction investigation; see Activities p. 193 for materials		Investigation Rubric
Lesson 81 Simple Machines: Lever				
214–17	81.1 Explain why simple machines are beneficial. **BWS** Importance of Humans (explain) 81.2 Differentiate between effort and load. 81.3 Explain the purpose and function of a lever and a fulcrum. 81.4 Identify examples of levers.	**Activities** • Study Guide (pp. 197–99) **Assessments** • Quiz 8A **Materials** • hand-crank pencil sharpener; hand-crank mixer or eggbeater • ruler	**Teacher Tools Online** • Video: Levers and Catapults • Video: Built-In Levers	Quick Check (p. 217) Study Guide (Act. pp. 197–99) Quiz 8A

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 82 Investigation: How Much Effort?				
218	82.1 Predict how the position of the fulcrum affects the amount of effort needed to balance the load. 82.2 Experiment to determine how the position of the fulcrum affects the amount of effort. 82.3 Identify the controlled and independent variables in the experiment. 82.4 Draw conclusions about the position of the fulcrum and the amount of effort needed to balance the load.	**Teacher Edition** • IA 1.3: Science Inquiry Skills • IA 1.7: Scientific Variables • IA 8.2: Seesaw Effort **Activities** • Investigation: How Much Effort? (pp. 201–3) **Assessments** • Investigation Rubric **Materials** • supplies for effort investigation; see Activities p. 201 for materials	**Teacher Tools Online** • IA 1.3: Science Inquiry Skills • IA 1.7: Scientific Variables • IA 8.2: Seesaw Effort	Investigation Rubric
Lesson 83 Inquiry: How Much Effort?				
218	83.1 Hypothesize how the length of the lever affects how the effort and load balance. 83.2 Experiment to determine how the length of the lever affects how the effort and load balance. 83.3 Identify the controlled and independent variables in the experiment. 83.4 Draw conclusions about how the length of the lever affects how the effort and load balance.	**Activities** • Inquiry: How Much Effort? (pp. 205–6) **Assessments** • Inquiry Rubric **Materials** • supplies for effort inquiry; see Activities p. 205 for materials		Inquiry Rubric
Lesson 84 Simple Machines: Wheel and Axle; Pulley				
219–23	84.1 Compare the distances a wheel and its axle move in one rotation. 84.2 Relate effort and distance to the wheel and axle. 84.3 Identify the directions of the effort and the load when using a pulley. 84.4 Identify examples of objects that use a wheel and axle or a pulley. 84.5 Explain how the wheel and axle and the pulley are beneficial. **BWS** Purpose of Science (explain)	**Materials** • toy car • supplies for rotation demonstration	**Teacher Tools Online** • WL: Wheel and Axle	Quick Check (p. 220) Quick Check (p. 223)
Lesson 85 Simple Machines: Inclined Plane				
224–27	85.1 Identify what an inclined plane is. 85.2 Explain how an inclined plane is beneficial. 85.3 Propose a plan for using an inclined plane to help others. **BWS** Importance of Humans (apply) 85.4 Relate a screw and a wedge to an inclined plane.	**Teacher Edition** • IA 8.1: Anticipation Guide: Energy and Work **Activities** • Answers in Genesis: Tools for the Job (pp. 207–8) • Study Guide (pp. 209–11) **Assessments** • Quiz 8B	**Teacher Tools Online** • Video: Animals as Simple Machines • Video: Carpenter • IA 8.1: Anticipation Guide: Energy and Work • WL: Inclined Plane • WL: Wedges and Screws	Quick Check (p. 226) Study Guide (Act. pp. 209–11) Quiz 8B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 86 Investigation: Vroom, Vroom!				
228	86.1 Predict the amount of force needed as the slope of an inclined plane increases. 86.2 Experiment to determine if the amount of force will increase or decrease as the slope of an inclined plane increases. 86.3 Identify the independent variable. 86.4 Draw conclusions about the amount of force needed as the slope of an inclined plane increases.	**Activities** • Investigation: Vroom, Vroom! (pp. 213–14) **Assessments** • Investigation Rubric **Materials** • supplies for force investigation; see Activities p. 213 for materials		Investigation Rubric
Lesson 87 Inquiry: Vroom, Vroom!				
228	87.1 Formulate a hypothesis to predict the amount of force needed to move toy cars of different weights up a steep hill. 87.2 Experiment to determine the amount of force needed to move cars of different weights up a steep hill. 87.3 Identify and control variables. 87.4 Draw conclusions about how the weight of an object affects the force needed to move that object.	**Activities** • Inquiry: Vroom, Vroom! (pp. 215–16) **Assessments** • Inquiry Rubric **Materials** • supplies for force inquiry; see Activities p. 215 for materials		Inquiry Rubric
Lessons 88–89 STEM: On the Move with Simple Machines				
229	88–89.1 Design three simple machines that will help to move a heavy load, using the engineering design process. 88–89.2 Create one simple machine that will move an object. 88–89.3 Test and compare simple machines. 88–89.4 Communicate how each design solves the problem. **BWS** Purpose of Science (apply)	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM: On the Move with Simple Machines (pp. 217–20) **Assessments** • STEM Rubric **Materials** • supplies for designing a simple machine; see Teacher Edition p. 229 for suggested materials	**Teacher Tools Online** • IA 2.2: STEM: The Engineering Design Process	STEM Rubric
Lesson 90 Review				
	90.1 Recall terms and concepts from Chapter 8.	**Materials** • supplies for review game		
Lesson 91 Test				
	91.1 Apply terms and concepts from Chapter 8.	**Assessments** • Test 8	**Teacher Tools Online** • EV: Chapter 8 Test Bank	Test 8 EV: Chapter 8 Test Bank

Chapter 9: Waves

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 92–93 Waves				
230–38	92–93.1 Explain how a wave travels. 92–93.2 Relate waves to the energy they transfer. **BWS** Design in Nature (explain) 92–93.3 Identify three wave patterns. 92–93.4 Identify properties of transverse and longitudinal waves. 92–93.5 Calculate the frequency of transverse waves. 92–93.6 Measure the wavelength of different wave patterns.	**Teacher Edition** • IA 9.1: Transverse Wave **Activities** • Waves (pp. 221–22) • Study Guide (pp. 223–25) **Materials** • supplies for wave demonstrations • supplies for rest position demonstration • centimeter rulers	**Teacher Tools Online** • Video: Waves • IA 9.1: Transverse Wave • WL: Stadium Wave Simulation	Quick Check (p. 234) Quick Check (p. 238) Study Guide (Act. pp. 223–25)
Lesson 94 Exploration: Let's Wave!				
239	94.1 Model and label four components of a transverse wave. 94.2 Model transverse and longitudinal wave patterns with a coiled spring toy. 94.3 Measure the speed of transverse and longitudinal waves using a coiled spring toy. 94.4 Compare and contrast the movement of a transverse wave with the movement of a longitudinal wave using a coiled spring toy.	**Activities** • Exploration: Let's Wave! (pp. 227–31) **Assessments** • Exploration Rubric **Materials** • supplies for wave models; see Activities p. 227 for materials	**Teacher Tools Online** • WL: Waves	Exploration Rubric
Lesson 95 Review				
	95.1 Recall terms and concepts from Chapter 9.	**Materials** • game tokens		
Lesson 96 Test				
	96.1 Apply terms and concepts from Chapter 9.	**Assessments** • Test 9	**Teacher Tools Online** • EV: Chapter 9 Test Bank	Test 9 EV: Chapter 9 Test Bank

Chapter 10: Light

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 97–98 Light Characteristics				
240–48	97–98.1 Evaluate different worldviews regarding the origin of light. **BWS** History of Nature (evaluate) 97–98.2 Identify what light is. 97–98.3 Differentiate between luminous and nonluminous objects. 97–98.4 Differentiate between transparent, translucent, and opaque objects.	**Teacher Edition** • IA 10.1: All about Light **Activities** • All about Light (p. 233) • Study Guide (pp. 235–36) **Assessments** • Quiz 10A **Materials** • flashlight • supplies for the flashlight activity	**Teacher Tools Online** • Video: Light • Video: Moonlight • IA 10.1: All about Light	Quick Check (p. 244) Quick Check (p. 248) Study Guide (Act. pp. 235–36) Quiz 10A
Lesson 99 Investigation: Light Hunters				
249	99.1 Complete a hypothesis for various objects to determine how each object will interact with light. 99.2 Record observations. 99.3 Classify objects as either opaque, translucent, or transparent. 99.4 Draw conclusions from data collected. 99.5 Devise another way to test how light interacts with objects.	**Activities** • Investigation: Light Hunters (pp. 237–40) **Assessments** • Investigation Rubric **Materials** • supplies for transparent, translucent, and opaque investigation; see Activities p. 237 for materials		Investigation Rubric
Lesson 100 Colors of Light				
250–53	100.1 Relate electromagnetic energy, wavelengths, and visible light to God's design of the human eye. **BWS** History of Nature (explain) 100.2 Relate visible white light to a prism and a rainbow. 100.3 Explain the origin of the rainbow and its purpose. **BWS** History of Nature (explain) 100.4 Identify the colors of the visible spectrum.	**Teacher Edition** • IA 9.1: Transverse Wave **Activities** • Colors of Light (pp. 241–42) **Materials** • prism • flashlight	**Teacher Tools Online** • Video: Rainbows and Prisms • IA 9.1: Transverse Wave	Quick Check (p. 253)

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 101 Exploration: Water Prism				
254	101.1 Create a water prism. 101.2 Observe the effects of white light passing through the water. 101.3 Draw conclusions about the light that passed through the water prism.	**Activities** • Exploration: Water Prism (pp. 243–44) **Assessments** • Exploration Rubric **Materials** • color wheel • supplies for water prism exploration; see Activities p. 243 for materials		Exploration Rubric
Lesson 102 Reflection and Refraction				
255–58	102.1 Compare reflection and refraction. 102.2 Explain why an object appears to be a certain color. 102.3 Explain why an object in water may appear bent or broken. 102.4 Identify tools that use refraction to help people see things more clearly.	**Activities** • Study Guide (pp. 245–46) **Assessments** • Quiz 10B **Materials** • supplies for "Cool" Light Patterns demonstration	**Teacher Tools Online** • WL: Understanding Absorption of Light—Why Do We See Different Colors? • WL: Rainbows and Refraction	Quick Check (p. 258) Study Guide (Act. pp. 245–46) Quiz 10B
Lesson 103 Light and the Human Eye				
259–64	103.1 Identify the structures and functions of the human eye. 103.2 Sequence how light travels through the eye to the optic nerve. 103.3 Differentiate between normal vision, farsighted vision, and nearsighted vision. **BWS** History of Nature (explain) 103.4 Compare how light is refracted by concave and convex lenses. 103.5 Explain why understanding refraction and lenses is beneficial. **BWS** Importance of Humans (explain)	**Teacher Edition** • IA 10.2: Parts of the Eye **Activities** • Study Guide (pp. 247–48) **Assessments** • Quiz 10C **Materials** • 12 large sheets of white paper	**Teacher Tools Online** • Video: Ophthalmologist • IA 10.2: Parts of the Eye • WL: Nearsighted or Farsighted • WL: Glasses and Vision	Quick Check (p. 261) Quick Check (p. 263) Study Guide (Act. pp. 247–48) Quiz 10C
Lessons 104–6 Exploration: I Spy My Eye				
265	104–6.1 Research the structures and functions of the human eye. 104–6.2 Write a complete paragraph, using the research conducted, and include at least one interesting fact about a structure of the human eye and its function. 104–6.3 Create a three-dimensional model of the eye. 104–6.4 Present research about a structure of the human eye and its function, using the written paragraph and the model. 104–6.5 Compare the human eye model to the human eye. **BWS** Modeling in Science (explain)	**Activities** • Exploration: I Spy My Eye (pp. 249–50) **Assessments** • Exploration Rubric **Materials** • supplies for the human eye model exploration; see Activities p. 249 and Teacher Edition p. 265 for materials	**Teacher Tools Online** • WL: The Seeing Eye	Exploration Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 107 Review				
240–65	107.1 Recall terms and concepts from Chapter 10.	**Materials** • supplies for review game		
Lesson 108 Test				
	108.1 Apply terms and concepts from Chapter 10.	**Assessments** • Test 10	**Teacher Tools Online** • EV: Chapter 10 Test Bank	Test 10 EV: Chapter 10 Test Bank

Chapter 11: Sound

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 109 Sound Waves				
266–72	109.1 Describe the properties of sound waves.	**Materials** • coiled spring toy • pencil	**Teacher Tools Online** • Video: Sound • WL: Cacophony of Sounds	Quick Check (p. 272)
Lesson 110 Characteristics of Sound				
273–76	110.1 Identify the characteristics of sound. 110.2 Relate the pitch of a sound to its frequency. 110.3 Relate the volume of a sound to its amplitude. 110.4 Explain how timbre helps to distinguish sounds.	**Activities** • Study Guide (pp. 251–52) **Assessments** • Quiz 11A **Materials** • supplies for timbre demonstration	**Teacher Tools Online** • WL: Pitch: Super Sounding Drums • WL: Timbre	Quick Check (p. 276) Study Guide (Act. pp. 251–52) Quiz 11A
Lesson 111 Sound and Matter				
277–81	111.1 Relate the speed of sound to the type of medium. 111.2 Relate the speed of sound to the transfer of energy. 111.3 Describe how temperature affects the speed of sound. 111.4 Describe how reflection and absorption affect sound.	**Activities** • Study Guide (pp. 253–54) **Assessments** • Quiz 11B **Materials** • supplies for balloon demonstration • supplies for particle demonstration	**Teacher Tools Online** • Video: Pediatric Echocardiography Sonographer • WL: Echolocation	Quick Check (p. 280) Study Guide (Act. pp. 253–54) Quiz 11B
Lessons 112–13 STEM: Case of the Boxed-Up Sound				
282	112–13.1 Infer what shape, design, and materials work best to hear the sound. 112–13.2 Design a model of a tool that will listen to a secret, recorded clue using the engineering design process. 112–13.3 Create a tool that will hear the recorded clue. 112–13.4 Test and compare models to improve the original design. 112–13.5 Communicate how the design solves the problem.	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM: Case of the Boxed-Up Sound (pp. 255–57) **Assessments** • STEM Rubric **Materials** • see Teacher Edition p. 282 for materials	**Teacher Tools Online** • IA 2.2: STEM: The Engineering Design Process	STEM Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 114 The Ear and Hearing				
283–88	114.1 Label the main parts of the ear. 114.2 Relate the three main parts of the ear to the functions of each part of the ear. 114.3 Sequence the path of sound waves through the ear to the brain.	**Teacher Edition** • IA 11.1: Diagram of the Human Ear **Materials** • centimeter ruler	**Teacher Tools Online** • IA 11.1: Diagram of the Human Ear • WL: Hearing: How Your Ears Work • WL: Hearing Loss Simulation • WL: How Cochlear Implants Work	Quick Check (p. 288)
Lesson 115 Exploration: All Ears				
289	115.1 Create a three-dimensional model of the ear. 115.2 Infer how scientists named different parts of the ear. 115.3 Compare and contrast the model of the human ear with the human ear. 115.4 Communicate how the model of the ear helps to understand how the ear works.	**Teacher Edition** • IA 11.1: Diagram of the Human Ear **Activities** • Exploration: All Ears (pp. 259–60) **Assessments** • Exploration Rubric **Materials** • supplies for creating a three-dimensional model of the ear; see Activities p. 259 for materials	**Teacher Tools Online** • IA 11.1: Diagram of the Human Ear • WL: Parts of the Human Ear	Exploration Rubric
Lesson 116 Sound Communication				
290–95	116.1 Describe the history of information transfer. **BWS** History of Nature (explain) 116.2 Explain binary code. 116.3 Sequence the transfer of information in digital communication.	**Activities** • Study Guide (pp. 261–62) **Assessments** • Quiz 11C **Materials** • paper bag	**Teacher Tools Online** • WL: Computer Science Basics: Binary	Quick Check (p. 292) Quick Check (p. 295) Study Guide (Act. pp. 261–62) Quiz 11C
Lessons 117–18 Exploration: Code in Binary				
296	117–18.1 Record three initials in binary code. 117–18.2 Encode letters into binary code.	**Teacher Edition** • IA 11.2: Code Worksheet **Activities** • Exploration: Code in Binary (pp. 263–65) **Assessments** • Exploration Rubric **Materials** • supplies for recording three initials in binary code; see Activities p. 263 for materials • 3 containers	**Teacher Tools Online** IA 11.2: Code Worksheet WL: Binary Code	Exploration Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 119–20 STEM: HELP!				
297	119–20.1 Design a model of a device that will communicate with light or sound over a distance using the engineering design process. 119–20.2 Create a device that will communicate over a distance. 119–20.3 Test and compare devices to improve the original design. 119–20.4 Communicate how the design solves the problem. **BWS** Purpose of Science (explain)	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM: HELP! (pp. 267–69) **Assessments** • STEM Rubric **Materials** • see Teacher Edition p. 297 for materials	**Teacher Tools Online** • IA 2.2: STEM: The Engineering Design Process • WL: Communication over Distance	STEM Rubric
Lesson 121 Review				
	121.1 Recall terms and concepts from Chapter 11.			
Lesson 122 Test				
	122.1 Apply terms and concepts from Chapter 11.	**Assessments** • Test 11	**Teacher Tools Online** • EV: Chapter 11 Test Bank	Test 11 EV: Chapter 11 Test Bank

Chapter 12: The Earth's Water

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 123–24 Fresh Water and Salt Water				
298–311	123–24.1 Identify the earth's land and water proportions. 123–24.2 Describe the continuous movement of water above and on the earth's surface using the water cycle. 123–24.3 Distinguish the properties and benefits of fresh water and salt water.	**Teacher Edition** • IA 12.1: My Father's World • IA 12.2: Frayer Model • IA 12.3: Vocabulary 1 • IA 12.4: Vocabulary 2 • IA 12.5: Vocabulary 3 • IA 12.6: Water and Land • IA 12.7: Ocean Saltiness **Activities** • Raindrops Keep Falling (p. 271) **Materials** • supplies for float or sink demonstration • supplies for freezing salt water demonstration	**Teacher Tools Online** • Video: The Earth's Waters • Video: Water Treatment Plant Operator • IA 12.1: My Father's World • IA 12.2: Frayer Model • IA 12.3: Vocabulary 1 • IA 12.4: Vocabulary 2 • IA 12.5: Vocabulary 3 • IA 12.6: Water and Land • IA 12.7: Ocean Saltiness • WL: Earth	Quick Check (p. 307) Quick Check (p. 311)
Lesson 125 Water Conservation				
312–16	125.1 Identify reasons and ways to conserve the earth's water. **BWS** Purpose of Science (explain)	**Teacher Edition** • IA 3.6: Be a Detective 1 • IA 3.7: Be a Detective 2 • IA 12.8: Vocabulary 4 **Activities** • Study Guide (pp. 273–76) **Assessments** • Quiz 12A **Materials** • hand lens • sticky notes • 3.8 L (1 gal) jug of water • supplies for dripping water demonstration	**Teacher Tools Online** • IA 3.6: Be a Detective 1 • IA 3.7: Be a Detective 2 • IA 12.8: Vocabulary 4 • WL: Plastic Adrift	Quick Check (p. 316) Study Guide (Act. pp. 273–76) Quiz 12A

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 126 Investigation: The Great Vapor Race				
317	126.1 Hypothesize how surface area affects the speed of water evaporation. 126.2 Measure the weights of two containers of water before and after evaporation. 126.3 Record and graph data. 126.4 Identify the controlled and independent variables. 126.5 Infer why knowing the effect of surface area on the speed of water evaporation is beneficial. **BWS** Purpose of Science (explain)	**Activities** • Investigation: The Great Vapor Race (pp. 277–79) **Assessments** • Investigation Rubric **Materials** • supplies for The Great Vapor Race Investigation; see Activities p. 277 for materials • sheet of construction paper • blue food coloring		Investigation Rubric
Lesson 127 Inquiry: The Great Vapor Race				
317	127.1 Hypothesize how air temperature or wind affects the speed of water evaporation. 127.2 Measure the weights of two containers of water before and after evaporation. 127.3 Record and graph data. 127.4 Identify the controlled and independent variables. 127.5 Defend why knowing the effect of air temperature or wind on the speed of water evaporation is beneficial. **BWS** Purpose of Science (evaluate)	**Activities** • Investigation: The Great Vapor Race (pp. 277–79) • Inquiry: The Great Vapor Race (pp. 281–83) **Assessments** • Inquiry Rubric **Materials** • supplies for The Great Vapor Race Inquiry; see Activities p. 281 for materials • blue food coloring		Inquiry Rubric
Lessons 128–29 Ocean Waves and Energy Transfer				
318–23	128–29.1 Identify and locate the oceans. 128–29.2 Explain how energy is transferred from wind to the ocean surface. 128–29.3 Identify cause-and-effect relationships of energy and waves.	**Teacher Edition** • IA 12.6: Water and Land • IA 12.8: Vocabulary 4 • IA 12.9: Vocabulary 5 • IA 12.10: Vocabulary 6 • IA 12.11: Frayer Model Key • IA 12.12: Cause and Effect **Activities** • Study Guide (pp. 285–87) **Assessments** • Quiz 12B **Materials** • word cards from Chapter 7 • globe or world map • supplies for wave model • dry-erase marker	**Teacher Tools Online** • IA 12.6: Water and Land • IA 12.8: Vocabulary 4 • IA 12.9: Vocabulary 5 • IA 12.10: Vocabulary 6 • IA 12.11: Frayer Model Key • IA 12.12: Cause and Effect • WL: Surfing the Waves • WL: Wave Origin	Quick Check (p. 321) Quick Check (p. 323) Quiz 12B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 130 Investigation: Making Waves				
324	130.1 Hypothesize how wind energy creates surface waves and how the energy transfer takes place in the ocean. 130.2 Record data on the movement of water and marbles by wind energy. 130.3 Identify the controlled and independent variables in the creation of waves. 130.4 Infer why knowing how surface waves form and knowing about the energy transfer of wind are beneficial. **BWS** Purpose of Science (explain)	**Activities** • Investigation: Making Waves (pp. 289–92) **Assessments** • Investigation Rubric **Materials** • supplies for the Making Waves Investigation; see Activities p. 289 for materials • globe		Investigation Rubric
Lessons 131–32 Ocean Currents				
325–30	131–32.1 Identify what causes surface currents. **BWS** History of Nature (explain) 131–32.2 Identify the direction of flow of warm and cold currents. 131–32.3 Classify the Gulf Stream, California Current, and Humboldt Current as warm or cold currents. 131–32.4 Identify two things that influence deep ocean currents.	**Teacher Edition** • IA 12.10: Vocabulary 6 • IA 12.13: Ocean Currents • IA 12.14: Friendly Floatees **Activities** • Ocean Currents (p. 293) • Study Guide (pp. 295–96) **Assessments** • Quiz 12C **Materials** • supplies for temperature and salinity demonstrations • sticky notes • globe	**Teacher Tools Online** • IA 12.10: Vocabulary 6 • IA 12.13: Ocean Currents • IA 12.14: Friendly Floatees	Quick Check (p. 327) Quick Check (p. 330) Study Guide (Act. pp. 295–96) Quiz 12C
Lesson 133 Exploration: Go with the Flow				
331	133.1 Create a model of the ocean, surface objects, and wind. 133.2 Record and interpret data. 133.3 Relate the motion of surface currents to the motion of objects floating in the ocean. 133.4 Relate the transfer of energy from wind to the movement of water. 133.5 Infer how surface currents affect the ocean water.	**Activities** • Exploration: Go with the Flow (pp. 297–300) **Materials** • supplies for Go with the Flow Exploration; see Activities p. 297 for materials	**Teacher Tools Online** • WL: Ocean Surface Currents	
Lesson 134 Review				
	134.1 Recall terms and concepts from Chapter 12.	**Materials** • game tokens		

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 135 Test				
	135.1 Apply terms and concepts from Chapter 12.	**Assessments** • Test 12	**Teacher Tools Online** • EV: Chapter 12 Test Bank	Test 12 EV: Chapter 12 Test Bank

Chapter 13: Below the Ocean's Surface

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 136 The Ocean Floor				
332–37	136.1 Identify features of the ocean floor. 136.2 Compare and contrast the features of the ocean floor with features of the earth's land.	**Teacher Edition** • IA 13.1: Ocean Floor **Activities** • Ocean Features (p. 301) **Materials** • supplies for whale demonstration	**Teacher Tools Online** • Video: Below the Ocean's Surface • IA 13.1: Ocean Floor • WL: Leaf Sheep Sea Slug • WL: Island Mountains • WL: Challenger Deep • WL: Mauna Kea	Quick Check (p. 337)
Lessons 137–38 Exploration: Mapping the Depths				
338	137–38.1 Create a model of the ocean floor with at least three features. 137–38.2 Measure the depth of an ocean floor model. 137–38.3 Graph the features of an ocean floor model. 137–38.4 Communicate how the graph compared to the ocean floor model. **BWS** Modeling in Science (explain)	**Activities** • Exploration: Mapping the Depths (pp. 303–6) **Assessments** • Exploration Rubric **Materials** • supplies for ocean floor model; see Activities p. 303 for materials	**Teacher Tools Online** • WL: The Ocean Floor	Exploration Rubric
Lessons 139–40 The Sunlight Zone				
339–49	139–40.1 Describe the characteristics of the sunlight zone of the ocean. 139–40.2 Classify ocean organisms in a food web as producers or consumers. 139–40.3 Sequence the transfer of energy in an ocean food web. 139–40.4 Construct a food chain to show the transfer of energy from the sun to the organisms in the ocean. 139–40.5 Give examples of God's design for organisms that help each other to survive and grow. **BWS** Design in Nature (explain)	**Teacher Edition** • IA 13.2: Ocean Zones **Activities** • Ocean Zones (p. 307) • Food Chains (pp. 309–10) • Study Guide (pp. 311–14) **Assessments** • Quiz 13A	**Teacher Tools Online** • Video: Underwater Photographer • IA 13.2: Ocean Zones • WL: Oceans: Sunlight Zone • WL: Parrotfish • WL: Carrier Crab • WL: Blue Shark • WL: Clownfish	Quick Check (p. 345) Quick Check (p. 348) Study Guide (Act. pp. 311–14) Quiz 13A
Lesson 141 The Twilight Zone				
350–53	141.1 Describe the characteristics of the twilight zone of the ocean. 141.2 Identify ways that bioluminescence is a benefit to some organisms. 141.3 Compare and contrast views of the origin of bioluminescence. **BWS** History of Nature (evaluate)	**Teacher Edition** • IA 13.2: Ocean Zones • IA 13.3: Fish **Activities** • Ocean Zones (p. 307) **Materials** • small glow sticks	**Teacher Tools Online** • Video: Bioluminescence • IA 13.2: Ocean Zones • IA 13.3: Fish • WL: Oceans: Twilight Zone	Quick Check (p. 353)

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 142 The Dark Zone				
354–59	142.1 Describe the characteristics of the dark zone of the ocean. 142.2 Explain how God designed some organisms to survive and grow in harsh environments. **BWS** Design in Nature (explain)	**Teacher Edition** • IA 13.2: Ocean Zones **Activities** • Ocean Zones (p. 307) • Study Guide (pp. 315–16) **Assessments** • Quiz 13B **Materials** • sticky notes • supplies for water pressure demonstration	**Teacher Tools Online** • IA 13.2: Ocean Zones • WL: Oceans: Dark Zone • WL: *Deepsea Challenger* • WL: Marine Snow	Quick Check (p. 359) Study Guide (Act. pp. 315–16) Quiz 13B
Lesson 143 Exploration: Ocean Zones				
360	143.1 Create a model of the zones of the ocean. 143.2 Communicate facts about the ocean zones with others.	**Activities** • Exploration: Ocean Zones (pp. 317–18) • Answers in Genesis: A Whale of a Tale (pp. 319–20) **Assessments** • Exploration Rubric **Materials** • supplies for ocean zone model; see Activities p. 317 for materials	**Teacher Tools Online** • WL: Whale Evolution	Exploration Rubric
Lessons 144–46 Exploration: Ocean Life				
361	144–46.1 Research an organism that lives in the ocean. 144–46.2 Record information about that organism. 144–46.3 Create a presentation about that organism. 144–46.4 Communicate information about that organism.	**Activities** • Exploration: Ocean Life (pp. 321–22) **Assessments** • Exploration Rubric **Materials** • supplies for ocean life research; see Activities p. 321 for materials	**Teacher Tools Online** • Video: God's Amazing Creatures	Exploration Rubric
Lesson 147 Review				
	147.1 Recall terms and concepts from Chapter 13.	**Teacher Edition** • IA 13.4: Submersibles	**Teacher Tools Online** • IA 13.4: Submersibles	
Lesson 148 Test				
	148.1 Apply terms and concepts from Chapter 13.	**Assessments** • Test 13	**Teacher Tools Online** • EV: Chapter 13 Test Bank	Test 13 EV: Chapter 13 Test Bank

Chapter 14: The Earth's Surface

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 149 Rocks and Minerals				
362–69	149.1 Recall the three main types of rocks and how they form. **BWS** History of Nature (recall) 149.2 Identify organic materials. 149.3 Explain why organic material can be found in some sedimentary rock. **BWS** History of Nature (explain) 149.4 Relate minerals to rocks. 149.5 Explain how the properties of minerals are used to differentiate one mineral from another.	**Activities** • Study Guide (pp. 323–24) **Assessments** • Quiz 14A **Materials** • rock	**Teacher Tools Online** • Video: The Earth's Surface • WL: Mohs Hardness Scale	Quick Check (p. 369) Study Guide (Act. pp. 323–24) Quiz 14A
Lesson 150 Weathering				
370–74	150.1 Explain how weathering affects the earth's surface. 150.2 Identify cause-and-effect relationships of physical and chemical weathering. 150.3 Differentiate between physical weathering and chemical weathering.	**Teacher Edition** • IA: 14.1: Cause and Effect: Physical Weathering • IA: 14.2: Cause and Effect: Chemical Weathering **Activities** • Cause and Effect: Physical Weathering (p. 325) • Cause and Effect: Chemical Weathering (p. 326) **Materials** • supplies for expanding water demonstration	**Teacher Tools Online** • IA: 14.1: Cause and Effect: Physical Weathering • IA: 14.2: Cause and Effect: Chemical Weathering	Quick Check (p. 374)
Lesson 151 Soil				
375–78	151.1 Identify the components of soil. 151.2 Explain what determines soil texture. 151.3 Differentiate between the three main layers of soil.	**Activities** • Study Guide (pp. 327–30) **Assessments** • Quiz 14B **Materials** • supplies for soil samples activity		Quick Check (p. 378) Study Guide (Act. pp. 327–30) Quiz 14B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 152 Exploration: Soil Detective				
379	152.1 Examine properties of three soil samples of an equal volume. 152.2 Record and interpret data collected from each soil sample. 152.3 Classify soil samples. 152.4 Compare properties of soil samples.	**Activities** • Exploration: Soil Detective (pp. 331–35) **Assessments** • Exploration Rubric **Materials** • supplies for soil comparison exploration; see Activities p. 331 for materials		Exploration Rubric
Lesson 153 Investigation: Mystery of the Soil Samples				
380	153.1 Complete hypotheses to predict which soil sample will drain the most water and which soil sample will retain the most water. 153.2 Measure the volume of water drained by each soil sample. 153.3 Record and interpret data based on observations. 153.4 Infer the ability of different soil samples to drain and retain water.	**Activities** • Investigation: Mystery of the Soil Samples (pp. 337–38) **Assessments** • Investigation Rubric **Materials** • supplies for soil sample investigation; see Activities p. 337 for materials		Investigation Rubric
Lesson 154 Erosion and Deposition				
381–85	154.1 Explain how water and wind erosion change the earth's surface. 154.2 Explain how the Genesis Flood helped to shape the earth's surface. **BWS** History of Nature (explain) 154.3 Relate water and wind deposition to features on the earth's surface.	**Teacher Edition** • IA: 14.3: Bending Rock Demonstration **Activities** • Answers in Genesis: Bent Rock (pp. 339–40) **Materials** • supplies for the bent rock demonstration	**Teacher Tools Online** • IA: 14.3: Bending Rock Demonstration • Video: Bent Rock • WL: Sea Stack Erosion • WL: Rock Layers • WL: Kosi River Course Shift	Quick Check (p. 383) Quick Check (p. 385)
Lesson 155 Investigation: Observing Erosion and Deposition				
386	155.1 Write a hypothesis to predict which type of soil will erode most easily. 155.2 Identify and control the variables. 155.3 Observe the erosion and deposition of three different types of soil. 155.4 Draw conclusions about erosion and deposition of soil types.	**Activities** • Investigation: Observing Erosion and Deposition (pp. 341–43) **Assessments** • Investigation Rubric **Materials** • drawing paper • supplies for erosion and deposition investigation; see Activities p. 341 for materials		Investigation Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 156 Erosion and Deposition				
387–90	156.1 Explain how glaciers create features on the earth's surface. 156.2 Evaluate different views of the origin of glaciers. **BWS** History of Nature (evaluate) 156.3 Identify various landforms caused by glaciers. 156.4 Compare a landslide and an avalanche. 156.5 Evaluate the ways people's activities relate to erosion. **BWS** Purpose of Science (evaluate)	**Activities** • Study Guide (pp. 345–47) **Assessments** • Quiz 14C **Materials** • sticky notes • supplies for landslide demonstration	**Teacher Tools Online** • Video: Avalanches • WL: Landslides	Quick Check (p. 390) Study Guide (Act. pp. 345–47) Quiz 14C
Lessons 157–58 Past and Present Changes to the Earth's Surface				
391–98	157–58.1 Differentiate between a naturalistic view and a biblical view of rock layer and fossil formation. **BWS** History of Nature (evaluate) 157–58.2 Evaluate, using a biblical worldview, the geologic time scale as a tool to determine the age of fossils. **BWS** History of Nature (evaluate) 157–58.3 Identify ways the earth's surface is presently changing. 157–58.4 Relate the eruption of Mount St. Helens to the changes that occurred to the earth's surface during the Genesis Flood. **BWS** History of Nature (formulate)	**Teacher Edition** • IA: 14.4: Geologic Time Scale **Materials** • fossils or photos of fossils	**Teacher Tools Online** • IA: 14.4: Geologic Time Scale • WL: The Fossil Record • WL: Order of Fossils • WL: Mount St. Helens	Quick Check (p. 392) Quick Check (p. 395) Quick Check (p. 398)
Lesson 159 Landforms				
399–404	159.1 Identify various landforms. 159.2 Explain how movement of the earth's surface shapes landforms. 159.3 Identify types of maps used to identify and model landforms.	**Activities** • Study Guide (pp. 349–51) **Assessments** • Quiz 14D **Materials** • supplies for lava landform demonstration	**Teacher Tools Online** • Video: Cartographer	Quick Check (p. 403) Study Guide (Act. pp. 349–51) Quiz 14D

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 160–61 Exploration: Continent X and Its Landforms				
405	160–61.1 Create a model of various landforms on an imaginary continent. 160–61.2 Describe characteristics of each modeled landform.	**Activities** • Exploration: Continent X and Its Landforms (pp. 353–54) **Assessments** • Exploration Rubric **Materials** • supplies for the landform review • supplies for continent and landform model; see Activities p. 353 for materials		Exploration Rubric
Lesson 162 Review				
362–405	162.1 Recall terms and concepts from Chapter 14.			
Lesson 163 Test				
	163.1 Apply terms and concepts from Chapter 14.	**Assessments** • Test 14	**Teacher Tools Online** • EV: Chapter 14 Test Bank	Test 14 EV: Chapter 14 Test Bank

Chapter 15: Natural Hazards

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 164 Earthquakes				
406–13	164.1 Relate Earth's plates to the layers of the earth. 164.2 Explain what causes earthquakes. 164.3 Relate plate boundaries to earthquake activity using a map. 164.4 Describe the benefits of studying earthquakes. **BWS** Importance of Humans (explain)	**Teacher Edition** • IA 15.1: Earth's Layers • IA 15.2: Earthquake Safety • IA 15.3: Major Plate Boundaries and Faults **Activities** • Earth's Layers (p. 355) **Materials** • meter stick, or tape measure	**Teacher Tools Online** • Video: Natural Hazards • IA 15.1: Earth's Layers • IA 15.2: Earthquake Safety • IA 15.3: Major Plate Boundaries and Faults • WL: Earthquake Damage • WL: Bridge Building Time Lapse	Quick Check (p. 413)
Lesson 165 Tsunamis and Floods				
414–19	165.1 Describe how tsunamis happen. 165.2 Differentiate between local, regional, and worldwide flooding. 165.3 Explain how we know that a worldwide flood will not happen again. **BWS** History of Nature (apply)	**Teacher Edition** • IA 15.3: Major Plate Boundaries and Faults • IA 15.4: Tsunami • IA 15.5: Flood Safety **Activities** • Study Guide (pp. 357–60) **Assessments** • Quiz 15A **Materials** • sticky notes	**Teacher Tools Online** • IA 15.3: Major Plate Boundaries and Faults • IA 15.4: Tsunami • IA 15.5: Flood Safety • WL: Tsunamis • WL: Atlanta Flooding • WL: Turn Around	Quick Check (p. 415) Quick Check (p. 419) Study Guide (Act. pp. 357–60) Quiz 15A
Lessons 166–67A STEM: Built to Last				
420	166–67A.1 Design a model of an earthquake-resistant bridge using the engineering design process. 166–67A.2 Create a model of an earthquake-resistant bridge. 166–67A.3 Test and compare models to improve the original design. 166–67A.4 Communicate how the design solves the problem. **BWS** Importance of Humans (explain)	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM A: Built to Last (pp. 361–63) **Assessments** • STEM Rubric **Materials** • supplies for designing an earthquake-resistant bridge; see Teacher Edition p. 420 for suggested materials	**Teacher Tools Online** • IA 2.2: STEM: The Engineering Design Process	STEM Rubric

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lessons 166–67B STEM: Too Much Water!				
421	166–67B.1 Design a way to reduce the damage from flooding using the engineering design process. 166–67B.2 Create a model of the design to reduce the impact of flooding. 166–67B.3 Test and compare models to improve the original design. 166–67B.4 Communicate how the design solves the problem. **BWS** Importance of Humans (explain)	**Teacher Edition** • IA 2.2: STEM: The Engineering Design Process **Activities** • STEM B: Too Much Water! (pp. 365–67) **Assessments** • STEM Rubric **Materials** • supplies for designing a way to reduce flooding; see Teacher Edition p. 421 for suggested materials	**Teacher Tools Online** • IA 2.2: STEM: The Engineering Design Process	STEM Rubric
Lesson 168 Volcanoes				
422–26	168.1 Relate plate boundaries to volcanic eruptions. 168.2 Locate the Ring of Fire, other volcanoes, and earthquakes by using a map. 168.3 Identify patterns of earthquake and volcanic activity by using a map. 168.4 Formulate ideas to limit the impact of a volcanic eruption on people.	**Teacher Edition** • IA 15.6: Earthquakes, Volcanoes, and Plate Boundaries **Activities** • Study Guide (pp. 369–70) **Assessments** • Quiz 15B **Materials** • supplies for volcano demonstration	**Teacher Tools Online** • Video: Volcanologist • IA 15.6: Earthquakes, Volcanoes, and Plate Boundaries • WL: Whakaari Volcanic Eruption	Quick Check (p. 425) Study Guide (Act. pp. 369–70) Quiz 15B
Lesson 169 Exploration: Natural Hazards				
427	169.1 Create a poster that explains why it is important to study natural hazards. **BWS** Importance of Humans (formulate) 169.2 Defend the idea that Christians should be concerned about limiting the effects of natural hazards. **BWS** Importance of Humans (formulate)	**Activities** • Exploration: Natural Hazards (pp. 371–72) **Assessments** • Exploration Rubric	**Teacher Tools Online** • WL: Tsunami Preparedness	Exploration Rubric
Lesson 170 Review				
	170.1 Recall terms and concepts from Chapter 15.	**Teacher Edition** • IA 15.7: Sandbags	**Teacher Tools Online** • IA 15.7: Sandbags	
Lesson 171 Test				
	171.1 Apply terms and concepts from Chapter 15.	**Assessments** • Test 15	**Teacher Tools Online** • EV: Chapter 15 Test Bank	Test 15 EV: Chapter 15 Test Bank

Chapter 16: Natural Resources

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 172 Resources for Our Use				
428–37	172.1 Identify what a natural resource is. **BWS** Design in Nature (explain) 172.2 Identify examples of a natural resource. 172.3 Describe the benefits of renewable resources. **BWS** Importance of Humans (explain) 172.4 Explain why it is beneficial to use renewable resources wisely. **BWS** Importance of Humans (formulate)	**Materials** • supplies for Lesson Introduction object lesson	**Teacher Tools Online** • Video: Natural Resources • Video: Forester • WL: Contour Plowing	Quick Check (p. 432) Quick Check (p. 437)
Lesson 173 Renewable and Nonrenewable Resources				
438–43	173.1 Identify renewable energy resources. 173.2 Explain how people benefit from renewable energy resources. 173.3 Differentiate between renewable and nonrenewable resources. 173.4 Identify some of Earth's nonrenewable resources. 173.5 Explain, using a biblical worldview, how and when fossil fuels formed. **BWS** History of Nature (formulate)	**Teacher Edition** • IA 16.1: Energy Resources 1 • IA 16.2: Energy Resources 2 **Activities** • Energy Resources (pp. 373–74) • Study Guide (pp. 375–77) **Assessments** • Quiz 16A **Materials** • solar-powered calculator	**Teacher Tools Online** • IA 16.1: Energy Resources 1 • IA 16.2: Energy Resources 2 • WL: Grand Coulee Dam	Quick Check (p. 441) Quick Check (p. 443) Study Guide (Act. pp. 375–77) Quiz 16A
Lesson 174 Exploration: Natural Resources All around Us				
444	174.1 Collect, record, and interpret data related to local natural resources. 174.2 Observe natural resources in a local area. 174.3 Classify the resources as renewable or nonrenewable. 174.4 Create a natural resource map and key based on observations. 174.5 Communicate the resources observed.	**Activities** • Exploration: Natural Resources All around Us (pp. 379–81) **Assessments** • Exploration Rubric **Materials** • supplies for natural resources exploration; see Activities p. 379 for materials		Exploration Rubric
Lesson 175 Our Responsibility				
445–51	175.1 Compare the advantages and disadvantages of renewable energy resources to nonrenewable energy resources. 175.2 Evaluate the importance of conserving natural resources. **BWS** Purpose of Science (evaluate) 175.3 Suggest ways to reduce, reuse, and recycle resources. **BWS** Purpose of Science (formulate)	**Activities** • Study Guide (pp. 383–85) **Assessments** • Quiz 16B	**Teacher Tools Online** • Video: Mount Trashmore • Video: Upcycling	Quick Check (p. 447) Quick Check (p. 451) Study Guide (Act. pp. 383–85) Quiz 16B

Pages	Objectives	Printed Resources & Materials	Digital resources	Assessments
Lesson 176 Exploration: How Does Water Pollution Travel?				
452	176.1 Create a model of a watershed. 176.2 Observe the flow of water in a watershed and the effect the flowing water has on land pollution. 176.3 Draw conclusions about the importance of keeping watersheds clean. **BWS** Purpose of Science (explain) 176.4 Make a recommendation for how land containing a watershed should be used. **BWS** Purpose of Science (apply)	**Activities** • Exploration: How Does Water Pollution Travel? (pp. 387–90) **Assessments** • Exploration Rubric **Materials** • supplies for water pollution exploration; see Activities p. 387 for materials	**Teacher Tools Online** • WL: What Is a Watershed?	Exploration Rubric
Lesson 177 Investigation: What Is in the Air I Breathe?				
453	177.1 Predict whether there are more particles in the air indoors or outdoors. 177.2 Make a tool that will collect particles from the air. 177.3 Record and interpret data from particles collected. 177.4 Identify and control variables in the investigation. 177.5 Draw conclusions about the importance of knowing how many particles are in the air. **BWS** Importance of Humans (apply)	**Activities** • Investigation: What Is in the Air I Breathe? (pp. 391–93) **Assessments** • Investigation Rubric **Materials** • supplies for air pollution investigation; see Activities p. 391 for materials		Investigation Rubric
Lesson 178 *SCIENCE 4* Wrap-up				
454–55	178.1 Apply a biblical worldview to the course topics of living things, energy, motion, work, the earth, and the earth's natural resources. **BWS** History of Nature, Design in Nature, Importance of Humans, Purpose of Science, Modeling in Science (apply)	**Materials** • representative item from one of the *SCIENCE 4* units • supplies for the reflection activity		
Lesson 179 Review				
	179.1 Recall terms and concepts from Chapter 16.	**Materials** • supplies for review game		
Lesson 180 Test				
	180.1 Apply terms and concepts from Chapter 16.	**Assessments** • Test 16	**Teacher Tools Online** • EV: Chapter 16 Test Bank	Test 16 EV: Chapter 16 Test Bank