# Lesson Plan Overviews

# Science 6, 4th edition

|  |
| --- |
| **Chapter 1: Earthquakes and Volcanoes** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 1 | 3–5 | 1-3 | 1 | **Unit and Chapter Opener**• Recognize the interrelationship of science concepts• Explain that ideas about science change, but that God never changes• Preview unit and chapter content*Creation under the curse of sin**God’s omniscience**Interrelationship of the parts of creation**God’s use of creation for His glory**Man’s finite knowledge* |  |
| 2 | 6–9 | 4–7 | 2–3 | **Earthquakes**• Identify some of the results of the constant changes on the earth’s surface• Explain the theory of plate tectonics• Infer that plate boundaries are unstable areas of the earth’s surface• Interpret diagrams of the parts of the earth and the different kinds of faults• Relate the movement of plates to faults and earthquakes*The Flood as God’s judgment on sin**God’s omnipotence**God’s use of creation for His purposes* | Using modelsInferring |
| 3 | 10–13 | 8–11 | 3–6 | **Earthquake Waves**• Compare and contrast body waves and surface waves• Explain differences between the Mercalli scale and the Richter scale• Describe disasters related to earthquakes*Christ as solid foundation for life**Man’s God-given dominion**Man’s demonstration of God’s love* | Measuring and using numbersUsing modelsCommunicating |
| 4 | 14–15 |  | 7–8 | **Activity:** **Practice using a scientific method**• Practice a scientific method | HypothesizingRecording dataIdentifying variables |
| 5–6 | 16–17 | 12–13 | 9–10 | **Activity:** **Construction Site**• Model the effects of an earthquake on a building• Design and construct a structure that can withstand a simulated earthquake• Record and analyze information to form conclusions• Identify variables*Christians as dependable workers**Christians as faithful workers* | PredictingExperimentingObservingMaking and using modelsRecording dataIdentifying and controlling variables |
| 7 | 18–21 | 14–17 | 11–12 | **Volcanoes**• Explain the causes of a volcanic eruption• Identify the parts of a volcano• Describe three ways volcanoes are classified | Classifying |
| 8-9 | 22–23 | 18–19 | 13–14 | **Activity:** **Create an Eruption**• Design a model volcano based on one of the three kinds of volcanoes• Construct a model volcano• Communicate the type of volcano made and the process used to make the volcano• Compare the model volcano to an actual volcano | PredictingMaking and using modelsMeasuringObservingCommunicating |
| 10 | 24–26 | 20–22 | 15–16 | **Effects of Volcanoes; Other Thermal Eruptions**• Identify possible dangers of volcanoes• List some of the meteorological effects of a volcanic eruption• Name some of the products of volcanoes• Describe other kinds of thermal eruptions*God as Master of creation**God’s use of forces for Earth’s benefit* | Using a modelInferring |
| 11–12 | 27 | 23 | 17–18 | **Exploration:** **I.N.V.E.N.T.**• Identify the dangers and difficulties associated with exploring volcanoes• Design a piece of equipment that would help in volcano research | Communicating |
| 13 | 28–29 |  |  | **Graphic Organizers**• Use graphic organizers to identify related concepts• Recognize that graphic organizers have different purposes |  |
| 14 | 30 | 24 | 19–20 | **Chapter Review**• Recall concepts and terms from Chapter 1• Apply knowledge to everyday situations |  |
| 15 | 30 |  |  | **Chapter 1 Test**• Demonstrate knowledge of concepts taught in Chapter 1 |  |
| **Chapter 2: Weathering and Erosion** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 16 | 31 | 25 | 21 | **Chapter Opener**• Recognize that scientific inferences are not always accurate• Preview the chapter content |  |
| 17 | 32–35 | 26–29 | 22 | **Rock Cycle and Mechanical Weathering**• Identify the three types of rocks and explain how they are formed• Differentiate between mechanical and chemical weathering• Define and give examples of mechanical weathering*The Flood ‘s effect on the earth* | Making and using modelsInferring |
| 18 | 36–39 | 30–33 | 23–24 | **Chemical Weathering and Caves**• Define and give examples of chemical weathering• Describe how acid rain forms• Summarize how chemical weathering forms limestone caves*Man as steward of God’s creation**God’s perfect design**God’s use of forces for Earth’s benefit* | Making and using models |
| 19 | 40–41 |  | 25–26 | **Activity: Measurement**• Measure length to the nearest millimeter• Measure mass to the nearest gram• Measure volume to the nearest milliliter*Man’s demonstration of God’s love**Christians as faithful workers* | Measuring |
| 20 | 42–44 | 34–36 | 27–28 | **Soil**• Compare the different kinds of soil and their relative sizes• Determine the factors that determine the composition of soil• Illustrate and describe the five soil horizons*God’s provision for man* | InferringClassifyingInterpreting data |
| 21 | 45 | 37 | 29–30 | **Exploration:** **Soil Detective**• Interpret the procedure of a flow chart• Analyze a soil sample | ObservingInterpreting data |
| 22–23 | 46–47 | 38–39 | 31–32 | **Activity:** **Retaining the Right Amount**• Record observations• Analyze experiment results• Predict the amount of particles needed for a specific soil sample | HypothesizingPredictingMeasuringExperimentingObservingIdentifying variablesRecording data |
| 24 | 48–51 | 40–43 |  | **Erosion**• Differentiate between erosion and weathering• Identify kinds of mass wasting• Describe how sediments are carried and deposited by a stream*God as Master of creation**God’s use of forces for Earth’s benefit**Man’s use of wisdom to serve his fellow man**Spirit-filled Christians* | Using models |
| 25 | 52–53 | 44–45 | 33–34 | **Activity: Stream Erosion**• Record and analyze data• Measure volume, angles, and mass accurately• Experiment to discover how the steepness of a slope affects erosion | HypothesizingMeasuringExperimentingObservingIdentifying variablesRecording data |
| 26 | 54–57 | 46–49 | 35–36 | **Wave, Wind, and Ice Erosion**• Demonstrate an understanding of the real-life problems of sand erosion and deposition• Summarize how water, wind, and ice cause erosion• Compare the effects of ice erosion with other kinds of erosion• Describe how rocks are eroded by glaciers*Man as steward of God’s creation**Man’s use of God’s resources**Man’s responsibility for his actions* | Using modelsInferring |
| 27 | 58–59 |  | 37–38 | **PQ3R** • Use the PQ3R method to read informational text |  |
| 28 | 60 | 50 | 39–40 | **Chapter Review**• Recall concepts and terms from Chapter 2• Apply knowledge to everyday situations |  |
| 29 | 60 |  |  | **Chapter 2 Test**• Demonstrate knowledge of concepts taught in Chapter 2 |  |
| **Chapter 3: Natural Resources** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 30 | 61 | 51 | 41 | **Chapter Opener**• Explain how God’s wisdom and mercy are demonstrated in natural disasters• Preview the chapter content*God’s uses of forces for Earth’s benefit* |  |
| 31 | 62–65 | 52–55 | 42 | **Nonrenewable Energy Resources**• Differentiate between renewable and nonrenewable resources• Explain how fossil fuels formed• Identify the sources and uses of petroleum, natural gas, and coal• Describe the benefits and problems related to the use of nuclear energy*God’s provision for man**Man’s uses of God’s resources**The Flood’s effect on the earth* | Inferring |
| 32 | 66–67 | 56–57 | 43–44 | **Activity: Clean Up the Spill**• Explain the different methods of cleaning up an oil spill• Predict the best method for removing the oil• Use a model to demonstrate the different methods of cleanup• Compare the methods used in this activity with the methods used in a real oil spill*Man’s responsibility for his actions**Man’s demonstration of God’s love* | HypothesizingPredictingMaking a modelObservingInferring |
| 33 | 68–71 | 58–61 | 45–46 | **Renewable Energy**• Describe some renewable energy resources• Compare and contrast renewable sources of energy | Using a model |
| 34 | 72–75 | 62–65 | 47–48 | **Minerals and Soil**• Name and identify the uses of several metals• Recognize soil as a natural resource• Identify several ways to conserve soil• Defend the idea that people can change nature to meet their needs*God’s Word as the only true source of guidance**God’s plan for worship**God’s refining in Christian’s lives**Man’s use of God’s resources* *Man’s God-given dominion* | Inferring |
| 35 | 76–77 | 66–67 | 49–50 | **Activity: Erosion Prevention**• Make models of soil without erosion prevention and soil with erosion prevention• Infer how certain materials prevent soil erosion | ObservingMaking a modelRecording dataInferring |
| 36–37 | 78–83 | 68–73 | 51–52 | **Water Resources; Preserving Our Resources**• Identify water as a natural resource• Explain how the ocean is the source of most fresh water• Identify locations of fresh water• Describe the different kinds of ice• Explain what it means to reuse, reduce, or recycle something*God’s design for Earth’s resources**God’s provision for man**Man as a steward of God’s creation* |  |
| 38 | 84–85 |  | 53–54 | **Exploration: Water Conservation**• Compare the differences between water accessibility in Bible times and water accessibility now• Identify several ways to conserve water• Recognize Christ as the Living Water*God’s gift of eternal life**Salvation through Christ* | Measuring and using numbersObservingInferring Collecting and recording data |
| 39 | 86–87 | 74–75 | 55 | **Technology: Autonomous Underwater Vehicles**• Identify examples of technology• Explain what an autonomous underwater vehicle is• Identify uses for AUVs• Describe how the *Seaglider* functions*Man’s use of wisdom to serve his fellow man**Man’s God-given dominion**Man’s God-given curiosity* |  |
| 40 | 88 | 76 | 56 | **Chapter Review**• Recall concepts and terms from Chapter 3• Apply knowledge to everyday situations |  |
| 41 | 88 |  |  | **Chapter 3 Test**• Demonstrate knowledge of concepts taught in Chapter 3 |  |
| **Chapter 4: Cells and Classification** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 42 | 91–93 | 77–79 | 57 | **Unit and Chapter Opener**• Recognize the interrelationship of science concepts• Recognize that God supplies the needs of every organism• Preview the chapter content*God’s perfect creation**God’s perfect design* | Classification |
| 43 | 94–98 | 80–84 |  | **Cells and Organisms**• Distinguish between living things and nonliving things• Identify five characteristics of living things• Identify men associated with the development of the microscope• Describe the cell theory*Creation under the curse of sin**Death and decay as a result of sin**Consequences of sin**God’s perfect creation**God’s plan for salvation**Man’s finite knowledge**New life in Christ* | ObservingUsing modelsInferringClassifying |
| 44 | 99–100 |  | 58 | **Using a Microscope**• Identify the parts of a microscope• Explain how to use a microscope | Observing |
| 45 | 101–3 | 85–87 | 59–62 | **Cells**• Identify a cell as a living unit• Discuss the relationship of cells, tissues, organs, and systems• Identify cell structures• Compare and contrast plant and animal cells | Inferring |
| 46–47 | 104 | 88 |  | **Activity: Cell Model**• Demonstrate knowledge of cell structure• Construct a 3-D model of a cell• Prepare a written report | Making and using a modelCommunicating |
| 48–49 | 105 | 89 | 63 | **Exploration: An Organized Cell**• Correlate the function of cell structure to another organization• Write and present a skit to compare a cell to an organization | Making and using a modelCommunicating |
| 50 | 106–7 | 90–91 |  | **Reproduction of cells**• Describe the process of cell division—both mitosis and meiosis• Recognize when mitosis occurs and when meiosis occurs*God’s plan for heredity* |  |
| 51 | 108 | 92 | 64 | **Activity: Classifying**• Distinguish groups according to chosen criteria• Complete a classification chart | ObservingClassifyingCommunicating |
| 52 | 109–13 | 93–97 | 65 | **Living Kingdoms**• Name the six kingdoms• Identify characteristics of each kingdom• Explain how man is similar to and yet different from other living organisms*Effects of a little sin**God’s perfect design**God’s provision for His creation**Man as God’s special creation* | Making and using modelsInferring Classifying |
| 53 | 114–15 | 98–99 | 66–68 | **Naming Organisms**• Recognize that Carolus Linnaeus was responsible for the method of classification that we use• List the levels of the classification system from the largest to smallest• Compare the common names and scientific names of organisms• Write a scientific name properly*God’s orderly design**God’s variety in creation**God’s omniscience**Man as steward of God’s creation* |  |
| 54 | 116 | 100 | 69–70 | **Chapter Review**• Recall concepts and terms from Chapter 4• Apply knowledge to everyday situations |  |
| 55 | 116 |  |  | **Chapter 4 Test**• Demonstrate knowledge of concepts taught in Chapter 4 |  |
| **Chapter 5: Animal Classification** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 56 | 117 | 101 | 71 | **Chapter Opener**• Recognize that studying animals helps us see God’s care for His creation• Preview the chapter content*God’s care for His creation**Man’s God-given dominion**Man’s responsibility for his actions**Man’s imitation of God’s creation* |  |
| 57 | 118–21 | 102–5 | 72 | **Sponges, Stinging Animals, and Mollusks**• Recognize *invertebrates* and *vertebrates* as broad categories to distinguish animals• Recognize that unique animal characteristics allow classification• Describe the unique characteristics of the phyla that include sponges, jellyfish, and mollusks*God’s perfect design**God’s provision for His creation**God’s provision for man* | ObservingClassifyingInferring |
| 58 | 122–23 | 106–7 | 73 | **Technology: Fiber Optic Sponges**• Compare the spicules of a Rossella sponge with optic fibers• Identify ways that studying a Rossella sponge may improve fiber optic technology• Recognize man’s duplication of God’s creation*Man’s imitation of creation**God’s perfect design* | Making and using modelsInferring |
| 59 | 124 | 108 | 74 | **Exploration: Snail Terrarium**• Construct a terrarium• Observe land snails• Record observations | ObservingRecording data |
| 60 | 125–27 | 109–11 | 72, 75 | **Echinoderms, Flatworms, Roundworms, Segmented Worms**• Identify animals with radial symmetry and tube feet as echinoderms• Describe characteristics of flatworms, roundworms, and segmented worms• Compare a free-living worm with a parasite• Explain why worms can be both helpful and harmful to man | Observing |
| 61 | 128–31 | 112–15 | 76–78 | **Arthropods**• Identify crustaceans, arachnids, centipedes, millipedes, and insects as arthropods• Describe basic characteristics of each kind of arthropod*God’s use of creation for His glory**Creation models biblical truth* | ObservingInferring |
| 62 | 132–33 | 116–17 | 79–80 | **Activity: Mealworm Movement**• Observe the larval stage of complete metamorphosis• Observe the pupal stage of complete metamorphosis• Collect and record observation data | ExperimentingObservingIdentifying and controlling variablesRecording data |
| 63 | 134–37 | 118–21 | 81 | **Fish and Amphibians**• Identify fish as cold-blooded animals that breathe through gills• Identify amphibians as cold-blooded animals that live part of their lives in water and part on land• Recognize that fish and amphibians are both cold-blooded animals• Describe the life cycle of most amphibians*God’s provision for His creation**God’s perfect design* | InferringClassifying |
| 64 | 138–41 | 122–25 | 82 | **Reptiles and Birds**• Identify characteristics of reptiles• Identify characteristics of birds• Compare similarities and differences of birds and reptiles*God’s power over sin**God’s perfect design**God’s provision for His creation**Creation models biblical truth* | Measuring and using numbersClassifying |
| 65–66 | 142–47 | 126–31 | 83–84 | **Mammals and Humans**• Identify four characteristics of mammals• Explain how marsupials and monotremes are different from other mammals• Recognize how humans are different from mammals*Man created in God’s image**Man as God’s special creation* | ClassifyingMaking and using models |
| 67 | 148–49 | 132–33 | 85–86 | **Activity: Blubber Mitts**• Write a hypothesis• Record temperatures and observations• Relate the effectiveness of shortening or lard as an insulator to the effectiveness of animal blubber | PredictingExperimentingMeasuringInferringObservingCollecting and recording data |
| 68–69 | 150–51 | 134–35 | 87 | **Exploration: Animal Robotics**• Associate animal parts with mechanical tools• Research to design a robotic animal• Prepare a drawing and description of a robotic animal*Man’s God-given dominion**Man’s God-given curiosity**Man’s imitation of God’s creation**Man’s responsibility to glorify God* | Inferring |
| 70 | 152 | 136 | 88 | **Chapter Review**• Recall concepts and terms from Chapter 5• Apply knowledge to everyday situations |  |
| 71 | 152 |  |  | **Chapter 5 Test**• Demonstrate knowledge of concepts taught in Chapter 5 |  |
| **Chapter 6: Plant Classification** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 72 | 153 | 137 | 89 | **Chapter Opener**• Recognize that man’s knowledge must continually be re-evaluated• Preview the chapter content*Man’s finite knowledge**God’s orderly design**God as Master of creation* |  |
| 73 | 154–57 | 138–41 | 90–91 | **Nonvascular Plants; Seedless Vascular Plants**• Describe differences between vascular and nonvascular plants• Classify vascular plants as seed-bearing plants or seedless plants• Identify kinds of seedless vascular plants• Identify the parts of a fern• Determine facts and opinions*God’s love of beauty**God’s variety in creation* | ObservingInferring |
| 74 | 158–61 | 142–45 | 92–93 | **Gymnosperms**• Classify seed-producing plants as gymnosperms and angiosperms• Identify four kinds of gymnosperms• Identify two kinds of conifers• Describe ways that man uses conifers*Christian’s dependence on God’s Word**Giving God the best* | Measuring and using numbersUsing ModelsObserving InferringClassifying |
| 75 | 162–65 | 146–49 | 94 | **Angiosperms**• Recognize that angiosperms include trees, shrubs, and flowering plants• Distinguish among annuals, biennials, and perennials• Name some ways that angiosperms are used• Compare monocotyledons and dicotyledons*Man’s God-given dominion**Man’s use of wisdom to serve his fellow man* | ObservingInferringClassifying |
| 76 | 166 | 150 | 95–96 | **Activity: Classification Check**• Create a visual illustrating how plants are classified | ObservingClassifyingCommunicating |
| 77 | 167 | 151 |  | **Exploration: Plant Products**• Research products made from a given plant• Prepare a display to demonstrate research results• Present a display | Communicating |
| 78 | 168–71 | 152–55 | 97–98 | **Plant Parts**• Identify the two kinds of vascular tissue and their functions• Summarize three main functions of a plant stem• Compare and contrast herbaceous and woody stems• Summarize three main functions of root system• Compare and contrast taproots, fibrous roots, and aerial roots*The Bible as final authority**Faith in the Word of God**God’s perfect design**God’s provision for His creation* | Using modelsInferring |
| 79 | 172–73 | 156–57 | 99–100 | **Activity: How Big is My Tree**• Measure the circumference, height, and crown of a tree• Calculate the tree’s point value• Create a graph to show relationships• Interpret graphs• Compare data | MeasuringObservingInferringCommunicatingCollecting, recording, and interpreting data |
| 80 | 174 | 158 | 101–2 | **Chapter Review**• Recall concepts and terms from Chapter 6• Apply knowledge to everyday situations |  |
| 81 | 174 |  |  | **Chapter 6 Test**• Demonstrate knowledge of concepts taught in Chapter 6 |  |
| **Chapter 7: Atoms and Molecules** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 82 | 177–79 | 159–61 | 103 | **Unit and Chapter Opener**• Recognize the interrelationship of science concepts• Recognize that man’s inferences are sometimes inaccurate• Preview unit and chapter content*God as master of creation**God’s creation of invisible forces**God’s holding all creation together**God’s omniscience**Man’s finite knowledge* |  |
| 83 | 180–83 | 162–65 | 104 | **Atoms**• Describe and label the size, charge, and location of each part of an atom• Recognize that an element is made of only one kind of atom• Differentiate between atomic mass and atomic number*God as Master of creation**Man’s finite knowledge**Faith in the Word of God* | Making and using models |
| 84 | 184–87 | 166–69 | 105–6 | **Elements**• Recognize that the periodic table is a classification system• Describe the process Mendeleev used for arranging the elements• Identify the types of information provided for each element on the periodic table• Identify the terms *period* and *group* as they relate to the periodic table • Differentiate among categories on the periodic table*God’s orderly design* | ClassifyingInferringMaking models |
| 85 | 188 | 170 | 107–8 | **Exploration: Wanted: U or Your Element**• Write about an element based on research• Construct a visual aid | Communicating |
| 86 | 189–91 | 171–73 | 109 | **Compounds, Chemical Formulas, Chemical Reactions**• Explain that a chemical change occurs when atoms of different elements combine• Demonstrate how to read and write a chemical formula• Differentiate between synthesis and decomposition reactions | ObservingPredictingInferring |
| 87 | 192–93 | 174–75 | 110 | **Atomic Bonds**• Research products made from a given plant• Prepare a display to demonstrate research results• Present a display | Making and using modelsInferring |
| 88 | 194–95 | 176–77 | 111–12 | **Activity: Hot or Cold**• Evaluate whether a chemical reaction has occurred• Collect data to identify a reaction as endothermic or exothermic | PredictingObservingMeasuringExperimentingCollecting and recording data |
| 89 | 196–99 | 178–81 | 113–14 | **Acids and Bases**• Compare and contrast characteristics of acids and bases• Describe the purpose of an indicator• Identify products that are acids, bases, or salts• Summarize how a salt forms*God’s creation for man’s enjoyment* | ObservationInferringExperimenting |
| 90 | 200–201 | 182–83 | 115–16 | **Activity: pH Indicator**• Identify a solution as an acid or a base by using a pH indicator solution• Observe the effects of an acid or a base on an indicator• Estimate the strength of an acid or base solution by interpreting a table  | PredictingMeasuringObservingRecording data |
| 91 | 202–3 | 184–85 | 117–18 | **Activity: Which Antacid is Best?**• Hypothesize about the effectiveness of several antacids• Make and use a model of “upset stomach” acid• Infer information from the model  | HypothesizingExperimentingObservingInferringRecording data |
| 92 | 204 | 186 | 119–20 | **Chapter Review**• Recall concepts and terms from Chapter 7• Apply knowledge to everyday situations |  |
| 93 | 204 |  |  | **Chapter 7 Test**• Demonstrate knowledge of concepts taught in Chapter 7 |  |
| **Chapter 8: Electricity and Magnetism** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 94 | 205 | 187 | 121 | **Chapter Opener**• Recognize God’s use of man’s curiosity• Preview chapter content*Man’s finite knowledge**Man’s God-given curiosity* |  |
| 95 | 206–9 | 188–91 | 122 | **Static Electricity; Current Electricity**• Explain what causes static electricity• Identify the two things needed for an electric current to flow• Describe the characteristics of conductors, resistors, and insulators*Man as steward of God’s creation**Man’s God-given dominion* | ExperimentingInferring |
| 96 | 210–11 | 192–93 | 123–24 | **Activity: An “Unbreakable” Circuit**• Design and build an “unbreakable” circuit • Experiment to test hypotheses | HypothesizingPredictingExperimentingInferringIdentifying and controlling variables |
| 97 | 212–15 | 194–97 | 125–28 | **Circuits; Measuring Electricity; Batteries**• Differentiate between parallel circuits and series circuits• Distinguish among the three basic units of electrical measurement: volt, ampere, and watt• Explain how a battery works*God’s perfect design**God’s provision for His creation* | Measuring and using numbersExperimentingMaking and using models |
| 98 | 216–18 | 198–200 | 129 | **Magnetism**• Describe what happens to magnets at their poles• Explain the relationship between magnetism and electricity• Identify and describe the parts of a generator• Explain how a generator works | Observing |
| 99 | 219 | 201 | 130 | **Exploration: Famous Inventors**• Research an inventor• Present a speech honoring an inventor | Communicating |
| 100 | 220–21 | 202–3 | 131–32 | **Activity: Build an Electromagnet**• Identify ways to increase a wire’s magnetism• Predict ways to strengthen an electromagnet• Experiment to test predictions | HypothesizingPredictingExperimentingObservingInferringIdentifying and controlling variablesRecording data |
| 101 | 222–23 | 204–5 | 133 | **Technology: Magnetic Levitation**• Explain how electromagnets are used in maglev trains• Identify some ways a maglev train may benefit the environment and transportation | Making and using models |
| 102 | 224–27 | 206–9 | 134 | **Electronics**• Explain the difference between electricity and electronics• Identify the benefits of an integrated circuit• Identify some of the parts of a computer*God’s perfect creation* | ObservingExperimentingRecording and interpreting dataCommunicating |
| 103 | 228 | 210 | 135–36 | **Chapter Review**• Recall concepts and terms from Chapter 8• Apply knowledge to everyday situations |  |
| 104 | 228 |  |  | **Chapter 8 Test**• Demonstrate knowledge of concepts taught in Chapter 8 |  |
| **Chapter 9: Motion and Machines** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 105 | 229 | 211 | 137 | **Chapter Opener**• Recognize that God values creativity• Preview the chapter content*Man’s responsibility to glorify God* |  |
| 106 | 230–33 | 212–15 | 138 | **Motion**• Differentiate between speed and velocity• Explain why a reference point is needed to observe motion• Describe the relationship of mass and velocity to momentum*Christ as a Christian’s reference point**Bible as final authority* | Using numbersInferring |
| 107 | 234–37 | 216–19 | 139–40 | **Laws of Motion**• Identify Newton’s three laws of motion • Explain that both gravity and friction work against inertia*Man’s finite knowledge**God’s omniscience**Experimenting* | InferringUsing numbersUsing modelsDefining operationally |
| 108 | 238–39 | 220–21 | 141–42 | **Activity: Mini Cars in Motion**• Plan a demonstration to illustrate the laws of motion• Experiment to show each of the laws of motion with toy cars• Identify the laws of motion in real-life situations*God’s orderly design* | ExperimentingMaking and using modelsObservingCommunicating |
| 109 | 240 | 222 | 143–44 | **Exploration: Roller Coaster**• Design and make a model roller coaster• Discover relationships between slope, speed, and momentum | Making and using modelsInferring |
| 110 | 241–43 | 223–25 | 145–46 | **Work; Simple Machines: Levers**• Explain that work equals force times distance• Describe a lever• Identify several common levers• Differentiate among the three classes of levers*God’s design of man’s body* | Using numbersUsing modelsInferringClassifying |
| 111 | 244–47 | 226–29 | 147–51 | **Pulleys; Wheels and Axles; Inclined planes; Wedges; Screws; Compound Machines**• Describe a pulley, wheel and axle, inclined plane, wedge, and screw• Discern between a fixed pulley, a moveable pulley, and a block and tackle• Explain what a compound machine is | Making and using modelsInferringObservingClassifying |
| 112 | 248–49 | 230–31 | 152 | **Activity: How Much Force**• Experiment to show that an inclined plane reduces the amount of force needed to do work• Measure metrically in newtons and centimeters• Define operationally the results of the activity | MeasuringExperimentingObservingDefining operationallyRecording data |
| 113 | 250 | 232 | 153–56 | **Chapter Review**• Recall concepts and terms from Chapter 9• Apply knowledge to everyday situations |  |
| 114 | 250 |  |  | **Chapter 9 Test**• Demonstrate knowledge of concepts taught in Chapter 9 |  |
| **Chapter 10: Stars** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 115 | 253–55 | 233–35 | 157 | **Unit and Chapter Opener**• Recognize the interrelationship of science concepts• Recognize how God’s glory is reflected in the vastness of the stars• Preview unit and chapter content*God as master of creation**God’s creation reflects His glory**God’s omniscience**God’s omnipotence* |  |
| 116 | 256–59 | 236–39 | 158 | **Our Closest Star; Characteristics of Stars**• Explain how stars produce their own light• Distinguish between apparent magnitude and absolute magnitude of stars• Identify classifications of stars according to color• Explain ways distance is measured in space• Interpret diagrams*God as only Creator**God’s omniscience**God’s use of creation for His glory**God’s use of creation for His purposes* | Measuring and using numbersMaking and using modelsInferringClassifying |
| 117 | 260–63 | 240–43 | 159–60 | **Kinds of Stars**• Differentiate between a pulsating variable star and an eclipsing variable star• Describe the causes of novas and supernovas• Describe how astronomers think neutron stars and black holes are formed | Using modelsInferringObserving |
| 118 | 264–67 | 244–47 | 161 | **Observing the Heavens**• Identify various constellations• Defend why a Christian should not be involved in astrology• Describe the difference between a reflecting telescope and a refracting telescope• Identify instruments used to study the stars*Faith in God’s Word for guidance**God’s Word as the only true source of guidance**God’s omnipotence**God’s use of creation for His glory* | ClassifyingObservingMaking and using models |
| 119 | 268 | 248 |  | **Activity: Pinhole Constellations**• Make a model of a constellation• Recognize and name several star groups and constellations | Making and using modelsObserving |
| 120 | 269 | 249 |  | **Exploration: A Different Look**• Make a model of a constellation• Plot points on a graph• Relate the model to the relative distances of stars | MeasuringMaking and using models |
| 121 | 270–75 | 250–55 | 162–64 | **Star Groups**• Identify how many stars are in a binary star group and in a multiple star group• Differentiate between an open star cluster and a globular cluster• Identify our galaxy as the Milky Way• Recognize that our galaxy is part of a cluster of galaxies called the Local Group• Describe asteroids, meteoroids, meteors, meteorites, and comets*God’s omnipotence**God as Master of creation**God’s use of creation for His glory**God as only Creator* | ObservingInferringUsing models |
| 122 | 276–77 |  | 165–66 | **Exploration: Stargazing**• Interpret and use a star chart• Identify objects in the night sky• Record observations | ObservingRecording data |
| 123 | 278–79 | 256–57 | 167–68 | **Activity: Crater Creations**• Measure mass and length• Use a chart to record information• Make and test predictions  | HypothesizingMeasuringObservingRecording dataIdentifying and controlling variablesCommunicating |
| 124 | 280 | 258 | 169–70 | **Chapter Review**• Recall concepts and terms from Chapter 10• Apply knowledge to everyday situations |  |
| 125 | 280 |  |  | **Chapter 10 Test**• Demonstrate knowledge of concepts taught in Chapter 10 |  |
| **Chapter 11: Solar System** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 126 | 281 | 259 | 171 | **Unit and Chapter Opener**• Recognize that God’s creation is orderly• Preview the chapter content*God’s orderly design**God’s perfect design**God’s provision for his creation* |  |
| 127 | 282–85 | 260–63 | 172 | **Space Exploration**• Explain how a rocket uses thrust to launch• Explain characteristics of different tools for space exploration: rockets, space shuttle, satellites, probes• Distinguish between a space shuttle and a probe• Identify ways that living in space is different from living on Earth*Man’s brevity of life* | InferringCommunicating |
| 128 | 286–87 | 264–65 | 173–74 | **Technology: Inflatable Spacecraft**• Describe some types of inflatable spacecraft • Understand the basics of inflatable technology• Explain the advantages of inflatable spacecraft*Man’s responsibility to glorify God**God’s orderly creation* | Using numbersInferringMaking and using models |
| 129 | 288–89 | 266–67 | 175–76 | **Activity: Rocket Race**• Hypothesize how design affects the performance of a balloon rocket• Construct a balloon rocket• Demonstrate an understanding of Newton’s third law of motion | HypothesizingMeasuringMaking and using modelsExperimentingObservingInferringRecording data |
| 130 | 290–93 | 268–71 | 177–75 | **The Sun and the Seasons**• Identify the parts of the sun• Describe the characteristics of a solar storm• Explain why Earth experiences seasons*God’s perfect design**God’s orderly design* | InferringMeasuring and using numbersMaking and using models |
| 131 | 294–97 | 272–75 | 179–80 | **The Planets**• Describe similarities among the inner planets• Explain how man has gradually learned about the planets• Identify characteristics of Mercury, Venus, and Mars*God’s provision for man* | Inferring |
| 132 | 298–301 | 276–79 | 179–82 | **Earth; the Moon; Project Apollo; Eclipses**• Explain some ways God made Earth unique• Describe why the same side of the moon always faces Earth• Give details about the *Apollo 11* mission• Describe the causes of solar and lunar eclipses*God’s provision for man**God’s omnipotence**God’s loving care* | Making and using modelsInferringCommunicating |
| 133 | 302–3 | 280–81 | 183–84 | **Activity: Spare Parts Solar Oven**• Construct a solar oven that will melt a marshmallow• Infer the relationship between materials used and results | ObservingInferringIdentifying variablesRecording dataCommunicating |
| 134 | 304–7 | 282–85 | 179–80, 185 | **The Outer Planets**• Identify characteristics of each of the outer planets• Define a dwarf planet• Explain why Pluto is classified as a dwarf planet• Explain how we know information about the outer planets and the Kuiper Belt *God’s great glory**God’s omnipotence**God’s perfect design* | InferringMaking and using modelsCommunicating |
| 135 | 308–9 |  | 186 | **Exploration: Solar Walk**• Construct a scale model of the solar system• Gain a greater understanding of the vastness of our solar system*God’s vast universe**God’s love for man**God’s omnipotence* | MeasuringMaking and using models |
| 136 | 310–11 |  | 187–88 | **Exploration: Travel Brochure**• Design a travel brochure for a planet• Collect data | Collecting and recording dataCommunicating |
| 137 | 312 | 286 | 189–90 | **Chapter Review**• Recall concepts and terms from Chapter 11• Apply knowledge to everyday situations |  |
| 138 | 312 |  |  | **Chapter 11 Test**• Demonstrate knowledge of concepts taught in Chapter 11 |  |
| **Chapter 12: Plant and Animal Reproduction** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 139 | 315–37 | 287–89 | 191 | **Unit and Chapter Opener**• Recognize the interrelationship of science concepts• Recognize that man’s inferences are sometimes faulty• Preview the unit and chapter content*God’s perfect design**God’s plan for heredity**God’s plan for salvation**God’s gift of eternal life* |  |
| 140 | 318–21 | 290–93 | 192 | **Plant Reproduction**• Identify and describe each part of a flower and its function• Differentiate between pollination and fertilization• Explain how scientists classify fruits• Describe the process of germination*God’s love of beauty**God’s provision for His creation* | ClassifyingInferringObserving |
| 141 | 322–23 | 294–95 | 193–94 | **Activity: Flower Dissection**• Measure the parts of a flower• Identify the parts of a flower*God’s perfect design* | MeasuringObservingRecording dataDefining operationally |
| 142 | 324–27 | 296–99 | 195–96 | **Seeds in Cones; Spores**• Explain how conifers reproduce• Compare and contrast seeds and spores• Identify some organisms that reproduce by spores*God’s perfect design* | InferringObserving |
| 143 | 328–31 | 300–303 | 197 | **Animal Reproduction**• Recognize that animals begin as a single cell• Compare and contrast placental and marsupial development• Generalize characteristics of eggs and where they are laid• Explain benefits of some animals laying many eggs*Man as God’s special creation**Man created in God’s image**Man’s use of wisdom to serve his fellowman**Man as steward of God’s creation**God’s provision for His creation* | InferringCommunicating |
| 144 | 332–33 |  | 198 | **Exploration: What Value Does God Place on Life?**• Recognize the value that God places on life• Summarize how God provides eternal life*God’s value of life**God’s plan for salvation**God’s gift of eternal life**God’s plan and provision for man**God’s omniscience**God’s omnipotence* | Inferring |
| 145 | 334–37 | 304–7 | 199–202 | **Asexual Reproduction**• Identify some methods of asexual reproduction**Activity: It’s a Race**• Set up an experiment to observe and compare the rate of growth of a seed and of a plant cutting | HypothesizingMeasuringObservingInferringRecording dataCommunicating |
| 146 | 338 | 308 | 203–4 | **Chapter Review**• Recall concepts and terms from Chapter 12• Apply knowledge to everyday situations |  |
| 147 | 338 |  |  | **Chapter 12 Test**• Demonstrate knowledge of concepts taught in Chapter 12 |  |
| **Chapter 13: Heredity and Genetics** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 148 | 339 | 309 | 205 | **Unit and Chapter Opener**• Recognize that each human is uniquely planned and formed by God• Preview the chapter content*God’s plan for heredity**God’s knowledge of each individual**God’s perfect design* |  |
| 149 | 340–42 | 310–12 | 206–8 | **Heredity**• Describe the relationship among chromosomes, DNA, and genes• Distinguish between learned and inherited traits**Activity: It’s All in the Genes**• Survey a sampling group• Graph survey results*God’s knowledge of each individual**Christians as a reflection of God* | Collecting dataInterpreting dataCommunicatingInferring |
| 150 | 343–44 | 313–14 | 209–12 | **DNA: the Double Helix**• Describe the structure of a DNA molecule• Recognize James Watson and Francis as those who identified DNA structure• Identify uses of DNA testing• Create a model of a DNA molecule | InferringUsing models |
| 151 | 345 | 315 | 213–14 | **Exploration: DNA Extraction**• Extract DNA from organic matter | Observing |
| 152 | 346–49 | 316–19 | 215 | **Father of Genetics; Dominant and Recessive Genes**• Describe Mendel’s experimental procedures• Explain Mendel’s conclusions• Interpret diagrams and charts• Differentiate between dominant genes and recessive genes*Man’s responsibility for his actions**Honesty* | Inferring |
| 153 | 350–53 | 320–23 | 216–18 | **Punnett Squares; Pedigrees**• Predict genetic probability using a Punnett square• Interpret a pedigree chart• Identify some traits as sex-linked*Identified in Christ* | InferringUsing models |
| 154 | 354–55 | 324–25 | 219–20 | **Activity: Paper Pet Genetics**• Use Punnett squares to predict genotypes• Construct paper pets based on predicted genotypes | Making and using modelsInferringInterpreting dataCommunicating |
| 155 | 356–59 | 326–29 | 221 | **Genetic Disorders and Diseases; Genetic Engineering**• Identify and discuss some common genetic disease and disorders• Explain why genetic diseases are not easy to cure• Name examples of genetic engineering*God as Master of creation**God’s knowledge of each individual**God’s perfect creation**Man’s fall**God’s provision for man**Man’s God-given curiosity**Man’s use of God’s resources* | CommunicatingInferring |
| 156 | 360–61 | 330–31 | 222 | **Technology: A Useful Weed**• Explain why thale cress is considered a model plant• Describe how thale cress has been used in genetic engineering• Recognize that scientists use the same basic methods that Mendel used | Controlling variablesInferring |
| 157 | 362 | 332 | 223–24 | **Chapter Review**• Recall concepts and terms from Chapter 13• Apply knowledge to everyday situations |  |
| 158 | 362 |  |  | **Chapter 13 Test**• Demonstrate knowledge of concepts taught in Chapter 13 |  |
| **Chapter 14: Nervous System** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 159 | 365–67 | 333–35 | 225 | **Unit and Chapter Opener**• Recognize the interrelationship of science concepts• Recognize that man’s inferences are sometimes inaccurate• Preview the unit and chapter content*God as Master of creation**Man created in God’s image**God’s use of creation for His glory**God’s design for man’s body* | Inferring |
| 160 | 368–71 | 336–39 | 226 | **The Central Nervous System**• Identify the two main parts of the nervous system• Explain how the parts of the central nervous system work together• Describe the four lobes of the cerebrum• Differentiate among the functions of the three parts of the brain*God’s design of man’s body**God’s perfect design* | InferringMaking and using modelsObserving |
| 161 | 372–75 | 340–43 | 227–28 | **The Peripheral Nervous System**• Identify the parts of a neuron • Explain how the neurons send messages• Compare the two parts of the peripheral nervous system• Describe how a reflex occurs*God’s perfect design* | Making and using modelsInferringObserving |
| 162 | 376–77 | 344–45 | 229–30 | **Activity: Reaction Time**• Explore variables that affect reaction time*Christians as a reflection of God**Man’s responsibility for his actions* | PredictingMeasuringInferringIdentifying and controlling variablesRecording and interpreting data |
| 163 | 378–81 | 346–49 | 231 | **The Five Senses**• Recognize how the five senses interact with the nervous system• Interpret diagrams for information• Identify the nerves associated with hearing, sight, and smell• Explain how the different senses communicate with the brain*God’s perfect design**Faith in the Word of God* | ObservingInferringMaking and using modelsExperimenting |
| 164 | 382–83 | 350–51 | 232 | **Activity: Touch Tester**• Predict and identify areas of the body that are the most sensitive to touch | PredictingMeasuringInferringRecording data |
| 165 | 384–87 | 352–55 | 233–36 | **Memory and Sleep**• Differentiate between short-term memory and long-term memory• Identify two categories of long-term memory• Describe some characteristics of REM sleep and explain why sleep is important to the body*God’s command to remember**God’s design of man’s body**Man’s responsibility to glorify God**Man’s finite knowledge**Godly wisdom**God’s perfect design* | InferringClassifyingObserving |
| 166 | 388–91 | 356–59 | 237–38 | **The Endocrine System; Disorders and Drugs**• Compare characteristics of the nervous system and the endocrine system• Identify the function of some glands in the endocrine system• Identify some common nervous system disorders• Recognize some of the problems resulting from drug abuse*God’s design of man’s body**Consequences of sin**Man’s body as God’s temple**Man’s responsibility to glorify God**Spirit-filled Christians* | InferringObserving |
| 167 | 392–93 |  |  | **Exploration: Effects of Drug Abuse**• Identify some common categories of drugs• Explain how some types of drugs affect the nervous system• List some biblical reasons for not taking drugs*Man’s body as God’s temple**Man’s sinful nature* | Inferring |
| 168 | 394 | 360 | 239–40 | **Chapter Review**• Recall concepts and terms from Chapter 14• Apply knowledge to everyday situations |  |
| 169 | 394 |  |  | **Chapter 14 Test**• Demonstrate knowledge of concepts taught in Chapter 14 |  |
| **Chapter 15: Immune System** |
| **Lesson** | **TE pages** | **ST pages** | **AM pages** | **Objectives and Christian Worldview** | **Process Skills** |
| 170 | 395 | 361 | 241 | **Chapter Opener**• Recognize that man’s inferences are sometimes inaccurate• Preview the chapter content*God as Great Physician**God’s omnipotence* |  |
| 171 | 396–99 | 362–65 | 242 | **Diseases**• Recognize that disease is a consequence of Adam’s sin• Explain how diseases are classified• Identify four common pathogens• List some diseases caused by each pathogen*Consequences of sin**God’s omnipotence**God’s protection of His people* | Inferring |
| 172 | 400–403 | 366–69 | 243–44 | **Pathogens and Noncommunicable Diseases**• Identify and explain several ways that pathogens are spread• Differentiate between communicable diseases and noncommunicable diseases• Explain some of the jobs of an epidemiologist*God as Master of creation**God’s omniscience**God’s knowledge of each individual* | Making and using modelsInferringObservingCommunicating |
| 173 | 404–5 | 370–71 |  | **Activity: Of Epidemic Proportions**• Recognize how quickly pathogens can spread• Infer the source of contamination | Making and using modelsObservingInferringRecording dataCommunicating |
| 174 | 406–9 | 372–75 | 245 | **The Immune System**• Identify several defensive barriers of the body• List two of the body’s nonspecific defenses• Identify the body’s specific defense against pathogens• Explain some functions of white blood cells during the immune response*God’s plan for man’s body**Consequences of sin**God’s mercy**God’s perfect design* | Inferring |
| 175 | 410–13 | 376–79 | 246–49 | **Immunity; Antibodies and Antibiotics; Malfunctions of the Immune System**• Explain three ways that the body can obtain immunity• Compare and contrast antibiotics and antibodies• Identify problems that can occur when the immune system malfunctions*Man’s sinful nature**God’s power over sin**Faith in the Word of God**God’s omniscience**God’s omnipotence* | Inferring |
| 176 | 414–15 | 380–81 | 250 | **Technology: Robotic Surgery**• Compare robotic surgery with traditional surgery• Describe some advantages and disadvantages of long-distance robotic surgery*God’s love for man**Man’s demonstration of God’s love* | Inferring |
| 177 | 416 | 382 |  | **Activity: Defend and Capture**• Model the interactions between the immune system and pathogens | ObservingCommunicatingDefining operationally |
| 178 | 417 | 383 |  | **Exploration: Extra, Extra, Read All About It**• Research and write an article about a medical discovery | Communicating |
| 179 | 418 | 384 | 251–52 | **Chapter Review**• Recall concepts and terms from Chapter 15• Apply knowledge to everyday situations |  |
| 180 | 418 |  |  | **Chapter 15 Test**• Demonstrate knowledge of concepts taught in Chapter 15 |  |