EARTH SCIENCE 5TH EDITION
LESSON PLAN OVERVIEW

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
UNIT 1: INTRODUCTION TO EARTH SCIENCE					
Chapter 1: The World of Earth Science (8 days) Foundational Chapter					
1	1A Why Study Earth Science?	3–6	3–6	Link: Tilly Smith and the Tsunami Lab 1A: *Feeding the World Through Earth Science*—Modeling World Population Growth	**EQ:** How can we use earth science to fulfill God's commands to the human race? **Objectives:** 1A1 Explain why Christians do science. 1A2 Explain how earth science helps Christians declare God's glory. 1A3 Defend the idea that earth science can play a role in God's work of redemption.
2	Lab Day 1			Lab 1A	
3	1B A Christian Approach to Earth Science	7–13	7–13	Biblical Origins: The Gap Theory Lab 1B: *Finding the Standard Carrot*—Inquiring into Standard Values	**EQ:** How does a biblical worldview affect earth science? **Objectives:** 1B1 Define *worldview*. 1B2 Explain how one's worldview is a key part of doing science. 1B3 Compare and contrast the secular and Christian worldviews. 1B4 Explain how models are important to science. 1B5 Define *science*.
4	Lab Day 2			Lab 1B	
5	1C Earth Science in Action	14–20	14–20	Case Study: Modeling the Solar System Link: Tilly Smith and the Tsunami Lab 1C: *Insufficient Data*—Investigating the Limits of Models	**EQ:** How does earth science work in the real world? **Objectives:** 1C1 Explain how scientists do science. 1C2 Compare operational and historical science. 1C3 Identify various earth scientists and briefly describe their work.
6	Lab Day 3			Lab 1C	
7–8	**Review and Test Days**			Chapter 1 Test	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
Chapter 2: Matter, Forces, and Energy (8 days) Foundational Chapter					
9	2A Matter	24–31	24–31	Info Box: Weight Versus Mass Links: Google Earth Users Guide, Archimedes's Principle Demonstration: Boiling at Low Temperature Google Earth Link: LHC Lab 2A: *Woody Data*—Measuring Matter	**EQ:** What is matter and why is it important to earth science? **Objectives:** 2A1 Show the impact of worldview on science. 2A2 Describe matter and the different forms it can take. 2A3 Describe how matter changes from one state to another. 2A4 Demonstrate three ways to measure matter.
10	Lab Day 1			Lab 2A	
11	2B Forces and Matter	31–35	31–35	Life Connection: Science in Microgravity Link: Microgravity Demonstrations: Newton's Third Law, Forces at a Distance	**EQ:** How does matter interact to affect the world around us? **Objectives:** 2B1 Classify forces and identify the various kinds of forces. 2B2 Investigate and describe how forces work in the universe. 2B3 Discuss the significance of the force of gravity.
12	2C Energy and Matter	36–41	36–41	Links: Shockwaves and Sonic Booms, Why Is a Sonic Boom So Loud? Lab 2B: *Cooling Down*—Understanding Temperature and Density	**EQ:** What is energy, and how does it affect matter? **Objectives:** 2C1 Define *work* and *energy*. 2C2 Classify different types of energy. 2C3 Discuss the significance of the principle of the conservation of energy.
13	Lab Day 2			Lab 2B	
14	2D Composition of Matter	41–48	41–48	Case Study: The Building Blocks of Everything Links: Elements Up Close, Interactive Periodic Table, Periodic Table Song, New Periodic Table Song	**EQ:** What makes up matter? **Objectives:** 2D1 Describe the structure of atoms. 2D2 Recognize that protons determine an element's identity. 2D3 Compare and contrast ions and atoms. 2D4 Distinguish between elements and compounds. 2D5 Show how a chemical formula is used to identify the elements in a molecule. 2D6 Describe the structure of matter at the atomic level. 2D7 State ways that we can know that different changes of matter have taken place.
15–16	**Review and Test Days**			Chapter 2 Test	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
Chapter 3: Maps and Mapping (9 days) Foundational Chapter					
17	3A Why Do We Use Maps?	52–60	52–60	Info Box: GPS Links: Ghost Map, Maps and Disease Control, Orienteering, Geocaching Google Earth Link: International Date Line (IDL) Lab 3A: *Where Am I?*—Determining Latitude	**EQ:** What features on most maps help us use them? **Objectives:** 3A1 Show why maps are important for life. 3A2 Explain how mapmaking is modeling. 3A3 Discuss why maps need coordinate systems. 3A4 Describe how to find your location on a map. 3A5 Summarize standard map features.
18	Lab Day 1			Lab 3A	
19	3B Types of Maps	60–65	60–65	Demonstration: Map Distortion Lab 3B: *Measuring the Earth*—Indirect Measurement of Earth's Circumference	**EQ:** What must cartographers consider when designing a map? **Objectives:** 3B1 Identify the three main types of map projections. 3B2 Briefly discuss the properties and uses of the common map projections. 3B3 Identify three standard types of maps. 3B4 Briefly discuss the use of contour lines in topographic maps. 3B5 Discuss the concept of a map theme. 3B6 Identify thematic maps.
20	Lab Day 2			Lab 3B	
21	3C Maps and GIS	65–70	65–70	Life Connection: GIS and Disaster Relief Careers: Serving God as a Cartographer Worldview Sleuthing: Driverless Cars Links: GIS and Haiti Earthquake (2010), Drones and Dominion, Driverless Cars Rubric, Washington DC Lab 3C: *The Best Vacation*—Learning Google Earth (2 days)	**EQ:** How can maps help people solve problems? **Objectives:** 3C1 Define a geographic information system (GIS). 3C2 State the main uses for a GIS. 3C3 Identify sources of GIS data. 3C4 Explain how GIS maps are used to help people.
22	Lab Day 3			Lab 3C (Day 1)	
23	Lab Day 4			Lab 3C (Day 2)	
24–25	**Review and Test Days**			Chapter 3 Test	
UNIT 2: THE RESTLESS EARTH					

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
Chapter 4: Geology—The Earth Speaks (8 days) Foundational Chapter					
26	4A The Earth, a Special Place	77–84	77–84	Info Box: Our Moon: Unique in the Solar System Links: Message from the Moon, Solar Heating Device Template Demonstration: Earth's Tilt Lab 4A: *Catching Some Rays*—Modeling Solar Heating	**EQ:** What scientific evidence confirms that Earth was designed for life? **Objectives:** 4A1 Explain why Earth is well-suited for life. 4A2 Show how Earth is unique by comparing it to other planets. 4A3 Explain how Earth's design helps humans explore the heavens.
27	Lab Day 1			Lab 4A	
28	4B Geology, the Science	85–89	85–89	Case Study: Nicholaus Steno, Bishop of Geology Demonstration: Uniformitarianism	**EQ:** How does our worldview affect our understanding of geology? **Objectives:** 4B1 Summarize the history of geology. 4B2 Explain the dangers of viewing the earth as very old and as the product of natural processes. 4B3 Describe how geology is used.
29	4C The Earth's Structure	90–92	90–92	Link: Wave Speed demonstration Lab 4B: *Waves Through the Earth*—Modeling Wave Motion in Solids	**EQ:** What is inside the earth and how do we know? **Objectives:** 4C1 Explain how scientists study the interior of the earth. 4C2 Describe the different layers of the earth and their properties. 4C3 Sketch the earth's interior, labeling its regions and layers.
30	Lab Day 2			Lab 4B	
31	4D The Earth's Natural Resources	93–96, 99	93–96, 99	Life Connection: An "Out-of-Balance" World	**EQ:** How can we wisely use Earth's resources to best glorify God and help others? **Objectives:** 4D1 Identify natural resources. 4D2 Explain how to manage natural resources. 4D3 List factors that affect environmental quality. 4D4 Explain why Christians should be concerned about the environment. 4D5 Analyze the relationship between Earth's resources and population.
32–33	**Review and Test Days**			Chapter 4 Test	
Chapter 5: The Changing Earth (7 days) Foundational Chapter					

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
34	5A Observing the Evidence	101–8	101–8	Case Study: The Arctic Quest to Understand Climate and Geology Links: Continental Drift Activity, Glacier Speed Google Earth Links: Tectonic Plates, Updated Tectonic Plates Lab 5A: *Going with the Flow*—Inquiring into Density Currents	**EQ:** How does what we see tell us where Earth came from and how it has changed? **Objectives:** 5A1 Explain why creating a story of Earth's history depends on your worldview. 5A2 Analyze the evidence that the solar system gives us of its history of change. 5A3 Analyze the evidence that the earth gives us of its history of change.
35	Lab Day 1			Lab 5A	
36	5B The Old-Earth Story	108–14	108–14	Timeline of Earth (old-earth perspective) Links: Nebular Hypothesis, Continental Drift, Geologic Time Scale, Ice Ages Lab 5B: *Where Do Those Dates Come From?*—Understanding the Age of the Earth	**EQ:** What story of Earth's history shows that it is millions of years old? **Objectives:** 5B1 Describe the processes and sequence of the origin of the earth from an old-earth viewpoint. 5B2 Summarize the old-earth story of how the earth has changed during its history. 5B3 Evaluate the effectiveness of the old-earth story in accounting for the evidence.
37	Lab Day 2			Lab 5B	
38	5C The Young-Earth Story	115–24	115–24	Timeline of Earth (young-earth perspective) Timeline of the Flood Life Connection: The Flood, the Ark, and Species Today Biblical Origins: The Day-Age Theory Links: Answers in Genesis, Creation Ministries International, The Cubit, Dr. John Baumgardner, Determining the Ark Kinds	**EQ:** What story of Earth's history shows that it is thousands of years old? **Objectives:** 5C1 Describe the processes and sequence of the origin of the earth from a young-earth viewpoint. 5C2 Summarize the young-earth story of how the earth has changed during its history. 5C3 Evaluate the effectiveness of the Bible's story in accounting for the evidence.
39–40	**Review and Test Days**			Chapter 5 Test	

Chapter 6: Earthquakes (11 days)
Foundational Chapter

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
41	6A Tectonic Forces	129–32	129–32	Links: Earthquake 101, Quake Catcher Network Demonstrations: Convection in the Earth, Ductility	**EQ:** What causes earthquakes? **Objectives:** 6A1 Summarize how tectonic forces trigger earthquakes. 6A2 Show how certain kinds of tectonic processes are most likely the cause of earthquakes. 6A3 Identify the material properties of rocks that help cause earthquakes.
42	6B Faults and Joints	133–36	133–36	Demonstrations: Strike and Dip, Types of Faults Google Earth Link: San Andreas Fault	**EQ:** How do we classify faults? **Objectives:** 6B1 Explain how joints, faults, and earthquakes are related. 6B2 Summarize how an earthquake happens.
43	6C Earth Waves and Seismology	136–41	136–41	Careers: Serving God as a Seismologist Links: Earthquake Montage, Real-Time Earthquakes, Making Waves, Locating the Epicenter, Tectonic Plates, Updated Tectonic Plates Demonstrations: Waves, Epicenter and Focus Google Earth Links: Mount St. Helens, Tectonic Plates, Updated Tectonic Plates, Real-Time Earthquakes Lab 6A: *Where Did It Start?*—Locating an Earthquake's Epicenter Lab 6B: *All Quiet?*—Understanding Why Earthquakes Occur Where They Do	**EQ:** How do scientists collect earthquake data? **Objectives:** 6C1 Describe how seismologists collect earthquake wave data. 6C2 Compare and contrast the types of seismic waves. 6C3 Explain how to find an earthquake's epicenter.
44	Lab Day 1			Lab 6A	
45	Lab Day 2			Lab 6B	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
46	6D Effects of Earthquakes	141–48, 151	141–48, 151	Info Box: Upside Down Mountain Life Connection: Quakes and Critters Case Study: Earthquakes—The Big One! Links: Earthquake Magnitude Liquifaction, Liquifaction Demonstration, Parkfield, CA Earthquake Experiment, Shake, Not Break Rubric, M7+ Earthquakes Google Earth Links: Miyako City, Japan, Chief Mountain Lab 6C: *Shake Not Break*—Designing Earthquake-Resistant Structures (3 days)	**EQ:** What are the effects of earthquakes on living things? **Objectives:** 6D1 Describe how scientists rate earthquakes. 6D2 Explain why earthquakes can be so dangerous. 6D3 Evaluate the difficulty and benefits of predicting earthquakes.
47	Lab Day 3			Lab 6C (Day 1)	
48	Lab Day 4			Lab 6C (Day 2)	
49	Lab Day 5			Lab 6C (Day 3)	
50–51	**Review and Test Days**			Chapter 6 Test	
Chapter 7: Mountains and Hills (6 days) Key Chapter					
52	7A: What Is a Mountain?	153–58	153–58	Info Box: Relief Maps Case Study: Brad Washburn: Adventurer, Cartographer Links: How Tall is Mount Everest?, Notable Mountains of the World, USGS Map Store Demonstration: Isostasy Google Earth Links: Notable Mountains of the World, Mount Whitney, Denali, Mount Everest, Mauna Kea Lab 7A: *How High?*—Modeling Indirect Measurement of Mountains	**EQ:** What factors determine the height of a mountain? **Objectives:** 7A1 Discuss the relation of topography to the principle of isostasy. 7A2 Summarize processes that contribute to orogeny. 7A3 Identify and describe various kinds of mountain and hill landforms. 7A4 Differentiate between elevation and actual height.
53	7B: Tectonic Mountains	158–64	158–64	Demonstrations: Geologic Folding, Domes and Basins Google Earth Links: Tectonic Plates, Updated Tectonic Plates, Lake Tanganyika, Lake Victoria, Laguna Verde	**EQ:** How do mountains form? **Objectives:** 7B1 Relate tectonic forces to orogeny. 7B2 Identify various convergent, divergent, and volcanic mountain landforms. 7B3 Identify various uplift and subsidence landforms.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
54	7C: Non-Tectonic Hills and Mountains	165–70	165–70	Life Connection: "In the Zone" on Mount Kilimanjaro Google Earth Links: Mount Kilimanjaro, Kilimanjaro Climate Zones, Mount Kilimanjaro Climbing Routes, Matterhorn, Mount Etna Lab 7B: *Staying on Top of It*—Understanding Topographic Maps	**EQ:** What other ways can mountains form? **Objectives:** 7C1 Explain in basic terms the processes of erosion and deposition. 7C2 Describe the various processes that produce erosional mountains. 7C3 Describe related tectonic processes that contribute to some residual landforms. 7C4 Discuss the major processes that created depositional mountains.
55	Lab Day			Lab 7A or 7B	
56–57	**Review and Test Days**			Chapter 7 Test	
Chapter 8: Volcanoes and Volcanism (6 days) Key Chapter					
58	8A: Fire Mountains	175–84	175–84	Life Connection: They Can Take the Heat Links: Eyjafjallajökull Eruption, Notable Volcanoes of the World, Four Types of Lava, Pillow Lava, Pyroclastic Flow Demonstration: Insulation Google Earth Links: Eyjafjallajökull, Tectonic Plates, Global Volcano map, Updated Tectonic Plates Lab 8A: *Hot Spots*—Understanding Why Volcanoes Are Located Where They Are	**EQ:** Why should we study volcanoes? **Objectives:** 8A1 Explain how earth science helps reduce the risks of natural hazards like volcanoes. 8A2 Describe the structure of a volcano. 8A3 List and describe the main kinds of volcanic emissions. 8A4 Associate the locations of extrusive igneous features around the world with tectonically active regions. 8A5 Infer from the global distribution of volcanoes the amount of volcano activity during the Genesis Flood.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
59	8B: Classifying Volcanoes	184–91	184–91	Worldview Sleuthing: Mount St. Helens Info Box: Mount Tambora: The Most Powerful Eruption in History Careers: Serving God as a Volcanologist Links: Mount St. Helens Webquest Rubric, Pyroclastic Flow Demonstration: Profiles of a Volcano Google Earth Links: Mount Rainier, Mount Tambora, Mount Unzen Lab 8B: *Volcanic Visits*—Examining Volcanic Eruptions	**EQ:** What are the different types of volcanoes? **Objectives:** 8B1 Identify and categorize volcanoes by their shape and composition. 8B2 Infer the activity of a volcano on the basis of its eruption history and seismic activity. 8B3 Analyze the definition of volcanic activity from both young-earth and old-earth viewpoints. 8B4 Classify the destructiveness of a volcanic eruption on the basis of the Volcanic Explosivity Index.
60	Lab Day			Lab 8A or Lab 8B	
61	8C: Intrusive Volcanism	192–97	192–97	Link: Old Faithful Webcam Demonstration: Pluton Formation Google Earth Links: Grand Prismatic Spring, Krakatoa	**EQ:** How does intrusive volcanism differ from extrusive volcanism? **Objectives:** 8C1 Compare intrusive volcanism with extrusive volcanism. 8C2 Describe various intrusive igneous formations and how they formed. 8C3 Define the geothermal gradient and describe how it varies with depth into the earth. 8C4 Discuss hydrothermal processes and identify volcanic features associated with heated groundwater. 8C5 Describe how energy can be extracted from geothermal sources.
62–63	**Review and Test Days**			Chapter 8 Test	
UNIT 3: EARTH'S ROCKY MATERIALS					
Chapter 9: Minerals and Ores (7 days) Foundational Chapter					
64	9A Describing Minerals	203–5	203–5	Lab 9A: *Crafting a Crystal*—Understanding Crystal Growth	**EQ:** How do I know whether a substance is a mineral? **Objectives:** 9A1 Relate the study and use of minerals to exercising biblical dominion. 9A2 Determine whether a substance is a mineral. 9A3 Classify natural materials as either native or compound minerals, or mixtures of these.
65	Lab Day 1			Lab 9A	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
66	9B Identifying Minerals	205–11	205–11	Infographic: Minerals and Their Crystals Links: Mineral Identification Gizmo, Flame Test, Mineral and Rock Identification Project, Mineral Identification Key (1), Mineral Identification Key (2) Demonstrations: Cleavage and Fracture, Flame Test Lab 9B: *Unmasking Mysterious Minerals*—Identifying Crystals	**EQ:** How do mineralogists identify minerals? **Objectives:** 9B1 Define mineralogy and explain what mineralogists do. 9B2 Describe characteristics used for mineral identification.
67	Lab Day 2			Lab 9B	
68	9C Minerals as Resources	212–19	212–19	Info Box: Trapped Underground Life Connection: Mud Pies for Macaws Demonstrations: Placer Deposits, Sulfur's Physical Properties Google Earth Links: Statue of Liberty, Argyle Diamond mine, Copiapó Mine, Jefferson Memorial	**EQ:** How do we use minerals? **Objectives:** 9C1 Evaluate the dominion uses of minerals in view of their practicality and beauty. 9C2 Discuss where native minerals are found. 9C3 Describe the key identifying properties of native minerals. 9C4 Give specific examples of the usefulness of minerals. 9C5 Differentiate between native and compound minerals. 9C6 Weigh the benefits and adverse effects of mining for minerals.
69–70	**Review and Test Days**			Chapter 9 Test	
Chapter 10: Rocks (9 days) Foundational Chapter					
71	10A Classifying Rocks	223–25	223–25	Life Connection: Rock Sweet Rock Links: USGS Volcanoes Hazards Program: Kilauea, Kilauea Lava Flow Google Earth Link: Kilauea	**EQ:** How do the types of rock differ? **Objectives:** 10A1 Define *rocks*. 10A1 Classify types of rocks on the basis of how they formed. 10A1 Identify properties of rocks used to classify them.
72	10B Igneous Rocks	226–29	226–29	Links: Mineral and Rock Identification Project, Rock Identification Key, Mount Rushmore Demonstration: Floating Rock	**EQ:** How do intrusive and extrusive igneous rocks differ? **Objectives:** 10B1 Evaluate the theories of origin of igneous rocks. 10B2 Classify igneous rocks by texture and magma types. 10B3 Identify common intrusive and extrusive igneous rocks. 10B4 Explain why igneous rocks have been used by humans throughout history.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
73	10C Sedimentary Rocks	230–36	230–36	Careers: Serving God as a Sedimentologist Link: The Flood and Chalk Deposits Demonstration: Artificial Sandstone Google Earth Link: Seven Sisters Chalk Cliffs Lab 10A: *That Settles It*—Inquiring into Sedimentation	**EQ:** How does eroded material become sedimentary rock? **Objectives:** 10C1 Evaluate the theories of origin of sedimentary rocks. 10C2 Describe the processes by which clastic and nonclastic sedimentary rocks formed. 10C3 Correctly classify sedimentary rocks. 10C4 Discuss common uses of sedimentary rocks.
74	Lab Day 1			Lab 10A	
75	10D Metamorphic Rocks	237–41	237–41	Info Box: Hydrothermal Fluids Links: Rock Identification Key, Rock Identification Gizmo Lab 10B: *Rock-Solid Science*—Understanding Rock Characteristics	**EQ:** How can rocks change? **Objectives:** 10D1 Differentiate between metamorphic rocks and other kinds of source rocks. 10D2 Identify the important agents of metamorphism. 10D3 Describe important processes of metamorphism. 10D4 Correctly classify metamorphic rocks. 10D5 Explain why metamorphic rocks have been used throughout history.
76	Lab Day 2			Lab 10B	
77	10E The Rock Cycle	242–44, 247	242–44, 247	Case Study: Rocks and the Age of the Earth	**EQ:** Does the rock cycle naturally recycle rocks? **Objectives:** 10E1 Explain the key features of the old-earth rock cycle hypothesis. 10E2 Evaluate the feasibility of the rock cycle from within a young-earth view of Earth's history. 10E3 Refute the assertion that the earth was created to reuse rock natural resources.
78–79	**Review and Test Days**			Chapter 10 Test	
Chapter 11: Fossils (7 days) Foundational Chapter					

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
80	11A Fossilization	249–57	249–57	Infographics: Kinds of Fossils, A Fossil Sampler Biblical Origins: Progressive Creationism Worldview Sleuthing: Ötzi Links: La Brea Tar Pit, Fossilization, Champlain Beluga, iDINO II Project, Ötzi Webquest Rubric 11A: *Encrusted Critters*—Investigating Fossilization	**EQ:** Where do fossils come from? **Objectives:** 11A1 Explain what fossils are and how they form. 11A2 Evaluate whether an object is a fossil, a trace fossil, or a non-fossil. 11A3 Analyze the origins of fossils that we find today.
81	Lab Day 1			Lab 11A	
82	11B Paleontology	258–65	258–65	Info Boxes: What Happened to the Dinosaurs?, Trilobites Links: Chicxulub Impact, Dead Sea Scrolls Lab 11B: *How Old Is It?*—Investigating Radiocarbon Dating	**EQ:** What can we learn from fossils? **Objectives:** 11B1 Summarize how to classify and name living and extinct organisms. 11B2 Identify the factors that lead to the extinction of an organism. 11B3 Evaluate efforts to interpret the fossil record in light of one's worldview. 11B4 Analyze and evaluate the explanations for the evidence of mass extinctions in the fossil record.
83	Lab Day 2			Lab 11B	
84	11C Fossil Fuels	265–73	265–73	Life Connection: Deep Dark Secrets Links: Coal Deposits Map, Deepwater Horizon	**EQ:** Where do fossil fuels come from? **Objectives:** 11C1 Describe fossil fuels and how we use them. 11C2 Evaluate different origin theories for coal, petroleum, and natural gas. 11C3 Evaluate the risks and benefits of using fossil fuels.
85–86	**Review and Test Days**			Chapter 11 Test	

Chapter 12: Weathering, Erosion, and Soils (6 days)
Key Chapter

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
87	12A Weathering	277–80	277–80	Case Study: What Happened to George Washington? Links: USGS: Mount St. Helens, Mount St. Helens Eruption Demonstration: Frost Wedging Google Earth Link: Crowfoot Mountain Lab 12A: *All Worn-Out*—Investigating Weathering	**EQ:** What makes rocks break down? **Objectives:** 12A1 Explain how rock weathers. 12A2 Recognize the effects of weathering. 12A3 Analyze what determines the rate of weathering.
88	12B Erosion and Deposition	281–92	281–92	Info Boxes: Glaciers and Climate Change, Varves Links: Grand Canyon Video Series, Sedimentation, Glacier Calving, Glacier Speed Google Earth Links: Oso, Washington Landslide, Grand Canyon Lab 12B: *Glacier Trek*—Understanding Characteristics of Glaciers (2 days)	**EQ:** What forces act in the processes of erosion and deposition? **Objectives:** 12B1 Relate stream erosion and deposition to stream speed. 12B2 Explain the process of wind erosion and deposition. 12B3 Describe the main processes that result in glacial erosion and deposition. 12B4 Recognize the effects of erosion. 12B5 Identify erosion and depositional features on maps.
89	Lab Day 1			Lab 12A or Lab 12B	
90	12C Soil	293–98, 301	293–98, 301	Life Connection: Living Soil Info Box: Controlling Erosion Careers: Serving God as a Pedologist Links: Mount St. Helens Eruption, USDA's National Resources Conservation Service Google Earth Links: Mount St. Helens, Chapter 12 Map Exercises	**EQ:** How does soil form? **Objectives:** 12C1 Describe how soil forms, including its horizons. 12C2 Analyze how different factors affect soil. 12C3 Evaluate ways for using and conserving soil.
91–92	**Review and Test Days**			Chapter 12 Test	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
UNIT 4: THE WATER WORLD					
Chapter 13: Oceans and Seas (7 days) Foundational Chapter					
93	13A Ocean Basins	305–16	305–16	Life Connection: Swimming Through a Rainforest Links: Water Crisis, Geoid, Turbidity Current, Coral Bleaching, Virtual Coral Reef Dive Google Earth Link: Challenger Deep	**EQ:** What does the topography of the oceans look like? **Objectives:** 13A1 Explain the reasons that the oceans are essential to life and some of the ways that we use them. 13A2 Evaluate theories that account for the origin of the oceans. 13A3 List the factors that determine mean sea level and describe how sea level varies around the globe. 13A4 Describe the general ocean basin topography from the shore to the abyssal plains. 13A5 Describe various kinds of coral reefs and atolls, and their origin, geologic significance, and impact on aquatic life.
94	13B Seawater	317–23	317–23	Worldview Sleuthing: Drinkable Water from Seawater Link: Drinkable Water from Seawater Rubric Demonstration: Salinity of Seawater Lab 13A: *Weighty Waters*—Investigating Density Lab 13B: *Low Salt*—Desalination by Freezing	**EQ:** How does seawater differ from fresh water? **Objectives:** 13B1 Evaluate different Flood theories that could account for the saltiness of the oceans. 13B2 Identify the main chemicals that contribute to ocean salinity. 13B3 List the factors affecting salinity. 13B4 Explain how salinity affects important physical properties of seawater.
95	Lab Day 1			Lab 13A	
96	13C Ocean Environments	323–27	323–27	Info Box: Marine Snow Link: Ocean Zones Google Earth Link: Chapter 13 Map Exercises	**EQ:** How does the ocean environment vary from place to place? **Objectives:** 13C1 Compare the different biological zones in the ocean. 13C2 Summarize the marine carbon and nitrogen cycles.
97	Lab Day 2			Lab 13B	
98–99	**Review and Test Days**			Chapter 13 Test	

Chapter 14: Ocean Motions (7 days) Foundational Chapter

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
100	14A Tides	331–36	331–36	Links: Global Currents, Tides, Hopewell Rocks, Hall's Harbour, Tidal Power Generation, Swansea Bay Tidal Lagoon	**EQ:** What causes tides and how can we use them? **Objectives:** 14A1 Compare tides with other ocean motions. 14A2 Analyze the forces that create and affect tides. 14A3 Evaluate the best uses of tides for generating electricity.
101	14B Currents	337, 338–45	337, 338–45	Life Connection: Ocean Migrations Info Box: The Coriolis Effect Worldview Sleuthing: Great Pacific Garbage Patch Links: Global Current Mapper, Coriolis Effect, Great Pacific Garbage Patch Video, Great Pacific Garbage Patch Rubric, Salinity Conversion Graph Demonstrations: Currents, Upwelling and Downwelling, Density Currents Lab 14A: *Too Salty?*—Investigating Salinity Lab 14B: *Current Events*—Modeling Thermohaline Currents	**EQ:** What causes and affects currents? **Objectives:** 14B1 Contrast currents with other ocean motions. 14B2 Analyze the forces that create and affect currents. 14B3 Evaluate the effect of currents on weather and life.
102	Lab Day 1			Lab 14A	
103	14C Waves	345–51	345–51	Info Box: Rip Currents: Swimmers Beware Links: Large Waves, Cruise Ship in Distress Demonstration: Waves Google Earth Links: Cape Henlopen (spit), Sea of Azov (bay barrier), Wood End (hook), North Atlantic Currents, Pacific Garbage Patch, Pacific Ocean Currents	**EQ:** Where do waves come from? **Objectives:** 14C1 Define *wave terminology*. 14C2 Analyze the forces that create and affect waves. 14C3 Predict what kind of landforms will be created under specific sets of wave and land conditions.
104	Lab Day 2			Lab 14B	
105–6	**Review and Test Days**			Chapter 14 Test	

Chapter 15: Ocean Exploration (6 days)
Enrichment Chapter

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
107	15A The History of Ocean Exploration	356–59	356–59	Case Study: The $6,000,000 Clock Links: Longitude Act, Longitude Found: John Harrison, Notable Explorations, *Challenger* Expedition Report Google Earth Link: Isles of Scilly	**EQ:** How have we studied the oceans in the past? **Objectives:** 15A1 Summarize the history of key advances in our knowledge of the world's oceans. 15A2 Identify the motivations behind these key advances.
108	15B Oceanography in Action	360–67	360–67	Careers: Serving God as an Oceanographer Life Connection: A Farm on Your Arms Links: Secchi Disk Simulator, Box Core Sampling, Yeti Crab Paper, Sonar Lab 15A: *Taking a Bath*—Examining Ocean Topography	**EQ:** How do we explore the ocean today? **Objectives:** 15B1 Compare the methods we use to study the oceans. 15B2 Evaluate how technology improves ocean exploration.
109	15C Entering an Alien World	368–75	368–75	Info Boxes: Diving Technology, Sea Habitats Links: Jacques Cousteau, Aquarius, Underwater Laboratory, Challenger Deep, Notable Submersibles Demonstration: Cartesian Diver Google Earth Link: Challenger Deep Lab 15B: *Dive, Dive!*—Investigating Archimedes's Principle	**EQ:** Why is it so difficult to study the ocean? **Objectives:** 15C1 Summarize the history of deep-sea diving. 15C2 Explain the progress in ocean exploration vehicles. 15C3 Evaluate the risks and benefits of ocean exploration.
110	Lab Day			Lab 15A or Lab 15B	
111–12	**Review and Test Days**			Chapter 15 Test	
Chapter 16: Surface Waters (5 days) Key Chapter					
113	16A Streams	379–86, 387	379–86, 387	Case Study: The Influence of Rivers on US History Links: Victoria Falls, Notable Rivers of the World, Three Gorges Dam video, Three Gorges Dam Article, Niagara Falls, Triple Divide Points in the Lower 48, Angel Falls, Three Gorges Ship Lift, Three Gorges Ship Lift Animation Google Earth Links: Victoria Falls, Three Gorges Dam, Divides	**EQ:** What are the characteristics of the different types of streams? **Objectives:** 16A1 Compare the different kinds of streams. 16A2 Sketch a stream from source to mouth and label its parts. 16A3 Analyze ways to wisely use streams.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
114	16B Lakes and Ponds	386–95	386–95	Info Box: Race Cars and Salt Flats Life Connection: Bogs, Bays, and Bloodthirsty Plants Google Earth Link: Chapter 16 Map Exercises Lab 16A: *Surface Impressions*—Exploring Surface Water Lab 16B: *Being* Too *Green?*—Investigating Eutrophication	**EQ:** How do lakes change over time? **Objectives:** 16B1 Relate a lake's chemical properties and anatomy to its geologic setting and elevation. 16B2 Categorize lakes by their properties. 16B3 Analyze different views of the origins of lakes. 16B4 Summarize the typical life phases of a lake.
115	Lab Day			Lab 16A or Lab 16B	
116–17	**Review and Test Days**			Chapter 16 Test	
Chapter 17: Groundwater (8 days) Key Chapter					
118	17A Underground Reservoirs	399–404, 405	399–404, 405	Biblical Origins: Analogous Days Theory Info Box: Depleted Aquifers Links: Jesus Wells, Jesus Well Installation, Water Cycle (NSF), Water Cycle (NASA) Demonstrations: The Water Table, Capillary Action, Porosity Lab 17A: *Perking Down*—Modeling Groundwater Storage	**EQ:** How is water stored in the ground? **Objectives:** 17A1 Create a chart or graph that compares the major segments of the earth's water inventory. 17A2 Describe the water cycle. 17A3 Express the relationships between the terms *porous*, *nonporous*, *permeable*, and *impermeable* when used to describe rocks. 17A4 Discuss the geologic features, storage, and movement of groundwater applied to its availability as drinking water.
119	17B Groundwater Chemistry	406–8	406–8	Link: Water and Solutions Demonstrations: Universal Solvent, Mineral Deposits in Water Lab 17B: *Taking the Waters*—Investigating Water Quality	**EQ:** Why is tap water not pure water? **Objectives:** 17B1 Relate the dissolving power of water to its physical and chemical properties. 17B2 Explain how the amounts and kinds of dissolved minerals in drinking water affect its hardness and usefulness. 17B3 Describe different methods for softening hard water.
120	17C Water as a Resource	408–13	408–13	Links: Center Pivot Irrigation, Water Conservation, Disposal of Unused Medicine, Water Treatment, Well Data Lab 17C: *Follow the Flow*—Inquiring into Groundwater Pollution (2 days)	**EQ:** How can we wisely use water? **Objectives:** 17C1 Explain how we can use and conserve drinking water. 17C2 Identify the ways that drinking water can become polluted. 17C3 Relate the importance of drinking water and sewage treatment to modern, healthy living.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
121	Lab Day 1			Lab 17A or Lab 17C (Day 1)	
122	Lab Day 2			Lab 17B or Lab 17C (Day 2)	
123	17D Groundwater Landforms	414–22, 425	414–22, 425	Life Connection: Curious Cave Critters Careers: Serving God as a Speleologist Case Study: White Nose Syndrome Links: Notable Caves of the World, various cave links, White Nose Syndrome Google Earth Links: Blue Grotto, Dead Sea Caves, Carlsbad Caverns, Craters of the Moon, Lava Beds National Monument	**EQ:** What conditions are required to form caves? **Objectives:** 17D1 Evaluate old- and young-earth models for the origin of solution caves. 17D2 Explain where cave features come from. 17D3 Distinguish between a spelunker, a caver, and a speleologist. 17D4 Describe some features of karst topography.
124–25	**Review and Test Days**			Chapter 17 Test	
UNIT 5: THE ATMOSPHERE					
Chapter 18: Earth's Atmosphere (6 days) Foundational Chapter					
126	18A What Is the Atmosphere?	429–39	429–39	Case Study: Skydiving from Space Links: Urey-Miller Experiment, Urey-Miller Experiment Analysis, Baumgartner's Space Jump, Carbon Cycle, Nitrogen Cycle Demonstration: Ammonia Lab 18A: *Weighty Matters*—Understanding Barometric Pressure	**EQ:** How does the atmosphere change with elevation? **Objectives:** 18A1 Describe how people can affect the atmosphere. 18A2 Identify evidence of design in the atmosphere. 18A3 Sketch the atmosphere's composition, temperature, and structure. 18A4 Trace the flow of carbon and nitrogen in the atmosphere.
127	18B Special Zones in the Atmosphere	439–44	439–44	Info Boxes: The Ozone Hole, Larry Vardiman, Atmosphere Scientist Links: Monitoring the Ozone Hole, Ionosphere, Magnetosphere, Northern Lights Video, Northern Lights	**EQ:** How do special layers of the atmosphere protect life on Earth? **Objectives:** 18B1 Relate special zones of the atmosphere to the other layers. 18B2 Explain how the special zones in the atmosphere are evidence of God's good design.
128	18C Energy in the Atmosphere	445–49	445–49	Life Connection: UV Light and Life Links: Paper Ruler Template, Mount Washington Observatory Demonstration: Visible Light Spectrum Google Earth Link: Mount Washington Observatory Lab 18B: *Warming Up*—Investigating Solar Heating	**EQ:** How does energy from the sun affect the atmosphere? **Objectives:** 18C1 Sketch the flow of energy in the atmosphere. 18C2 Compare radiation, conduction, and convection.
129	Lab Day			Lab 18A or 18B	
130–31	**Review and Test Days**			Chapter 18 Test	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
Chapter 19: Weather (7 days) Foundational Chapter					
132	19A What Is Weather?	453–57	453–57	Links: Wind Power, Time Lapse Weather, Cloud Photography Project, Wind Power Capacity Demonstration: Air Pressure	**EQ:** How do scientists collect weather data? **Objectives:** 19A1 Evaluate the risks and benefits of wind power. 19A2 Describe the weather data that meteorologists collect. 19A3 Compare the different aspects of weather with one another.
133	19B Winds	458–63	458–63	Life Connection: Winds and Migration Links: Bar-Headed Goose, Anemometer Template Lab 19A: *On the Wings of the Wind*—Understanding Wind Speed Measurement	**EQ:** What determines the speed and direction of the wind? **Objectives:** 19B1 Explain what factors affect winds. 19B2 Locate and name the major global wind belts. 19B3 Identify sources of local winds.
134	Lab Day 1			Lab 19A	
135	19C Clouds and Precipitation	464–70	464–70	Infographic: Cloud Types Info Box: Mount Washington: Home of the World's Worst Weather? Links: Cloud Classification Guide, New Cloud Types, Snowflake Bentley, Snowflake Bentley (ICR), SEM Snowflake, World Wind Resources, Mount Washington Observatory Demonstrations: Dew Point, Cloud Formation, Dirty Rain Google Earth Link: Mount Washington Observatory Lab 19B: *Psyched Out*—Understanding Relative Humidity Measurement	**EQ:** How do clouds play a part in weather? **Objectives:** 19C1 Explain how clouds form. 19C2 Relate clouds, air temperature, and humidity to precipitation. 19C3 Compare the different forms of precipitation. 19C4 Classify clouds by altitude, shape, and potential for precipitation.
136	Lab Day 2			Lab 19B	
137–38	**Review and Test Days**			Chapter 19 Test	
Chapter 20: Storms and Weather Prediction (9 days) Foundational Chapter					

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
139	20A Air Masses and Fronts	475–80	475–80	Links: Storm Prediction Center (SPC), Weather Fronts, Rain Shadow Effect Demonstration: Convection	**EQ:** What creates weather? **Objectives:** 20A1 Explain how air masses move with weather. 20A2 Identify air masses by their source regions. 20A3 Connect weather to the interaction of two or more air masses. 20A4 Describe processes that produce precipitation.
140	20B Severe Weather Day 1	481–85	481–85	Info Box: Doppler Radar Links: Doppler Effect, Doppler Effect Applet, Doppler Radar, Thunderstorm Formation, Lightning, Lightning Video, World Lightning Map Demonstration: Lightning	**EQ:** How do severe storms form? **Objectives:** 20B1 Classify storms and explain how they form. 20B2 Describe the major hazards of each kind of storm. 20B3 Identify the key actions to take to remain safe in each kind of storm.
141	20B Severe weather Day 2	486–95	486–95	Info Box: Hurricane Hunters Life Connection: What Happens to Animals During Hurricanes? Worldview Sleuthing: Severe Weather Response Links: Tornado, Tornado Video, Storm Chaser, Last Days of a Storm Chaser, Tornado History Database, Naming Hurricanes, Hurricane Hunters, Hurricane Hunter Video 1, Hurricane Hunter Video 2, Severe Weather Response Rubric Lab 20A: *Tornado Chasing*—Understanding Tornadoes Lab 20B: *Hurricane Hunting*—Understanding Hurricanes	
142	Lab Day 1			Lab 20A	
143	Lab Day 2			Lab 20B	
144	20C Weather Forecasts	495–99	495–99	Info Box: National Weather Service Links: Station Model Exercise, Weather Prediction Center (WPC), Daily Synoptic Weather Map, NEXRAD, National Weather Service (NWS) Demonstration: Weather Map Symbols Lab 20C: *Rain or Shine?*—Forecasting Weather	**EQ:** Why is predicting the weather so difficult? **Objectives:** 20C1 Describe weather station models. 20C2 Explain how weather data is used to construct weather maps. 20C3 Evaluate the probable accuracy of a weather forecast.
145	Lab Day 3			Lab 20C	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
146–47	**Review and Test Days**			Chapter 20 Test	
	Chapter 21: Climate and Climate Change (6 days) Key Chapter				
148	21A What Is Climate?	503–9	503–9	Info Box: The Canopy Theory Links: Global Climate Change (NASA), NOAA Climate, National Park Service Demonstration: The Effects of Ray Angle on Heating, The Land of the Midnight Sun Google Earth Link: Mount Kilimanjaro	**EQ:** What is climate, and what factors affect it? **Objectives:** 21A1 Contrast climate with weather. 21A2 Analyze how different factors may affect climate.
149	21B Climate Zones	509, 510, 511–14	509, 510, 511–14	Biblical Origins: The Framework Hypothesis Careers: Serving God as a Climatologist Infographic: Into the Zones Link: Lonnie Thompson Google Earth Links: Mount Kilimanjaro, Mount Kilimanjaro Climate Zones	**EQ:** How do scientists classify climates? **Objectives:** 21B1 Identify six major kinds of climates. 21B2 Give examples of the different kinds of climates.
150	21C Climate Change	515–25	515–25	Info Box: The Melt Zone Case Study: CO_2 in the Atmosphere Life Connection: Are Polar Bears on Thin Ice? Links: Calving Glacier, Arctic Sea Ice News, Arctic Sea Ice Minimum, El Niño and La Niña, *American Thinker*, Water Vapor, various web sites for Lab 21B Google Earth Links: Ross Ice Shelf, Mount Pinatubo, Biosphere 2 Lab 21A: *Models That Mislead*—Investigating the Limits of Models (2 days) Lab 21B: *Data Dilemma*—Inquiring into Climate Change	**EQ:** How does climate change relate to a Christian worldview? **Objectives:** 21C1 Analyze potential causes for climate change. 21C2 Critique worldview assumptions behind global climate models. 21C3 Evaluate current fears of climate change. 21C4 Formulate a Christian perspective of climate change.
151	Lab Day			Lab 21A or Lab 21B	
152–53	**Review and Test Days**			Chapter 21 Test	
	UNIT 6: THE HEAVENS				
	Chapter 22: The Sun, Moon, and Earth System (7 days) Foundational Chapter				

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
154	22A The Sun	531–39	531–39	Infographic: Up Close with the Sun Links: Stonehenge, Scale of the Sun and Earth, Mixing Light, The Sun's Atmosphere, Sunspots, Solar Flare, CME, Equatorial Sundial Spreadsheet, Magnetic Declination Demonstrations: Visible Light Spectrum, Mixing Light, Bright-Line Spectra Google Earth Link: Stonehenge Lab 22A: *The Giant Clock*—Understanding Sundials	**EQ:** How does the sun change, affecting life on Earth? **Objectives:** 22A1 Describe the sun's structure, activity, and energy. 22A2 Summarize the sun's influence on Earth.
155	Lab Day 1			Lab 22A	
156	22B The Moon	539–44	539–44	Info Box: *Hidden Figures* Links: Lunar Origins, Moon Dust and a Young Moon, Lunar Rover	**EQ:** What is the structure and surface of the moon like? **Objectives:** 22B1 Sketch the moon's structure. 22B2 Describe the moon's surface.
157	22C The Sun, Moon, and Earth as a System	545–54	545–54	Links: Lunar Libration, Phases of the Moon, Calendars, Seasons, Solar Eclipse, Lunar Eclipse, Sun and Moon Data Demonstrations: The Moon's Phases, Seasons Lab 22B: *Mastering the Moon*—Modeling Lunar Phases	**EQ:** How do the sun, moon, and earth interact? **Objectives:** 22C1 Describe how sun and earth interactions cause seasons. 22C2 Identify and explain the moon's phases. 22C3 Analyze how sun, moon, and earth interactions create eclipses. 22C4 Differentiate between ocean tides and earth tides.
158	Lab Day 2			Lab 22B	
159–60	**Review and Test Days**			Chapter 22 Test	
Chapter 23: Our Solar System (7 days) Foundational Chapter					
161	23A Modeling the Solar System	560–66	560–66	Links: *New Horizons* (NASA), *New Horizons*, Retrograde Motion Video, Retrograde Motion (NASA) Lab 23A: *Elliptical Excursions*—The Ellipse and Planetary Motion	**EQ:** How do we know that the sun is the center of our solar system? **Objectives:** 23A1 Analyze models of the solar system. 23A2 Discuss the cultural significance of the adoption of the heliocentric system. 23A3 Describe the properties of planetary orbits.
162	Lab Day 1			Lab 23A	

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
163	23B The Planets	567–77	567–77	Life Connection: Just Add Water? Case Study: Journey to Mars Links: Scale of the Solar System, Mission to Mercury, Journey to Mars, *Juno* Mission to Jupiter, *Cassini* Mission to Saturn Lab 23B: *Running Backward*—Understanding Retrograde Motion	**EQ:** How do the planets in our solar system compare with each other? **Objectives:** 23B1 Categorize objects in the solar system. 23B2 Describe the position, appearance, size, composition, motion, and special features of the planets in our solar system. 23B3 Contrast other planets in the solar system with Earth.
164	Lab Day 2			Lab 23B	
165	23C Non-planetary Objects	577–84	577–84	Info Box: Asteroid Strike! Careers: Serving God as an Astrogeologist Links: Asteroid Names, Asteroid Florence "Near Miss," Exploring Comets, Tunguska Event	**EQ:** Besides the sun and planets, what other bodies exist in the solar system? **Objectives:** 23C1 Classify non-planetary objects in the solar system. 23C2 Describe the small bodies in our solar system. 23C3 Explain where non-planetary objects may be found in the solar system.
166–67	**Review and Test Days**			Chapter 23 Test	
Chapter 24: Stars, Galaxies, and the Universe (6 days) Key Chapter					
168	24A Stars	588–600	588–600	Info Boxes: Mapping the Skies, Fingerprinting Stars Worldview Sleuthing: Extraterrestrial Intelligence Links: Hubble Space Telescope, James Webb Space Telescope, Starry Night, Scale of Distance to Closest Stars, Constellation Finder Template, Extraterrestrial Intelligence Webquest Rubric, Spectroscopy Demonstrations: Parallax, Bright-Line Spectra Lab 24A: *Sky Map*—Observing Stars and Constellations	**EQ:** What have we learned about stars through observation? **Objectives:** 24A1 Find stars in the sky using constellations. 24A2 Describe ways that stars are named. 24A3 Identify and describe the common properties of stars. 24A4 Compare the sun with other stars. 24A5 Classify stars by their luminosity and color. 24A6 Describe the common remnants of stars after they die.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
169	24B Gas to Galaxies	601–6	601–6	Life Connection: Astrobiology Links: Scale of the Galaxy, Names of the Milky Way, Sky Survey Lab 24B: *Going the Distance*—Understanding Parallax and Stellar Distances	**EQ:** Besides stars, what else is in the universe? **Objectives:** 24B1 Describe and classify various objects in the universe. 24B2 Differentiate between a double star and a binary star. 24B3 Identify and classify various kinds of star clusters. 24B4 Summarize the history leading to the recognition of what a galaxy is. 24B5 Classify galaxies by their shapes and sizes.
170	Lab Day			Lab 24A or Lab 24B	
171	24C The Universe and Its Origin	606–15	606–15	Info Box: Danny Faulkner Biblical Origins: Theistic Evolution Links: Red Shift, CMBR, Big Bang theory, Anisotropic Synchrony Convention	**EQ:** How did the universe form? **Objectives:** 24C1 Differentiate between the two competing cosmogonies. 24C2 Discuss evidence used to support the Big Bang theory of cosmogony. 24C3 Summarize various attempts to solve the starlight/distance problem in a creationist theory of cosmogony. 24C4 Validate the significance of Earth and humans in a vast universe.
172–73	**Review and Test Days**			Chapter 24 Test	
Chapter 25: Space Exploration (7 days) Enrichment Chapter					
174	25A Telescopes	619–23	619–23	Links: Arecibo Observatory, Hubble Space Telescope, James Webb Space Telescope Demonstration: Refracting Telescopes Google Earth Links: Mauna Kea, Arecibo Radio Telescope	**EQ:** How do telescopes work? **Objectives:** 25A1 Evaluate the importance of space exploration. 25A2 Classify telescopes by their structure. 25A3 Explain the function and limitations of various kinds of telescopes.
175	25B Rockets, Satellites, and Probes	624–34	624–34	Careers: Serving God as an Aerospace Engineer Links: *Sputnik*, Seven Minutes of Terror, *Curiosity* Lab 25A: *Reaction Time*—Understanding Reaction Engines	**EQ:** How can we explore space without leaving Earth? **Objectives:** 25B1 Explain how a rocket works. 25B2 Identify the challenges of exploring the solar system. 25B3 Contrast satellites, probes, and landers. 25B4 Explain how satellites, probes, and landers are used.

Day	Section	ST Pages	TE Pages	Teacher Resources	Essential Questions Content Objectives
176	25C Manned Space Exploration	635–45	635–45	Case Study: No Safe Return Life Connection: Critternauts Links: Man on the Moon, We Choose to Go to the Moon, Project Mercury, Project Gemini, Project Apollo, Lunar Landing, ISS, Night Earth Orbit, ISS Sighting, SpaceX, Virgin Galactic, Model Rocket Rubric, NAR, ESTES™, Quest Aerospace, Aerotech Lab 25B: *Liftoff!*—Building and Launching Rockets (2 days)	**EQ:** Are the benefits of manned space exploration worth the risks? **Objectives:** 25C1 Summarize the challenges of sending humans into space. 25C2 Summarize the history of manned space exploration. 25C3 Evaluate the risks and benefits of manned space exploration.
177	Lab Day 1			Lab 25A or Lab 25B	
178	Lab Day 2			Lab 25A or Lab 25B	
179–80	**Review and Test Days**			Chapter 25 Test, Final Exam	