**Lesson Plan Overview**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| 1 |  | 1–2 | 1 | • Define worldview• Recognize that everyone has a worldview• Identify characteristics of a Christian worldview |  |
| Chapter 1: Minerals and Rocks |
| 2 | 2–5 | 3–5 | 2 | • Recognize the interrelationship of science concepts• Distinguish facts and assumptions in the evolution/Creation debate• Evaluate evolutionary assumptions from a Christian worldviewMankind’s imitation of God’s creationThe Bible as the final authorityGod as the only Creator |  |
| 3 | 6–9 | 6–9 | 3–4 | • Identify and locate the layers of the earth• Describe features of the core, mantle, and crust• Explain how weathering and erosion affect sediment• Define humusThe Flood’s effect on the earthFall of mankindMankind’s use of God’s resources |  |
| 4 | 10–11 |  | 5–6 | Answers in Genesis• Explain why it is necessary to look at the world with a biblical perspective• Justify from a biblical viewpoint that the layers of the earth did not take millions of years to form |  |
| 5–6 | 12–17 | 10–15 | 7 | • Define mineral• Identify crystal structure, luster, hardness, color, and cleavage as characteristics of minerals• Explain how the Mohs scale is used to determine hardnessGod’s design for the earth’s resourcesGod’s design for the human body |  |
| 7 | 18–19 |  | 8 | Activity: Measuring Mass and Volume• Measure mass to the nearest gram• Measure volume to the nearest milliliter |  |
| 8–9 | 20–21 | 16–17 | 9–10 | Activity: Salty Crystals• Follow directions• Observe the formation of Epsom-salt crystals• Collect and record observation data | MeasuringExperimentingObservingIdentifying and controlling variablesCollecting, recording, and interpreting data |
| 10 | 22–26 | 18–22 | 11–13 | • Differentiate between characteristics of precious and semiprecious stones• List some common uses of minerals• Recognize that some minerals are metals• Identify where minerals are foundGod’s creation for mankind’s enjoymentGod’s salvation through Christ |  |
| 11 | 27 | 23 | 14 | Exploration: Munching Minerals• Research a mineral found in foods or beverages• Display foods or beverages that contain the mineral• Prepare an oral presentationGod’s design for the human body |  |
| 12 | 28–29 |  | 15–18 | Study Skill: PQ3R• Use the PQ3R method to read informational text |  |
| 13 | 30–33 | 24–27 | 19 | • Define rock• Identify three types of rock and explain how each is formed• List examples of igneous rock, sedimentary rock, and metamorphic rockConsequences of sinThe Bible as the final authority |  |
| 14 | 34–35 | 28–29 | 20–21 | Activity: Rock Hounding• Label rocks in a collection• Classify rocks according to chosen criteria | ObservingClassifyingCommunicatingDefining operationally |
| 15 | 36 | 30 | 22 | **Chapter Review**• Recall concepts and terms from Chapter 1• Apply knowledge to everyday situations |  |
| 16 | 36 |  |  | **Chapter 1 Test**• Demonstrate knowledge of concepts taught in Chapter 1 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 2: Fossils and Dinosaurs |
| 17 | 37 | 31 | 23 | • Evaluate evolutionary assumptions from a Christian worldviewFaith in the Word of GodGod’s orderly design |  |
| 18 | 38–40 | 32–34 |  | • Define fossil• Compare and describe some types of fossils that form in sediment: petrified fossil, mold, cast, carbon film, trace fossil• Identify other materials in which fossils are sometimes preservedThe Flood’s effect on the earth |  |
| 19 | 41 | 35 | 24–25 | • Compare beliefs of evolutionists and CreationistsThe Flood’s effect on the earthFaith in the Word of God |  |
| 20 | 42–43 | 36–37 | 26 | Activity: Fact or Theory?• Identify phrases or statements that indicate a Creationist or evolutionist viewpoint• Make inferences as to the viewpoint from which literature is writtenDiscerning what is trueThe Bible as the final authority | InferringCollecting and interpreting dataCommunicatingDefining operationally |
| 21–22 | 44–45 | 38–39 | 27–28 | Activity: Molds and Casts• Make models of fossils• Relate models to fossils |  |
| 23–24 | 46–49 | 40–43 | 29–30 | • Define paleontology• Describe how fossils are excavated and reconstructed• Explain why rock layers do not indicate the age of a buried fossil• Describe how paleontologists use carbon dating to guess the age of fossilsThe Flood’s effect on the earthFaith in the Word of God |  |
| 25–26 | 50–51 | 44–45 | 31–32 | Exploration: Fossil Dig• Model the procedures a paleontologist uses while excavating• Complete a site map |  |
| 27 | 52–55 | 46–49 | 33 | • Recognize that what is known about dinosaurs is based on the observations of fossils• Name some of the types of information that are known from fossils• Recognize some of the types of information that can be inferred from fossilsMankind’s God-given curiosityFaith in the Word of GodGod’s perfect creation |  |
| 28 | 56–59 | 50–53 | 34 | • Realize that man and dinosaurs lived at the same time• Recognize that some dinosaurs survived the Flood• Identify biblical animals that may have been dinosaurs• Name some causes of extinction• Identify reasons why dinosaurs may have become extinctFaith in the Word of GodGod’s orderly design |  |
| 29 | 60–61 |  | 35–36 | Answers in Genesis• Justify from a biblical viewpoint that dinosaurs existed and that dinosaurs and people lived together• Examine scientific evidence to show that dinosaurs are thousands of years old and not millions |  |
| 30 | 62 | 54 | 37–38 | **Chapter Review**• Recall concepts and terms from Chapter 2• Apply knowledge to everyday situations |  |
| 31 | 62 |  |  | **Chapter 2 Test**• Demonstrate knowledge of concepts taught in Chapter 2 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 3: Matter |
| 32 | 64–67 | 55–57 | 39 | • Recognize that God created different kinds of matter to melt at different temperatures• Recognize that learning about matter and how it works is important to glorify God and serve others• Give an example of how God’s design of the properties of matter benefits peopleChristian behavior as showing God’s love to othersChristians as a reflection of God |  |
| 33 | 68–71 | 58–61 | 40 | • Define matter• Explain how to find the volume of a solid and of a liquid• Differentiate between mass and weight• Recognize that volume, mass, and weight are ways by which matter can be measured• Explain how density is related to mass and volumeMankind’s use of wisdom to serve othersGod’s provision for mankindGod’s perfect design |  |
| 34 | 72–73 |  | 41 | Activity: Measuring Length, Volume, and Temperature• Measure length to the nearest millimeter• Measure volume using cubic centimeters• Measure temperature to the nearest degree |  |
| 35–36 | 74–79 | 62–67 | 42–44 | • Identify and describe the three states of matter• List examples of solids, liquids, and gases• Define physical change• Recognize that a change of state is a physical change• Differentiate among melting, freezing, vaporization, and condensationGod’s orderly design |  |
| 37 | 80–81 |  | 45–46 | Activity: A Science Experiment• Use a scientific methodDiscerning what is true |  |
| 38 | 82–83 | 68–69 | 47–48 | • Identify atoms as small particles of matter• Differentiate between elements and compounds• Contrast chemical changes and physical changes |  |
| 39 | 84–85 | 70–71 | 49–50 | Activity: Separating a Mixture• Plan a procedure for separating the parts of a mixture• Apply the physical properties of the items that make up a mixture• Experiment to test predictions• Infer how to physically remove a dissolved item from water | PredictingExperimentingObservingInferringCommunicating |
| 40 | 86–89 | 72–75 | 51 | • Define mixture• Explain the difference between a mixture and a compound• Give some examples of mixtures• Identify some ways that substances in a mixture can be separated using physical properties |  |
| 41 | 90–93 | 76–79 | 52–54 | • Identify a solution as a type of mixture• Identify the parts of a solution• Define concentration• Explain ways to increase the rate of dissolvingMankind’s demonstration of God’s love |  |
| 42 | 94–95 |  | 55–56 | Answers in Genesis• Recognize that God created the matter in the universe from nothing• Provide examples from Scripture of how the universe was created• Identify the object of faith for materialists (matter) and Christians (God and the Bible) |  |
| 43 | 96–97 | 80–81 | 57–58 | Activity: A Disappearing Act• Predict how surface area will affect the rate of dissolving• Relate results to other situations | HypothesizingExperimentingObservingInferringDefining operationally |
| 44–45 | 98–99 | 82–83 | 59 | Exploration: Float a Boat• Design a clay boat that will float• Demonstrate buoyancyGod overruling His natural laws |  |
| 46 | 100 | 84 | 60 | **Chapter Review**• Recall concepts and terms from Chapter 3• Apply knowledge to everyday situations |  |
| 47 | 100 |  |  | **Chapter 3 Test**• Demonstrate knowledge of concepts taught in Chapter 3 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 4: Energy and Heat |
| 48 | 101 | 85 | 61 | • Explain the importance of energy and heat in designing useful technologyGod’s provision for His creationMankind’s use of wisdom to serve others |  |
| 49–50 | 102–5 | 86–89 | 62 | • Define energy• Differentiate between potential energy and kinetic energy• Recognize that energy is often classified as either potential or kinetic• Recognize that the amount of thermal energy depends on the temperature and mass of a substance• Differentiate between thermal energy and temperaturePeople as stewards of God’s creation |  |
| 51 | 106–7 | 90–91 | 63–64 | Activity: Rock Heaters• Predict how the mass of a substance affects the amount of thermal energy it can transfer• Experiment to test a hypothesis | HypothesizingMeasuring and using numbersCollecting and recording dataDefining operationally |
| 52 | 108–10 | 92–94 | 65–66 | • Recognize that increasing or decreasing thermal energy can cause matter to change to a different state• Explain what happens during thermal expansion• Define calorie• Recognize that substances differ in their ability to store thermal energy |  |
| 53 | 111 | 95 | 67–68 | Exploration: Energy for Your Body• Recognize that a food Calorie is also called a kilocalorie• Calculate the resting metabolic rate• Track Calorie consumption for three days |  |
| 54–55 | 112–15 | 96–99 | 69–70 | • Define heat• Recognize that heat always flows from a warmer substance to a cooler substance• Identify and describe three ways that heat occurs• Differentiate between conductors and insulators |  |
| 56 | 116–17 | 100–101 | 71–72 | Activity: Keeping Warm• Predict which type of insulation will best keep hot water warm• Test different types of insulation to determine which is the most effective• Measure and use numbers in an activity | HypothesizingPredictingInferringCollecting and recording dataCommunicating |
| 57 | 118–20 | 102–4 | 73–75 | • Identify some common fuels• Distinguish between renewable and nonrenewable resources• Name some ways fuel is used• Give examples of unwanted heatGod’s design for the human body |  |
| 58 | 121–24 | 105–8 | 76 | • Explain why controlling heat is necessary• Explain how scientists controlled heat for the reentry of space capsules• Name two types of insulation used on space shuttles• Name some ways that thermal energy is part of our everyday lives Mankind’s imitation of creationMankind’s responsibility to glorify God |  |
| 59 | 125–26 |  | 77–78 | Answers in Genesis• Show how Christian scientists can do operational science in order to exercise biblical dominion• Give examples of discoveries that show that operational science does not need to refer to evolutionary principles to be successful• Explain why biomimicry is an example of exercising dominion to love our neighbor and to glorify God |  |
| 60 | 127 | 109 | 79 | Exploration: Moon Station• Design a piece of equipment for a moon station• Research equipment developed for the space program |  |
| 61 | 128 | 110 | 80 | **Chapter Review**• Recall concepts and terms from Chapter 4• Apply knowledge to everyday situations |  |
| 62 | 128 |  |  | **Chapter 4 Test**• Demonstrate knowledge of concepts taught in Chapter 4 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 5: Weather |
| 63 | 130–31 | 111–13 | 81 | • Recognize the interrelationship of science concepts• Recognize, from a Christian worldview, reasons for studying climate• Understand the role of meteorology in preserving human life• Apply the biblical teaching on the value of human life to everyday situations |  |
| 64–65 | 134–37 | 114–17 | 82–83 | • Describe the atmosphere• Define air pressure• Recognize that gravity pulls the atmosphere toward the earth• Name an instrument that measures air pressure• Identify and describe the two lower layers of the atmosphereMankind’s God-given ability to observeGod’s design for the human bodyGod’s orderly design |  |
| 66–67 | 138–43 | 118–23 | 84–86 | • Compare and contrast high-pressure air masses and low-pressure air masses• Define front and describe three types• Explain how temperature affects wind• Differentiate between global winds and local winds• Name examples of global winds and local winds |  |
| 68 | 144–45 | 124–25 | 87 | Activity: Temperature Changes• Predict whether water and soil will warm or cool at the same rate• Identify and control variables• Measure and record temperatures• Relate temperature changes to the ability of each substance to hold and give off heat | MeasuringObservingInferringRecording data |
| 69–70 | 146–51 | 125–31 | 88 | • Define precipitation• Differentiate among rain, sleet, snow, and hail• Define humidity• Identify and describe three basic shapes of cloudsGod’s provision for His creationChristian behavior as showing God’s love to others |  |
| 71 | 152–54 | 132–34 |  | • Describe characteristics of thunderstorms, tornadoes, and hurricanes• Differentiate between a weather watch and a weather warningMankind’s God-given dominionChristian behavior as showing God’s love to others |  |
| 72 | 155 | 135 |  | Exploration: Dangerous Extremes• Research the safety precautions for a type of severe weather• Make and present a poster or pamphlet |  |
| 73 | 156–57 | 136–37 | 89–90 | • Describe the job of a meteorologist• Read and interpret basic symbols on a weather mapMankind’s use of wisdom to serve othersChristian behavior as showing God’s love to others |  |
| 74–75 | 158–59 | 138–39 | 91–92 | Activity: Weather Observatory• Make working weather instruments• Correctly use the instruments to gather information about the weather• Record data• Use data to make weather predictions | Measuring and using numbersMaking and using modelsObservingCollecting, recording, and interpreting data |
| 76 | 160–61 |  | 93–94 | Answers in Genesis• Explain how clouds form• Defend a biblical view of evidence for one ice age against a secular view of evidence for multiple ice ages |  |
| 77 | 162 | 140 | 95 | **Chapter Review**• Recall concepts and terms from Chapter 5• Apply knowledge to everyday situations |  |
| 78 | 162 |  |  | **Chapter 5 Test**• Demonstrate knowledge of concepts taught in Chapter 5 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 6: Biomes |
| 79 | 163 | 141 | 97 | • Appreciate the effect of human intervention on a wetland biome• Apply the Bible’s teaching of stewardship of creation to biomes• Generate possible solutions to the concerns about destroying or using biomesMankind as steward of God’s creationMankind’s use of wisdom to serve others |  |
| 80 | 164–67 | 142–45 | 98 | • Differentiate between a biome and the biosphere• Identify climate as a major influence on land biomes• Describe basic characteristics of the tundra• Name some ways that animals and plants survive on the tundraGod’s provision for His creation |  |
| 81–82 | 168–71 | 146–49 | 99–100 | • Describe basic characteristics of the coniferous forest• Describe basic characteristics of the deciduous forest• Differentiate between conifers and deciduous trees• Name two ways that animals in the deciduous forest survive the changing seasonsGod’s provision for His creation |  |
| 83–84 | 172–75 | 150–53 | 101–2 | • Describe basic characteristics of grasslands• Compare and contrast prairies and savannas• Name ways some savanna grasses and trees survive the dry season• Describe characteristics that all deserts have in common• Name some ways that desert animals and plants survive the extreme temperatures and drynessGod’s provision for His creation |  |
| 85 | 176–77 | 154–55 | 103–4 | Activity: Help Prevent Water Loss!• Identify some characteristics of water-efficient plants• Predict how waxy surfaces on plants affect water loss• Relate the effectiveness of a petroleum-jelly coating on a sponge to the waxy surfaces on some leaves and stemsGod’s provision for His creation | PredictingMeasuringMaking and using modelsInferringRecording data |
| 86–87 | 178–180 | 156–58 | 101, 105–7 | • Describe basic characteristics of a tropical rain forest• Identify the layers of the rain forest• Name ways that roots benefit the rain forest trees• Recognize that biomes are only a general way to classify sections of the biosphere• Explain how a mountain can have several biomes |  |
| 88–89 | 181 | 159 |  | Exploration: Build a Biome• Research a biome• Create a model of that biome |  |
| 90–91 | 182–87 | 160–65 | 108–10 | • Name the two categories of aquatic biomes• Explain why coral reefs are called “the rain forests of the sea”• Identify the force that keeps river water moving• Describe kinds of wetlands• Recognize that people have the God-given responsibility to be good stewards of the earthGod’s provision for His creationMankind as steward of God’s creation |  |
| 92 | 188–89 |  | 111–12 | Answers in Genesis• Compare the description of the Garden of Eden to a map of modern-day Iraq• Explain why the climate and biomes changed after the Flood |  |
| 93 | 190–91 | 166–67 | 113 | Activity: From Dirty to Clean• Demonstrate how wetlands purify water• Infer how the activity models the purifying process of a real wetlandGod’s provision for His creation | Making and using modelsObservingInferring |
| 94 | 192 | 168 | 114 | **Chapter Review**• Recall concepts and terms from Chapter 6• Apply knowledge to everyday situations |  |
| 95 | 192 |  |  | **Chapter 6 Test**• Demonstrate knowledge of concepts taught in Chapter 6 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 7: Interactions in an Ecosystem |
| 96 | 194–97 | 169–71 | 115 | • Recognize the interrelationship of science concepts• Explain the relationship between the study of ecosystems and Genesis 1:28• Apply the Bible’s teaching of stewardship to creatures in a habitat |  |
| 97–98 | 198–201 | 172–75 | 116–18 | • Identify the two parts of an ecosystem• Explain the relationships between individuals, communities, and populations• Identify the functions of producers, consumers, and decomposers• Explain why scavengers and decomposers are important to an ecosystemMankind as steward of God’s creation |  |
| 99 | 202–3 | 176–77 | 119–20 | Activity: Habitat Investigation• Investigate a habitat• Distinguish between living things and nonliving things• Identify producers and consumers• Record interactions | ObservingClassifyingCollecting and recording dataDefining operationally |
| 100 | 204–7 | 178–81 | 121–22 | • Identify the predators and prey in a food chain• Differentiate between a food chain and a food web• Describe the transfer of energy from one organism to another• Explain how competition affects population size |  |
| 101 | 208 | 182 |  | Activity: Food-Web Connections• Identify predators and prey within a food web• Model a food web• Recognize interrelationships among organisms in a food web• Compare the model food web with an actual food web | Making and using modelsCommunicatingDefining operationally |
| 102–3 | 209 | 183 |  | Exploration: A Tangled Web• Make a visual representation of a food web• Identify producers, predators, and prey within a food web• Identify animals as herbivores, omnivores, or carnivoresMankind’s God-given dominion |  |
| 104 | 210–11 |  | 123–24 | Answers in Genesis• Describe relationships among animals and plants in a simple ecosystem• State the sources of food for both people and animals before the Fall• Explain why the kinds of teeth in a skull may not determine the kinds of food an animal eats• Compare and contrast the evolutionary and creationary views of the history of carnivores |  |
| 105–6 | 212–15 | 184–87 | 125 | • Identify the basic needs of plants and animals• Identify and describe adaptations that help plants survive• Identify and describe adaptations that help animals surviveGod’s provision for His creation |  |
| 107 | 216–19 | 188–91 | 126–29 | • Identify different kinds of symbiosis• Differentiate between instincts and learned behaviors• Give examples of instincts and learned behaviorsGod’s perfect designConsequences of sinChristians behavior as showing God’s love to others |  |
| 108 | 220 | 192 | 130 | **Chapter Review**• Recall concepts and terms from Chapter 7• Apply knowledge to everyday situations |  |
| 109 | 220 |  |  | **Chapter 7 Test**• Demonstrate knowledge of concepts taught in Chapter 7 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 8: Changes in an Ecosystem |
| 110 | 221 | 193 | 131 | • Recognize ways that people can have dominion over the earth as God has commandedMankind’s God-given dominion |  |
| 111–12 | 222–25 | 194–97 | 132–34 | • Recognize that the earth has many cycles• Identify the seasonal changes that may occur in an ecosystem• Explain the carbon cycle• Differentiate between photosynthesis and respirationGod’s orderly designGod’s provision for His creation |  |
| 113–14 | 226–29 | 198–201 | 135–36 | • Name two ways that nitrogen is changed into usable compounds• Describe the nitrogen cycle• Identify the parts of the water cycle• Identify and infer some ways that cycles work together in an ecosystemInterrelationship of the parts of creationGod’s provision for His creation |  |
| 115–16 | 230–31 | 202–3 | 137–38 | Activity: Decomposers at Work• Recognize that decomposers are a part of many cycles• Identify water as a variable that affects decomposition• Analyze the effects of water on the rate of decomposition | HypothesizingExperimentingObservingIdentifying and controlling variablesRecording data |
| 117–18 | 232–35 | 204–7 | 139 | • Identify three natural stresses on an ecosystem• Explain how fires and floods can be beneficial to an ecosystem• Identify some effects of a drought• Describe the process of succession• Recognize that sometimes what seems to us like adisaster is actually God’s way of maintaining the earthConsequences of sinGod’s provision for His creationGod’s use of creation for His purpose |  |
| 119–20 | 236 | 208 | 140 | Exploration: Stress Alert• Research a historical stress, such as a famous fire, flood, or other disaster• Organize and present information about the stress |  |
| 121–22 | 237 | 209 |  | Activity: Current Events• Collect and record information about ecosystems• Organize the information into a notebook for presentation | ClassifyingCommunicatingDefining operationally |
| 123 | 238–39 |  | 141–42 | Answers in Genesis• Explain the water cycle using a model• Relate the cycles of nature to God’s care of His creation |  |
| 124 | 240–43 | 210–13 | 143 | • Identify some manmade stresses• List differing opinions about using natural resources• Differentiate between an extinct species and an endangered speciesMankind’s use of God’s resourcesMankind’s God-given dominionConsequences of sinMankind’s responsibility to glorify God |  |
| 125 | 244 | 214 | 144 | **Chapter Review**• Recall concepts and terms from Chapter 8• Apply knowledge to everyday situations |  |
| 126 | 244 |  |  | **Chapter 8 Test**• Demonstrate knowledge of concepts taught in Chapter 8 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 9: Sound |
| 127 | 249 | 215–17 | 145 | • Recognize the interrelationship of science concepts• Recognize that technology can be designed to control sound because sound moves in predictable waysMankind’s God-given dominionMankind’s use of wisdom to serve othersMankind’s responsibility to glorify God |  |
| 128–29 | 250–53 | 218–21 | 146–48 | • Define sound and wavelength• Identify a compression of a sound wave• Differentiate between the frequency and speed of sound wavesMankind’s use of wisdom to serve others |  |
| 130 | 254–55 | 222–23 | 149–50 | Activity: Sound Slide• Observe how the size of a vibration affects its sound• Change a variable and compare results• Predict the highness or lowness of a sound | PredictingExperimentingObservingIdentifying and controlling variablesCommunicating |
| 131–32 | 256–59 | 224–27 | 151–52 | • Define pitch and volume• Explain how the pitch of a sound wave is related to its frequency• Identify the frequency range of human hearing• Explain how the volume of a sound is related to the intensity of its sound waves• Define and describe timbreGod’s design for the human body |  |
| 133 | 260–61 | 228–29 | 153–54 | Activity: Shhh, Quiet Please• Compare the amount of sound absorbed by different materials• Predict which material will absorb the most sound• Rate the loudness of sounds• Identify relationships between materials and their abilities to absorb sound | HypothesizingPredictingObservingCommunicating |
| 134 | 262–63 |  | 155–56 | Answers in Genesis• Summarize what the Bible says about hearing• Explain why a creationary approach to science is a better approach to solving problems (like hearing loss) than an evolutionary approach |  |
| 135 | 264–68 | 230–34 | 157 | • Differentiate between sound and noise• Recognize that a sound fades as its energy is used up• List examples of how echoes are used in nature and technology• Name examples of how an acoustical engineer uses his knowledge of soundMankind’s imitation of creationGod’s design for the human bodyGod’s creation for mankind’s enjoymentMankind’s use of wisdom to serve othersChristians as faithful witnesses |  |
| 136 | 269 | 235 |  | Exploration: A “Medium” Exploration• Test the abilities of different mediums to carry sound• Write a paragraph that compares and contrasts the results |  |
| 137 | 270 | 236 | 158 | **Chapter Review**• Recall concepts and terms from Chapter 9• Apply knowledge to everyday situations |  |
| 138 | 270 |  |  | **Chapter 9 Test**• Demonstrate knowledge of concepts taught in Chapter 9 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 10: Light |
| 139 | 271 | 237 | 159 | • Recognize that God provides for the needs of peopleMankind’s use of wisdom to serve othersMankind’s responsibility to glorify God |  |
| 140 | 272–75 | 238–41 | 160–61 | • Identify light as a form of energy• Compare and contrast electromagnetic and mechanical waves• Identify the four properties of waves: wavelength, amplitude, frequency, and speed• Differentiate between the frequency of a wave and the speed of a waveGod’s perfect creation |  |
| 141–42 | 276–79 | 242–45 | 162–63 | • Differentiate between refraction and reflection• Recognize that the color of an object depends on which colors of light are being reflected• Identify the primary colors of lightGod’s salvation through ChristFaith in the Word of God for guidanceGod’s creation for mankind’s enjoyment |  |
| 143 | 280–81 | 246–47 | 164 | Activity: Fog Vision• Test the visibility of colors• Infer which colors are most visible in fog | HypothesizingPredictingExperimentingObservingInferring |
| 144–45 | 282–285 | 248–51 | 165 | • Explain how light reflects off smooth and rough surfaces• Identify and describe three kinds of mirrors• Identify some technologies that use light• Name some uses for lasers |  |
| 146 | 286–87 | 252–53 | 166 | Activity: Angles of Reflection• Differentiate between the angle of incidence and the angle of reflection• Measure the angle of reflection• Infer the relationship between the angle of reflection and the angle of incidence | PredictingMeasuring and using numbersObservingInferringDefining operationally |
| 147–48 | 288–92 | 254–58 | 167–68 | • Identify characteristics of waves found in the electromagnetic spectrum• Name some uses for each type of electromagnetic waveGod’s creation of invisible forcesMankind’s use of wisdom to serve othersMankind’s responsibility to glorify God |  |
| 149 | 293–94 |  | 169–70 | Answers in Genesis• Contrast the naturalistic view of the sun’s origin with the biblical view• Recognize that the Bible calls Christians to defend their faith |  |
| 150 | 295 | 259 | 171 | Exploration: Light at Work• Identify different ways that light is used in technology• Make a collage that explains how different products use light |  |
| 151 | 296 | 260 | 172 | **Chapter Review**• Recall concepts and terms from Chapter 10• Apply knowledge to everyday situations |  |
| 152 | 296 |  |  | **Chapter 10 Test**• Demonstrate knowledge of concepts taught in Chapter 10 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 11: Respiratory System |
| 153 | 301 | 261–63 | 173 | • Contrast technology with the marvels found in the human body• Demonstrate how people are being inspired by God’s designs to develop new technologyGod’s perfect designMankind’s imitation of creation |  |
| 154 | 302–4 | 264–66 | 174–75 | • Identify the respiratory system as the breathing system• Differentiate between involuntary breathing and voluntary breathing• Identify the muscles that help with breathing• Describe the movement of the body and air when inhaling and exhalingMankind as God’s special creationMankind created in God’s imageGod’s design for the human body |  |
| 155 | 305 | 267 | 176 | Activity: Breathe In, Breathe Out• Make a model of a lung• Use the lung model to explain how the diaphragm moves during breathing | Making and using modelsInferringDefining operationally |
| 156–57 | 306–9 | 268–71 | 177–78 | • Explain how mucus and cilia help keep the respiratory system clean• List the parts of the respiratory system from the nose to the larynx• Describe the function of the epiglottis• Explain how the vocal cords produce sound |  |
| 158–59 | 310–13 | 272–75 | 179–80 | • Identify and describe the trachea, bronchi, and lungs• Describe the function of the lungs• Explain causes of snoring, hiccupping, coughing, and sneezing |  |
| 160 | 314–15 | 276–77 | 181–82 | Activity: How Much Air Is in Your Lungs?• Calculate the amount of air exhaled• Identify variables that may affect the results | HypothesizingMeasuring and using numbersCollecting, recording, and interpreting data |
| 161 | 316–17 |  | 183–84 | Answers in Genesis• Describe the unique way God created man• Relate the physical position of Jesus on the cross to His inability to breathe normally, a part of His suffering |  |
| 162–63 | 318–21 | 278–81 | 185–87 | • Identify some diseases that make it difficult to breathe properly• Describe what happens during an asthma attack• Recognize that allergies are not contagious• Name some reasons why smoking is harmful to your healthGod’s design for the human bodyMankind as steward of God’s creation |  |
| 164 | 322–23 |  |  | Exploration: Dangers of Smoking• Explain why it is hard to quit smoking• Identify dangers of smoking• Identify reasons people smoke• List biblical reasons for not smokingPeople’s responsibility for their actionsMankind’s responsibility to glorify GodThe human body as God’s temple |  |
| 165 | 324 | 282 | 188 | **Chapter Review**• Recall concepts and terms from Chapter 11• Apply knowledge to everyday situations |  |
| 166 | 324 |  |  | **Chapter 11 Test**• Demonstrate knowledge of concepts taught in Chapter 11 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Lesson | TEpages | STpages | AM pages | Objectives and Christian Worldview | Process Skills |
| Chapter 12: Circulatory System |
| 167 | 325 | 283 | 189 | • Illustrate the superiority of God’s design over mankind’s technology• Glorify God for His wisdom and powerMankind’s imitation of creationFaith in the Word of God |  |
| 168–69 | 326–29 | 284–87 | 190–92 | • Name the parts of the circulatory system• Describe the path of blood through the heart• Explain the function of the heart’s pacemakerGod’s design for the human body |  |
| 170 | 330–31 | 288–89 | 193–94 | Activity: How Fast Is the Beat?• Calculate the heart rate• Calculate how long it takes the heart rate to return to normal• Make a line graph using the heart-rate data | HypothesizingMeasuring and using numbersCollecting and recording data |
| 171–72 | 332–35 | 290–93 | 195 | • Identify and describe the three types of blood vessels• Name the largest artery and the largest veins• Differentiate between arteries and veins• Recognize that the exchange of gases takes place in the capillaries• Explain why William Harvey is important as a scientist and a physicianGod’s immutabilityGod as only Creator |  |
| 173–74 | 336–40 | 294–98 | 196 | • Identify the contents of blood• Describe platelets, red blood cells, and white blood cells• Name the four main blood types• Describe a blood donationGod’s plan for salvationGod’s salvation through Christ |  |
| 175 | 341 | 299 | 197–98 | Activity: Exploring Blood Types• Demonstrate which blood types can safely mix with each other | PredictingMeasuringMaking and using modelsObserving |
| 176 | 342–43 | 300–301 | 199–200 | Activity: Pump and Pour• Model the heart pumping blood• Compare the model with the function of the heart | PredictingMeasuring and using numbersMaking and using modelsCollecting and recording dataDefining operationally |
| 177 | 344–45 |  | 201–2 | Answers in Genesis• Explain why it is important to identify the God of the Bible as the designer of our bodies• Defend from Scripture that Jesus created the world |  |
| 178 | 346–49 | 302–5 | 203 | • Identify organs that help remove wastes from the body• Recognize that the kidneys help clean the blood• Name three ways to stay healthy• Recognize that no inventions would be possible without GodGod’s design for the human bodyPeople’s responsibility for their actionsGod as the perfect CreatorGod’s love for mankind |  |
| 179 | 350 | 306 | 204 | **Chapter Review**• Recall concepts and terms from Chapter 12• Apply knowledge to everyday situations |  |
| 180 | 350 |  |  | **Chapter 12 Test**• Demonstrate knowledge of concepts taught in Chapter 12 |  |