

let's talk science

Adventures in the Physical World

level 2



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About the Author



Carrie Lindquist is a homeschool graduate, wife to Wayne, and momma to two energetic boys. She is a passionate advocate for homeschooling and loves helping new-to-homeschooling moms realize that homeschooling through the early years isn’t scary — it’s really just an extension of all the fun things they are already doing with their children! When she isn’t cleaning the endless little messes her boys create, you can find her encouraging moms to embrace the calling of everyday faithfulness.

Table of Contents



A series of colorful callout boxes on the left side of the page, each containing a section title and page number. The callouts are: a red one for 'Course Description 4', a blue one for 'Course Objectives 4', a pink one for 'Course Overview 4', a green one for 'A Note from the Author 5', an orange one for 'Course Components 6', a red one for 'Helpful Tips 7', a yellow one for 'Master Materials List 8', a teal one for 'Schedule II', and an orange one for 'Answer Key 345'.

Course Description	4
Course Objectives	4
Course Overview	4
A Note from the Author	5
Course Components	6
Helpful Tips	7
Master Materials List	8
Schedule	II
Answer Key	345

15	The Physical World
25	Potential and Kinetic Energy
33	Mechanical Energy
41	Friction and Force
49	Pulleys
57	Gears
65	Levers
73	Chemical Energy
81	Matter
89	Magnets
97	Electrical Energy
107	Thermal Energy
115	Light Energy
123	Nuclear Energy
131	The Sun
139	Moon
149	Stars
157	Constellations
165	Solar System I
173	Solar System 2
181	Intro to Meteorology
191	Weather Instruments
199	The Atmosphere
215	Clouds I
225	Clouds 2
235	The Water Cycle
247	Seasons
257	Intro to Geology
269	Earthquakes
279	Mountains
289	Volcanoes
297	Igneous Rocks
307	Sedimentary Rocks
315	Metamorphic Rocks
325	Fossils
333	Conclusion

Course Description

Approximately 20 minutes per lesson, three times per week

Designed for second graders in a one-year course

Let's Talk Science: Adventures in the Physical World will guide your student through a fascinating exploration of physical science. Through hands-on investigations and biblically inspired stories, students will explore and experience God's world as they study energy, force, simple machines, matter, astronomy, meteorology, and geology. Through each adventure, they'll discover that science is a wonderful tool God has given us to study His creation — and learn more about our relationship with Him!

Students will also use their imaginations to join Noah and his grandchildren as Noah tells them about his story and God's faithfulness. Students will encounter God's wisdom, power, and majesty on display as they explore the branches of physical science through engaging activities and compile a Science Notebook to share what they've learned with others.

Course Objectives

Students completing this course will:

- Explore energy, force, motion, simple machines, matter, astronomy, meteorology, and geology
- Discover that science teaches many lessons about God and our relationship with Him
- Learn through hands-on exploration and experimentation
- Compile a Science Notebook as students document their discoveries and share what they've learned with others

Course Overview

Lessons follow a weekly pattern of:



Day 1: Learn about the topic



Day 2: Experience the topic through investigations, hands-on activities, or experiments



Day 3: Apply and share what they've learned with others as they add a new page to their Science Notebook

A Note from the Author

I'm so very excited as your student begins his or her adventure in the physical world! It's my prayer that the student encounters the wisdom, power, majesty, and the grace of God in a new way this year as he or she explores His creation.

As a child, I found science to be a series of dry facts that I couldn't relate to — especially physical science! My perspective changed as an adult, however, as I began to see God's hand in various parts of creation. Science suddenly became fascinating and awe-inspiring because God's wisdom, understanding, majesty, and grace is so clearly on display in His creation.

Let's Talk Science: Adventures in the Physical World is more than exploration of physics, chemistry, astronomy, meteorology, and geology — through these topics, it's an exploration of God's awe-inspiring creation, a discovery of the depth of His wisdom, a reminder of His faithfulness, and an illustration of many spiritual lessons. Of course, sometimes science also reminds us that the world was broken through sin, and there we find God's mercy and a reminder that we all need Jesus.

This course is inspired by the many questions my sons have asked — we've had many discussions and adventures together in the pursuit of answers to those questions! *Let's Talk Science: Adventures in the Physical World* is designed to be relational and encourage curiosity — if your child is particularly interested in a topic or question, I invite you to spend some time exploring God's world together through books, videos, and resources. Make this course your own and have fun!

When my sons started school, each picked out a special 3-ring binder to hold their completed worksheets. One night after dinner, they excitedly brought out their binders to show Dad all the things they had learned that day. This quickly became a favorite part of our nightly routine and is the inspiration behind the student's Science Notebook in this course. Encourage your student to pick out his or her own binder or decorate it. It will be a very special part of his or her science adventure.

I hope you and your student have a lot of fun together as you explore the physical world, and may God richly bless your school year!



Course Components



Imagine That!: Historical fiction is used as a tool in *Adventures in the Physical World* to illustrate concepts, help students develop their reading skills, and as an opportunity to help students see Noah and his family as real people in history. While we don't know what the lives of Noah and his family looked like beyond what the Bible tells us, we can imagine what their lives may have been like based on the

details the Bible does provide.

Each story in *Adventures in the Physical World* is carefully introduced as something we are imagining together based on the lives of very real people in the Bible. These biblically inspired stories are also designed to draw your student to ask questions and spark a desire to read Noah's story in the Bible for him or herself. You'll also find a theme of choices within these stories — each of us must make the choice of whether to follow God with our lives.

These stories may provide conversation starters as your student learns how to discern fact from fiction — a skill he or she will use throughout his or her whole life. You can read Noah's story and genealogy in Genesis chapters 6–9 and talk with your student about what his life may have looked like, what life looked like after the Flood, and what it might have been like if Noah was your grandpa.

You'll find the names of several children in these stories. Where possible, names were taken from the genealogy of Noah's family: Gomer and Magog are listed as being sons of Japheth. Cush is recorded as a son of Ham. Finally, Elam is recorded as a son of Shem. However, the Bible doesn't record the names of Japheth, Ham, or Shem's daughters. In these stories, Ham has been given a daughter named Abi, and Sara is the daughter of Shem.



Discussion Starters: Discussion Starters at the end of the lesson provide additional questions, activities, or ideas to dive deeper into the topic. Questions for the student are included in speech bubbles. Additional activity ideas or tips are in orange text.



Let's Memorize: Many lessons feature a memory verse with accompanying hand motions. Hand motions are a great way to help your student memorize the verse! You may also customize or create your own motions.

Science Notebook: The student will compile a Science Notebook as he or she completes the course. Each week, the student will tear out the activity page on Day 3 and add that page to his or her Science Notebook to document what he or she learned. These pages are designated by a “Tear out for Science Notebook” note on the left-hand side of the page. Encourage your student to show someone else the page and share what he or she has learned during the week.

Materials List: Weekly hands-on activities are integral to this course. A Master Materials List (page 8) provides an at-a-glance view of the materials your student will need to complete the activities for each week. The activities are designed to be easy to prepare for, and most require materials you may already have on hand.

At the start of each week's lessons you'll find the Weekly Materials List included in the lesson.

These are the materials you'll need to have on hand to complete activities and worksheets for the week. The Materials Needed list shows the materials you'll need to complete that individual lesson.

flashlight



Weekly materials list



Helpful Tips

- *Adventures in the Physical World* covers many abstract concepts such as force, motion, and atoms. This may be your student's very first introduction to these topics, and mastery is not required. *Adventures in the Physical World* is an introductory exploration of these topics.
- When your student encounters a topic that is more complex, encourage him or her to simply enjoy learning about and exploring the topic. Teach your student to recognize the feeling of awe at God's creation and remind him or her that there will always be things we don't fully understand about it. When we encounter these things, it reminds us how powerful, majestic, and creative God is, and it draws our hearts to worship Him.

Recommended Resources from Master Books®:

These resources are not required but may be used to explore topics of interest at a deeper level and enhance your student's learning adventure.

The New Weather Book

The New Astronomy Book

Inside Noah's Ark 4 Kids

Created Cosmos (DVD)

The New Geology Book

The True Story of Noah's Ark

The Answers Book for Kids Volume 2

Master Materials List

Week 1

- 3-ring binder for student's Science Notebook
- Crayons or colored pencils

Week 2

- Matchbox® car
- Objects to build a small ramp with

Week 3

- Pencil
- Wooden craft stick
- Milk Chocolate M&Ms® or other small, round candy

Week 4

- Drinking straw
- Paper
- Bouncy ball
- Matchbox® car

Week 5

- 2 spools of $\frac{3}{8}$ " ribbon
- Pencil
- Solo® cup
- Hole punch
- Water or rocks to fill the cup

Week 6

- Gear set (should include a big and smaller gear; can be purchased at a hobby store or from a science supply retailer)
- Toothpicks
- Cardboard box or Styrofoam™ board

Week 7

- Block of wood
- 3 2-inch nails
- Hammer

Week 8

- Balloon
- 2-liter soda bottle (empty)
- Vinegar
- Funnel
- Baking soda
- 1 tablespoon
- $\frac{1}{2}$ cup

Week 9

- Water
- Drinking glass
- Ice cube tray
- Pot or pan

Week 10

- 2 bar magnets
- Various magnetic and non-magnetic items such as paper, book, glass, metal paper clip, nail, silverware, metal toys, etc.

Week 11

- 2 aluminum soda cans
- 2 balloons
- Fleece or fuzzy material

Week 12

- Popcorn kernels
- Butter and salt (or chosen seasonings)
- Air popper (or alternate cooking method)
- Thermometer

Week 13

- Green leaves
- Crayons

Week 14

- Two colors of playdough

Week 15

- Sunny day
- Styrofoam™ plate
- Pencil
- Permanent marker

Week 16

- 4- or 5-inch Styrofoam™ ball
(save for week 27)
- Gray paint
- Paintbrush
- Flashlight or lamp
- Small rocks
- Pencil

Week 17

- 2 sheets each of yellow, orange, red, and blue construction paper
- Scissors
- Stapler
- Markers
- Dessert plate
- Silver glitter glue or gel pen

Week 18

- Black construction paper
- White crayon
- Star stickers
- Glitter glue (optional)

Week 19 and 20

- Solar system planetary model kit (You may also put together your own model solar system using any materials you'd like.)

Week 21

- The weather forecast to watch with your student

Week 22

- 2-liter soda bottle (empty)
- Scissors or utility knife
- Ruler
- Permanent marker
- Gravel or small stones
- Duct tape

Week 23

- Mason jar or big glass container
- Glass container for mixing
- Small gravel or rocks
- Funnels
- Syringe
- Corn syrup
- Water
- Vegetable oil
- Dish soap
- Rubbing alcohol
- ½ or ¼ measuring cup, depending on the size of your jar
- Glue stick

Week 24

- Shaving cream
- Bathtub with water

Week 25

- Scissors
- Brass fastener
- Cardstock or laminator (optional)

Week 26

- Glass cup or jar
- Plastic wrap
- Hot water
- Ice cubes
- Blue food coloring (optional)
- Rubber band (optional)
- Towel

Week 27

- 4- or 5-inch Styrofoam™ ball
- Metal or wooden skewer (12+ inches long)
- Permanent marker
- Flashlight
- Green and blue paint, paintbrush (optional)

Week 28

- Graham crackers
- Frosting
- Plate
- Butter knife

Week 29

- 2 packages of Jell-O®
- 2 pie tins or small baking sheets
- Mini marshmallows
- Toothpicks

Week 30

- 3 or more kitchen towels
- Plate
- Sand or dirt
- Spray bottle
- Construction or patterned scrap paper
- Glue stick

Week 31

- Playdough or modeling clay (Playdough/clay will not be reusable. If you prefer, you can also purchase a volcano model from a craft or science retailer. If using this option, please follow the directions in your kit for this activity.)
- Toilet paper tube
- Scissors
- Red food coloring
- Baking soda
- Vinegar
- Baking tray

- ½ tablespoon
- ¼ cup
- Warm water
- Drinking glass or liquid measuring cup

Week 32

- 1 cup of milk chocolate chips or wafers for candy making
- Glass bowl
- Double-boiler or microwave
- Plate
- Wax paper
- Basic Rock and Mineral set (optional: Set is not required for completion of this course, but it is suggested and may be used to give your student hands-on experience with the rocks covered in this course. Rock types discussed in weeks 32–34 are pumice, obsidian, granite, diorite, sandstone, limestone, shale, conglomerate, coal, slate, quartzite, schist, gneiss, and marble.)

Week 33

- Clear glass jar
- ¼–½ cup each of sand, dirt, and potting soil
- Water
- Spoon

Week 34

- Your favorite cookie recipe and ingredients




























Week 35

- Orange Jell-O®
- Candy gummy insects or worms
- Clear glass container




























Week 36

- Crayons, colored pencils, or markers



























Schedule

Date	Day	Assignment	Due Date	✓
Week 1		Read and complete Day 1 • The Physical World • Pages 15–18		
		Read and complete Day 2 • The Physical World • Pages 19–20		
		Read and complete Day 3 • The Physical World • Pages 21–24		
Week 2		Read and complete Day 1 • Potential and Kinetic Energy • Pages 25–27		
		Read and complete Day 2 • Potential and Kinetic Energy • Page 28		
		Read and complete Day 3 • Potential and Kinetic Energy • Pages 29–32		
Week 3		Read and complete Day 1 • Mechanical Energy • Pages 33–36		
		Read and complete Day 2 • Mechanical Energy • Page 37		
		Read and complete Day 3 • Mechanical Energy • Pages 38–40		
Week 4		Read and complete Day 1 • Friction and Force • Pages 41–44		
		Read and complete Day 2 • Friction and Force • Pages 45–46		
		Read and complete Day 3 • Friction and Force • Pages 47–48		
Week 5		Read and complete Day 1 • Pulleys • Pages 49–53		
		Read and complete Day 2 • Pulleys • Page 54		
		Read and complete Day 3 • Pulleys • Pages 55–56		
Week 6		Read and complete Day 1 • Gears • Pages 57–60		
		Read and complete Day 2 • Gears • Page 61		
		Read and complete Day 3 • Gears • Pages 62–64		
Week 7		Read and complete Day 1 • Levers • Pages 65–68		
		Read and complete Day 2 • Levers • Page 69		
		Read and complete Day 3 • Levers • Pages 70–72		
Week 8		Read and complete Day 1 • Chemical Energy • Pages 73–75		
		Read and complete Day 2 • Chemical Energy • Page 76		
		Read and complete Day 3 • Chemical Energy • Pages 77–80		
Week 9		Read and complete Day 1 • Matter • Pages 81–84		
		Read and complete Day 2 • Matter • Page 85		
		Read and complete Day 3 • Matter • Pages 86–88		




























Schedule

Date	Day	Assignment	Due Date	✓
Week 10	 Day	Read and complete Day 1 • Magnets • Pages 89–91		
	 Day	Read and complete Day 2 • Magnets • Page 92–93		
	 Day	Read and complete Day 3 • Magnets • Pages 94–96		
Week 11	 Day	Read and complete Day 1 • Electrical Energy • Pages 97–101		
	 Day	Read and complete Day 2 • Electrical Energy • Pages 102–103		
	 Day	Read and complete Day 3 • Electrical Energy • Pages 104–106		
Week 12	 Day	Read and complete Day 1 • Thermal Energy • Pages 107–110		
	 Day	Read and complete Day 2 • Thermal Energy • Page 111		
	 Day	Read and complete Day 3 • Thermal Energy • Pages 112–114		
Week 13	 Day	Read and complete Day 1 • Light Energy • Pages 115–118		
	 Day	Read and complete Day 2 • Light Energy • Pages 119–120		
	 Day	Read and complete Day 3 • Light Energy • Pages 121–122		
Week 14	 Day	Read and complete Day 1 • Nuclear Energy • Pages 123–125		
	 Day	Read and complete Day 2 • Nuclear Energy • Pages 126–127		
	 Day	Read and complete Day 3 • Nuclear Energy • Pages 128–130		
Week 15	 Day	Read and complete Day 1 • The Sun • Pages 131–135		
	 Day	Read and complete Day 2 • The Sun • Page 136		
	 Day	Read and complete Day 3 • The Sun • Pages 137–138		
Week 16	 Day	Read and complete Day 1 • Moon • Pages 139–143		
	 Day	Read and complete Day 2 • Moon • Pages 144–145		
	 Day	Read and complete Day 3 • Moon • Pages 146–148		
Week 17	 Day	Read and complete Day 1 • Stars • Pages 149–152		
	 Day	Read and complete Day 2 • Stars • Page 153		
	 Day	Read and complete Day 3 • Stars • Pages 154–156		
Week 18	 Day	Read and complete Day 1 • Constellations • Pages 157–161		
	 Day	Read and complete Day 2 • Constellations • Page 162		
	 Day	Read and complete Day 3 • Constellations • Pages 163–164		

Schedule

Date	Day	Assignment	Due Date	✓
Week 19	 Day	Read and complete Day 1 • Solar System 1 • Pages 165–168		
	 Day	Read and complete Day 2 • Solar System 1 • Page 169		
	 Day	Read and complete Day 3 • Solar System 1 • Pages 170–172		
Week 20	 Day	Read and complete Day 1 • Solar System 2 • Pages 173–176		
	 Day	Read and complete Day 2 • Solar System 2 • Page 177		
	 Day	Read and complete Day 3 • Solar System 2 • Pages 178–180		
Week 21	 Day	Read and complete Day 1 • Intro to Meteorology • Pages 181–184		
	 Day	Read and complete Day 2 • Intro to Meteorology • Pages 185–186		
	 Day	Read and complete Day 3 • Intro to Meteorology • Pages 187–190		
Week 22	 Day	Read and complete Day 1 • Weather Instruments • Pages 191–194		
	 Day	Read and complete Day 2 • Weather Instruments • Page 195		
	 Day	Read and complete Day 3 • Weather Instruments • Pages 196–198		
Week 23	 Day	Read and complete Day 1 • The Atmosphere • Pages 199–202		
	 Day	Read and complete Day 2 • The Atmosphere • Page 203		
	 Day	Read and complete Day 3 • The Atmosphere • Pages 204–214		
Week 24	 Day	Read and complete Day 1 • Clouds 1 • Pages 215–219		
	 Day	Read and complete Day 2 • Clouds 1 • Page 220		
	 Day	Read and complete Day 3 • Clouds 1 • Pages 221–224		
Week 25	 Day	Read and complete Day 1 • Clouds 2 • Pages 225–228		
	 Day	Read and complete Day 2 • Clouds 2 • Pages 229–230		
	 Day	Read and complete Day 3 • Clouds 2 • Pages 231–234		
Week 26	 Day	Read and complete Day 1 • The Water Cycle • Pages 235–240		
	 Day	Read and complete Day 2 • The Water Cycle • Page 241		
	 Day	Read and complete Day 3 • The Water Cycle • Pages 242–246		
Week 27	 Day	Read and complete Day 1 • Seasons • Pages 247–250		
	 Day	Read and complete Day 2 • Seasons • Pages 251–252		
	 Day	Read and complete Day 3 • Seasons • Pages 253–256		

Schedule

Date	Day	Assignment	Due Date	✓
Week 28		Read and complete Day 1 • Intro to Geology • Pages 257–262		
		Read and complete Day 2 • Intro to Geology • Pages 263–264		
		Read and complete Day 3 • Intro to Geology • Pages 265–268		
Week 29		Read and complete Day 1 • Earthquakes • Pages 269–272		
		Read and complete Day 2 • Earthquakes • Pages 273–274		
		Read and complete Day 3 • Earthquakes • Pages 275–278		
Week 30		Read and complete Day 1 • Mountains • Pages 279–283		
		Read and complete Day 2 • Mountains • Page 284		
		Read and complete Day 3 • Mountains • Pages 285–288		
Week 31		Read and complete Day 1 • Volcanoes • Pages 289–291		
		Read and complete Day 2 • Volcanoes • Page 292		
		Read and complete Day 3 • Volcanoes • Pages 293–296		
Week 32		Read and complete Day 1 • Igneous Rocks • Pages 297–302		
		Read and complete Day 2 • Igneous Rocks • Page 303		
		Read and complete Day 3 • Igneous Rocks • Pages 304–306		
Week 33		Read and complete Day 1 • Sedimentary Rocks • Pages 307–310		
		Read and complete Day 2 • Sedimentary Rocks • Page 311		
		Read and complete Day 3 • Sedimentary Rocks • Pages 312–314		
Week 34		Read and complete Day 1 • Metamorphic Rocks • Pages 315–319		
		Read and complete Day 2 • Metamorphic Rocks • Page 320		
		Read and complete Day 3 • Metamorphic Rocks • Pages 321–324		
Week 35		Read and complete Day 1 • Fossils • Pages 325–328		
		Read and complete Day 2 • Fossils • Page 329		
		Read and complete Day 3 • Fossils • Pages 330–332		
Week 36		Read and complete Day 1 • Conclusion • Pages 333–337		
		Read and complete Day 2 • Conclusion • Pages 338–339		
		Read and complete Day 3 • Conclusion • Pages 340–344		

The Physical World

Day**Learn**

Welcome to our science adventure! I'm very excited to explore God's creation with you. Science is an amazing tool God has given us to learn about and explore the world He created. Science helps us ask questions, test our ideas, and share what we learn about the world and about God with others. Jeremiah 51:15 says, *"He [God] made the earth by his power; he founded the world by his wisdom and stretched out the heavens by his understanding."*

This year, we're going to study God's creation through physical science. When we explore physical science, we see God's power, wisdom, and understanding on display in His creation. So, what exactly is physical science? Well, it's the study of the physical world around us. Through physical science, we can study non-living things like energy, simple machines, what things are made of, how things move, weather, rocks, and even outer space! Wow, we have so much to talk about — let's get started!

We're going to start our adventures in the physical world by learning about physics. Through physics, scientists can study things like energy, motion, light, magnets, and electricity. That all sounds like so much fun to explore! Let's start by talking about energy — what do you think energy is?

3-ring binder for student's Science Notebook



Crayons or colored pencils

**Weekly materials list**

Energy means that something has the potential or ability to do work. Energy can do all kinds of work, like helping your body move, keeping the lights on in your house, moving a car, keeping your home warm or cool, and even cooking your food. There are many ways something can do work.

You and I use energy every day. In fact, you're using energy right now to learn! In the Bible, there was a man who needed lots of energy to do a very big job God gave him — do you know who that might be? After Adam and Eve sinned, they had to leave the Garden of Eden. They had children, and their children had children, and their children had more children, and soon there were many, many people on the earth! But there was a big problem — all those people weren't following God's ways. In Genesis 6:5, the Bible says, *“The LORD saw how great the wickedness of the human race had become on the earth, and that every inclination of the thoughts of the human heart was only evil all the time.”*

Sin had taken over the whole world. How very sad! But there was one man who followed God. His name was Noah — and God gave Noah a big job! God warned Noah that He was going to send a flood on the whole earth. God told Noah to build an ark, which is a type of very large ship. Noah followed God's directions and trusted in Him. Can you imagine all the energy and types of tools Noah may have needed to build the ark?

Noah was a real person with a real family, just like ours. He had a wife and three sons. The Bible tells us the names of his sons were Shem, Ham, and Japheth. They must have had many adventures together! I wonder if Noah told his grandchildren his story. Let's imagine what it might have been like one day as Noah talked to his grandchildren. . . .

“Papa, Papa!” Gomer and Abi called breathlessly as they ran to their grandpa, Noah. Their cousins, Cush, Sara, Elam, and Magog, were running right behind them. Noah was taking care of the animals in the field. He looked up as he smiled and chuckled. He knew his grandchildren were coming to listen to him tell them the story of the world.

Noah had already told them how God created the world, how God had made Adam and Eve, and how they had disobeyed God’s directions. Noah had told his grandchildren how sin had broken the world, and all about his parents, grandparents, and great-grandparents. Now it was time to tell them the next part of history, Noah’s story.

Noah took a deep breath. What an adventure it had been. He rubbed his face with his rough hands as he turned to face his grandchildren and smiled. “Hello, children, are you ready to help me tend to the animals?”

“Papa, we want to hear more history! Tell us your story!” said Elam. “Yes, yes, please!” the others echoed.

“Alright,” Noah answered, “let’s work together, and I’ll tell you my story. It all started one day. . . .”

.....

I’m so excited to learn more about energy and imagine what it might have been like to hear Noah’s story directly from him, aren’t you?



name

We're wrapping up our lesson for today, though, so let's finish with an activity.

Fill in the blank with the right word.

share

ask

test

Science helps us _____ questions, _____
our ideas, and _____ what we've learned with others.

In our story, Noah was taking care of animals in the field. Draw a picture of the animals you imagined he was taking care of.

Discussion Starters

What is science?

What is energy?

What were the names of Noah's sons?



Experience

Let's go on an energy expedition today! Do you remember what energy is? Energy means that something has the potential or ability to do work, and there are many types of work energy can do. Energy helps us move, cook our food, light up the room, keep us warm or cool, move from place to place, and so much more. There is energy all around us. Let's go explore!

Activity directions:

Walk around the inside and outside of the house with your student and look for people or things using energy all around you. Guide your student to notice anyone who is moving around, lights or fans, appliances, vehicles, etc. Take note of whether something is using energy right now or could be using energy but isn't.





Teacher tip: If applicable, your student may also create a cover for or decorate his or her Science Notebook.

We learned a little about energy this week. Do you remember what energy is? Energy means that something has the potential or the ability to do work. Energy is all around us, and there's so much more we're going to learn about it! As we study physical science this year, we're going to see God's power, wisdom, and understanding on display, just like Jeremiah 51:15 reminds us: *"He made the earth by his power; he founded the world by his wisdom and stretched out the heavens by his understanding."*

Science helps us ask questions, test our ideas, and share what we've learned with others. As we explore the physical world, we're going to create a Science Notebook! You'll be able to document the things you've learned about each week in your Science Notebook and then share what you've learned with someone else.



Remember our energy exploration the other day? We explored and saw that energy is used all around us for different types of work.



Jeremiah 51:15

Teacher tip: Hand motions are a great way to help your student memorize. You can use the ideas below or develop your own motions with your student.

“He **made** the **earth** by his **power**; he founded the **world** by his wisdom and **stretched out** the heavens by his **understanding.**”

	Actions
made	Make your hands into fists — one on the bottom, one on top. Tap your top fist on the bottom fist.
earth	Put your fingers together to form a circle with your hands.
power	Show your muscles.
world	Put your fingers together to form a circle with your hands.
wisdom	Tap the side of your head.
stretched out	Pretend to stretch something apart with your hands.
understanding	Tap the side of your head.

Let's add our first page to our Science Notebook! Answer the question and then draw the people or things you found using energy. You can look back at the list you wrote down if you need to! Once you're done, add the page to your Science Notebook and remember to show someone your page and tell him or her that energy is all around us!

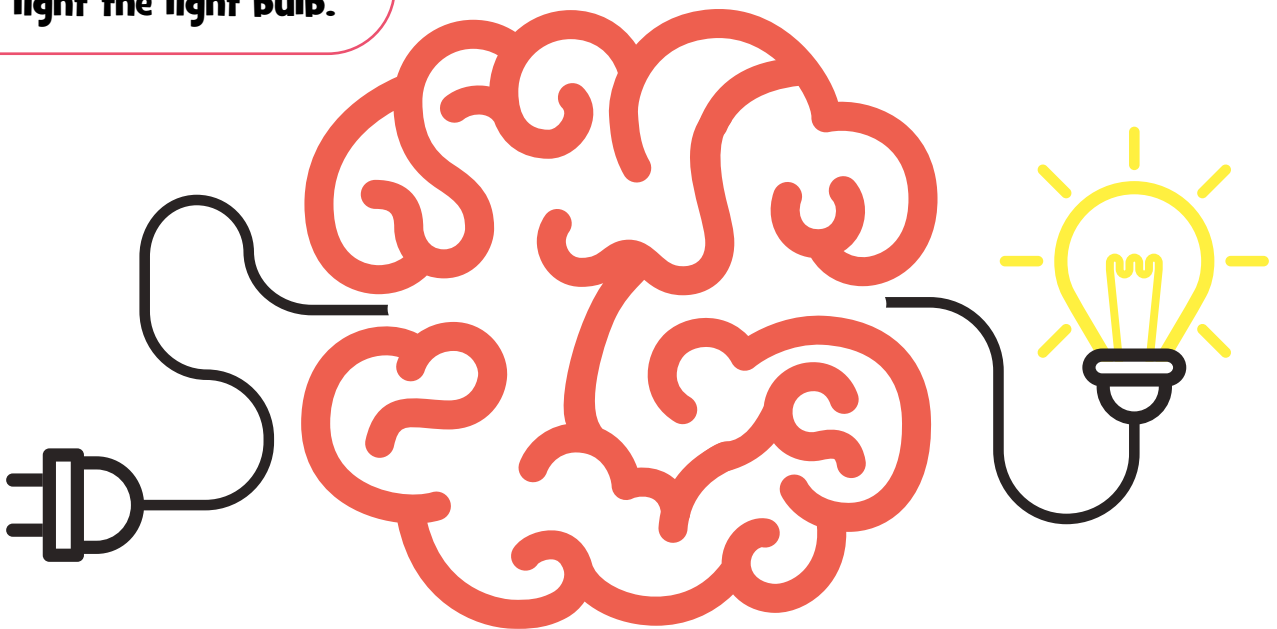
name _____

What is something you want to remember about energy?



Handwriting practice lines consisting of solid top and bottom lines with a dashed middle line. There are four sets of these lines provided for writing.

Connect the cord to light the light bulb.



Draw a picture of something that uses energy.

Matter

Day**Learn**

It's time for another science adventure! We learned about chemical energy last week. Chemical energy is released through a chemical reaction. We used chemical energy to inflate our balloon. Wasn't that fun? We also learned a little about atoms and molecules. Everything around you is made of atoms and molecules. We call it matter. Let's talk about matter this week!

Matter is what we call the things you can see all around you, and the things you can't see, like the air you're breathing right now. Matter is anything that is made of atoms and molecules. So that means that matter is all around you! Matter can be a liquid, a solid, or a gas. Let's think about our experiment from last week again. Did you notice we had a solid (the baking soda), a liquid (the vinegar), and that a gas (carbon dioxide, which was what filled up the balloon) was created? Each of these — liquid, solid, and gas — is a way matter can exist. We call these the states of matter.

Water Drinking glass Ice cube tray Pot or pan **Weekly materials list**

Liquids are things that occupy a space — we call this volume. Water in a glass fills the space inside the glass because water has volume; it is a liquid. Liquid can also flow, like water, juice, oil, or milk. Solids are things that have a shape. Solids are firm and don't flow. Solids are things

like wood, glass, powders, and even cookies! Gases don't have a shape, but they can fill a space. The carbon dioxide that blew up our balloon in our



experiment was a gas; it filled the space of our balloon. The air you're breathing right now is also a gas. While we can see something in a liquid or solid state, we usually can't easily see something in a gas state.



We can study and observe the properties of matter. For example, we can observe the color, weight, or smell of something. We can also observe the state of matter: Is it liquid, solid, or gas? Sometimes, we can even watch matter change from one state to another state. Can you think of something that can be a liquid, solid, or gas? I'm thinking of water.



When you pour a glass of water, the water is in a liquid state. If you pour that water into an ice cube tray and put the tray into the freezer, it will turn into ice cubes. Ice cubes are water in a solid state. If we then put those ice cubes into a pan and place it on the stove to cook, the ice cubes will melt back into water, and steam will begin to rise. Steam is water vapor, which is water in a gas state. Wow!



Let's continue imagining what it might have been like to be Noah's grandchild. Pay close attention and see if you can spot examples of matter in a solid, liquid, and gas state!

Imagine!
That!
Bible-inspired stories

Noah glanced at the sky. The sun was beginning to set. "Your parents are going to be calling you all for dinner soon, children," Noah said as he picked up the wooden board to carry it back to the house. Just then, Elam and Sara heard their mother's voice calling them for dinner.



“Will you tell us more tomorrow, Papa?” Sara asked quickly.

“Yes, dear, now hurry along home,” Noah smiled in reply, and off they ran.

Elam was thirsty after running. Once he got back home, he grabbed his clay cup and drank a whole cup of water. Then he realized something smelled very good! “Mmm, Sara, Mom made bread! Do you see the steam rising from the bread on the table? It is still hot from the oven!” Warm bread was his favorite, and he was very hungry tonight after helping to move that big rock!

.....

Did you find the examples? Noah’s wooden board was a solid, and so was the loaf of bread and the rock. Elam drank a cup of water, which was a liquid, and the steam rising from the bread was a gas! Isn’t it neat how we can observe matter around us and how matter can sometimes change from one state to another state?

name

For today, let's observe the matter around us. Look around your house or yard. Can you find something that is a liquid, a solid, and a gas?

Fill in the boxes with your examples!

solid

liquid

gas

Discussion Starters

What are the three states of matter?

What is matter?

What are other things you might be able to observe about matter?



Experience

materials needed

- Water
- Drinking glass
- Ice cube tray
- Pot or pan

Teacher tip: This activity may take a couple of days to complete since the water has to freeze.

We're learning about matter and the states it can be in. Do you remember those states? They are liquid, solid, and gas. Let's observe water in each state today!

Activity directions:

1. Pour water into a drinking glass. Ask your student what state the water is in.
2. Next, direct your student to carefully pour the water into the ice cube tray. Is the water still in the same state?
3. Place the ice cube tray into the freezer and give it time to freeze.
4. Once the water has frozen, remove the tray and dump the ice cubes out. Let your student touch or play with them. What state is the water in now?
5. Direct your student to place the ice cubes in the pot or pan. Carefully place the pot or pan on the stove and begin to cook them.
6. Watch as the ice melts and turns back into water. As it continues to cook, observe the steam rising from the pot or pan. What state is the water in now?

Wasn't it neat to see water change to each state?



Liquid



solid



gas



It's a lot of fun to observe matter and how it can change! Watching the water change from liquid to solid to a gas reminds me of the best change of all — how God can take our sinful hearts and give us pure hearts that desire to seek and follow Him. Psalm 51:10 says, *“Create in me a pure heart, O God, and renew a steadfast spirit within me.”*

When we ask Jesus to forgive us for our sin, He does and gives us a pure heart. Colossians 1:21–22 (NIrV) says, *“At one time you were separated from God. You were enemies in your minds because of your evil ways. But because Christ died, God has brought you back to himself. Christ’s death has made you holy in God’s sight. So now you don’t have any flaw. You are free from blame.”*



I think that is the very best change. Let's share it with someone! Oh, and it's also time to add a new page to our Science Notebook! Remember to share what you learned about matter this week with someone and tell him or her all about the very best change.

name _____

What is something you learned this week about matter?



Psalm 51:10

“Create in **me** a pure **heart**, O **God**, and renew a **steadfast** spirit within me.”

	Actions
me	Point to yourself.
heart	Place your hands together in a heart shape.
God	Place your hands together in prayer.
steadfast	Make two fists and tap them together.

Color the picture showing matter in all three states.

Matter can be a liquid, solid, or gas. A coffee mug is a solid, coffee is a liquid, and the steam rising is a gas.

Color the gas gray,
color the solid red,
and color the
liquid brown.



Constellations

Day**Learn**

We learned about some really amazing stars in our science adventure last week. This week, let's explore how you can find some of those stars in the night sky. The night sky is beautiful, stunning, and fascinating. It has captured people's attention through all of history and around the world. As people watched and studied the sky, they also began to recognize where certain stars were and how they moved across the sky as the earth rotates in its orbit around the sun. Ready to learn more? Let's get started!

One way we can learn how to find certain stars is by looking for constellations. Star constellations are like an imaginary dot-to-dot in the sky; if you connect some stars, they make shapes. For example, there is the Ursa Major constellation. We also call this constellation the Big Dipper, and it looks a bit like a scoop or ladle in the night sky.



Black construction paper



White crayon



Star stickers



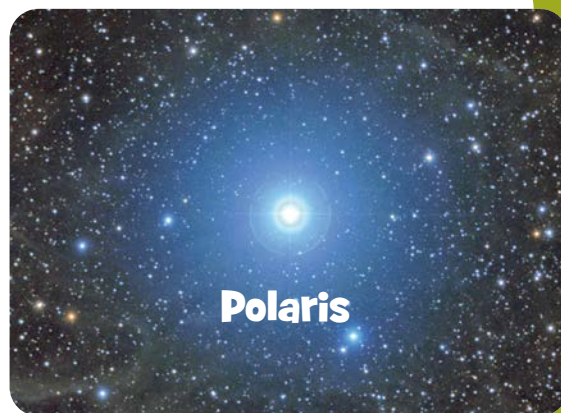
Glitter glue (optional)

**Weekly materials list**

Below the Big Dipper is Ursa Minor, or the Little Dipper. The Little Dipper also looks like a scoop or ladle in the sky, but it is smaller than the Big Dipper. The star at the very end of the Little Dipper's handle is called Polaris, or the North Star. Explorers, sailors, and travelers used the North Star throughout history like

a compass to help them know which direction is north. There are many stories of people who have used the North Star to help them travel. If you can find the Little Dipper, then you can find the North Star in the night sky too!

I wonder if Noah and his family ever observed the stars at night. Let's imagine that the next part of our story happened under the night sky!



Imagine That!

Bible-inspired stories

After lunch, Noah and his grandchildren had returned to the field to find the fence had broken, and several animals were wandering around outside of the fence. They quickly went to work trying to catch the wandering members of the herd and repair the broken fence. What a busy afternoon it had been! So busy, in fact, that they hadn't even had time to hear Noah tell more of his story.

Later that day after dinner and chores, Noah invited each family to come sit under the stars. The sky was clear, and the stars were shining so brightly. Each person took turns pointing out their favorite stars and talking about what it might have been like when they were created by God. Cush, Gomer, and Magog laughed and teased each other as they each tried to find the brightest star in the sky.

Elam had been thinking all day, and when everyone was quiet, he turned to Noah and softly said, "Papa, I have a question. How..." Elam's voice trailed off and he looked thoughtful.

Noah encouraged him, "Go ahead, Elam, asking questions is a good thing."

"Well, Papa, how did you know you could trust God? Didn't God's directions sound strange to you?"

Noah wrapped his arm around Elam as he answered, "Well, the first man Adam was still alive when my grandparents and father was born. Adam had told many about God, how He created the earth, and about sin. I

learned to follow God and His ways from people who had spoken to and learned from Adam.” Noah paused as he looked at the night sky.

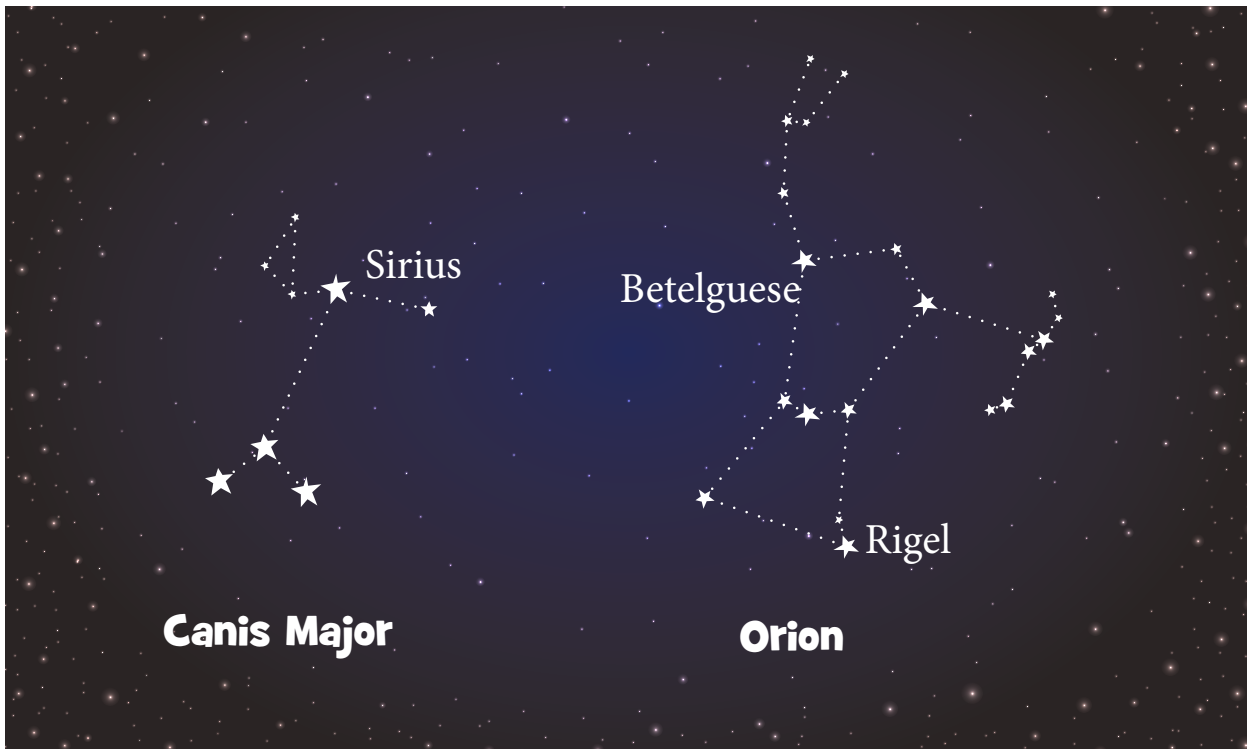
“Elam,” he continued, “I may not always understand what God is doing or what will happen. But look at this . . .” Noah paused again as he motioned to the stars in the night sky. “Our Creator simply spoke all of this into being. He is more powerful and far wiser than I could ever be. Throughout my life, I’ve also seen how merciful He is — how many chances he gave people to turn back to His ways before the Flood came. God is trustworthy. I have faith — a complete trust — that God’s words are true and that His ways are right. I chose to follow Him, and I continue to choose to follow Him each day.”

“Children, though I pray it won’t happen, the world may turn away from God again someday. Each of you will also need to choose for yourselves to trust God’s ways and follow Him.” Tears glistened in Noah’s eyes, and each member of his family thought about his words. Noah glanced at each of his sons, their wives, and children while quietly praying that each would continue to follow God’s ways.



You can use a constellation to help you find the brightest star in the sky — Sirius! Sirius is in the constellation Canis Major. If you use your imagination to connect the stars in this constellation, it looks like a dog, and Sirius will be right under the head!

Orion is another constellation, and this one contains Betelgeuse and Rigel! If you use your imagination, Orion looks like a warrior in the sky. Do you see the three bright stars in a row in the middle? It looks like a belt. If you can find the belt in the night sky, you've found Orion! One of Orion's feet is Rigel.

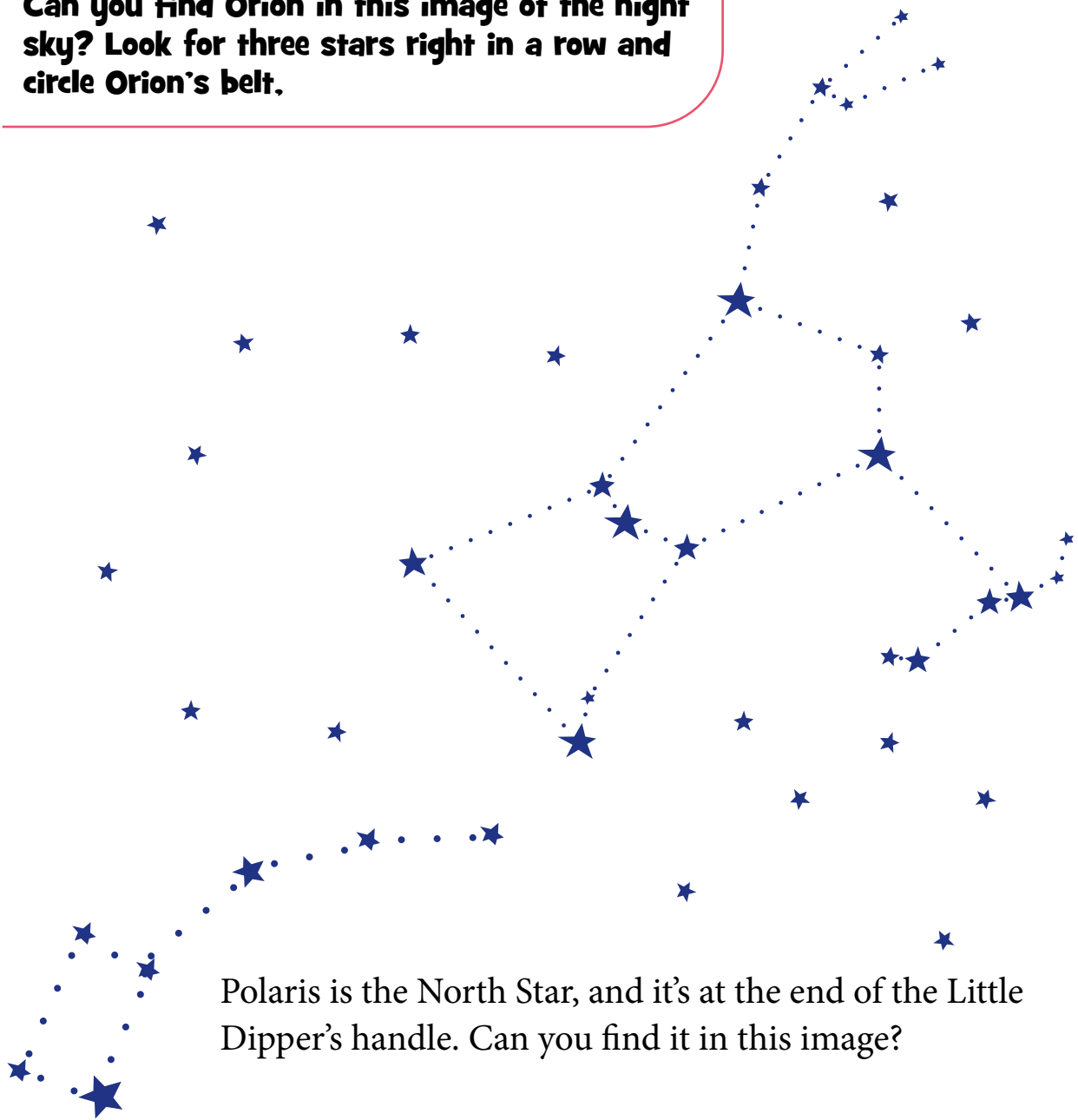


Rigel will have a blue-white glow, and it's one of the brightest stars in the sky. Do you remember how many suns could fit inside this star? More than 70! Above the belt, Betelgeuse will be one of the shoulders. This star will have an orange or red glow, and it's one of the biggest stars we know about.

There are many more constellations in the night sky you can learn about, and they're a great way to learn about certain stars and then find them in the sky!

name _____

Can you find Orion in this image of the night sky? Look for three stars right in a row and circle Orion's belt.



Polaris is the North Star, and it's at the end of the Little Dipper's handle. Can you find it in this image?

Discussion Starters

Have you ever looked at a constellation in the sky?

What constellation is your favorite?

Which constellation would you like to look for?

- Go outside at night and look at the stars. Can you identify any constellations? There are also mobile apps available that can help you easily locate constellations in the sky.



Stars are amazing, and constellations can help us find certain special stars in the sky. Today, let's make constellations!

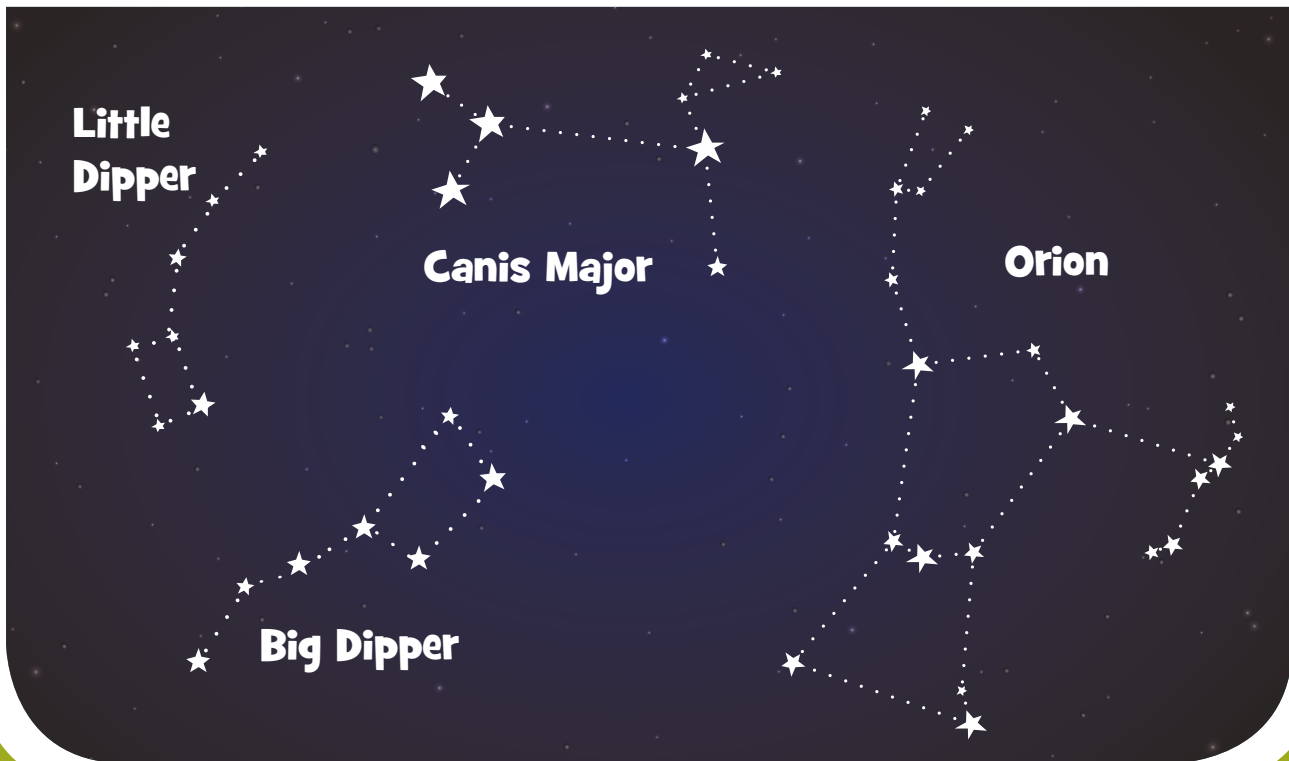
Experience

Activity directions:

materials needed

- Black construction paper
- White crayon
- Star stickers
- Glitter glue (optional)

1. Direct your student to pick his or her first constellation from below and look at the example. Then instruct the student to place star stickers on the construction paper in the same pattern as the constellation.
2. Use the white crayon to trace the constellation between the stars. Circle special stars (like Polaris, Sirius, Betelgeuse, and Rigel) and label them. Label each page with the name of the constellation.
3. Repeat for each constellation shown.
4. Optional: Your student may also use glitter glue to add small star dots around each constellation.





I sure had fun exploring the night sky with you this week! You know, there are so many stars in the universe and so much we don't know about them. But God created all of them in His wisdom, power, and majesty.

Share When I see the sun, moon, and stars, it reminds me that God is wise and powerful. It also reminds me that God cares for me too. Psalm 136:1–9 says,

Give thanks to the LORD, for he is good. His love endures forever.

Give thanks to the God of gods. His love endures forever.

Give thanks to the Lord of lords: His love endures forever.

to him who alone does great wonders, His love endures forever.

who by his understanding made the heavens, His love endures forever.

who spread out the earth upon the waters, His love endures forever.

who made the great lights — His love endures forever.

the sun to govern the day, His love endures forever.

the moon and stars to govern the night; His love endures forever.

“Endures” is a word that means it will last forever. God’s love lasts forever. When you see the night sky, let it remind you of God’s great wisdom, power, and His enduring love for you. Are you ready to add a new page to our Science Notebook? Remember to tell someone about the constellations!

What is something you want to remember about constellations?

Handwriting practice lines consisting of solid top and bottom lines with a dashed midline. There are five sets of these lines provided for writing.

name _____

What is your favorite constellation? Draw a picture of it below!



Psalm 136:1

“Give thanks to the Lord, for he is good. His love endures forever.”

	Actions
Give	Place hands at hip level, palms facing up. Raise hands to shoulder level.
Lord	Make an L with your pointer finger and thumb on your right hand. Place your L hand at your left shoulder and cross it in front of you to your right hip — almost like you are wearing a sash and tracing over it with your hand.
good	Touch the fingers of your right hand to your mouth, then lower your right hand to the palm of your left hand.
love	Cross your arms in front of your heart.
forever	Look out as far as you can see.

Seasons

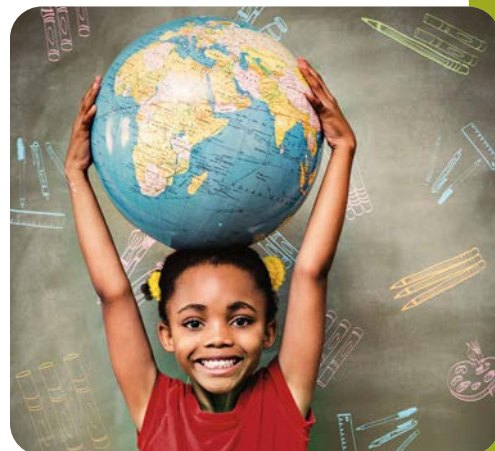
Day

Learn

Spring, summer, fall, and winter — these seasons repeat each year in a regular pattern. Have you ever wondered why the earth has regular seasons? Let's explore the reason behind the seasons this week!

In order to discover the reason the earth has regular seasons, we need to first explore the earth's orbit around the sun. It takes the earth 365 days to orbit all the way around the sun. Remember, those 365 days are what makes our year here on earth.

The earth is a sphere, like a ball, but it doesn't orbit and spin straight up and down toward the sun. Hmm, what does that mean? Let's imagine there is a long pole through the center of the earth — we call this an axis. An axis is a



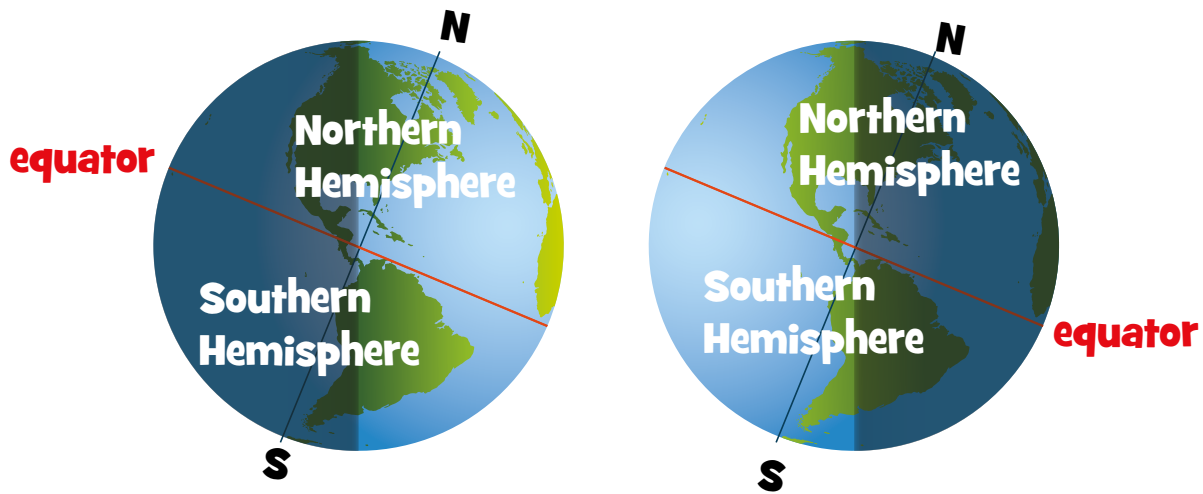
line we imagine through the center of a planet. This line, or axis, helps us describe how the planet orbits and spins.

The earth's axis — the line it orbits and spins around — isn't straight up and down, it is tilted to the side.

Now let's also imagine a line around the middle of the earth — we call this line the equator. Above the equator is the Northern Hemisphere, or the northern half of the earth. Below the equator is the Southern Hemisphere,

- 4- or 5-inch Styrofoam™ ball
- Metal or wooden skewer (12+ inches)
- Permanent marker
- Flashlight
- White paper
- Pencil
- Green and blue paint, paintbrush (optional)

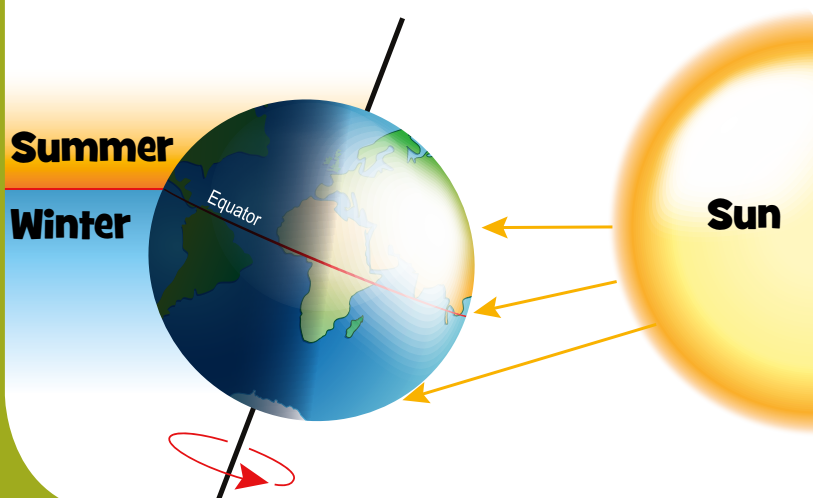
Weekly materials list



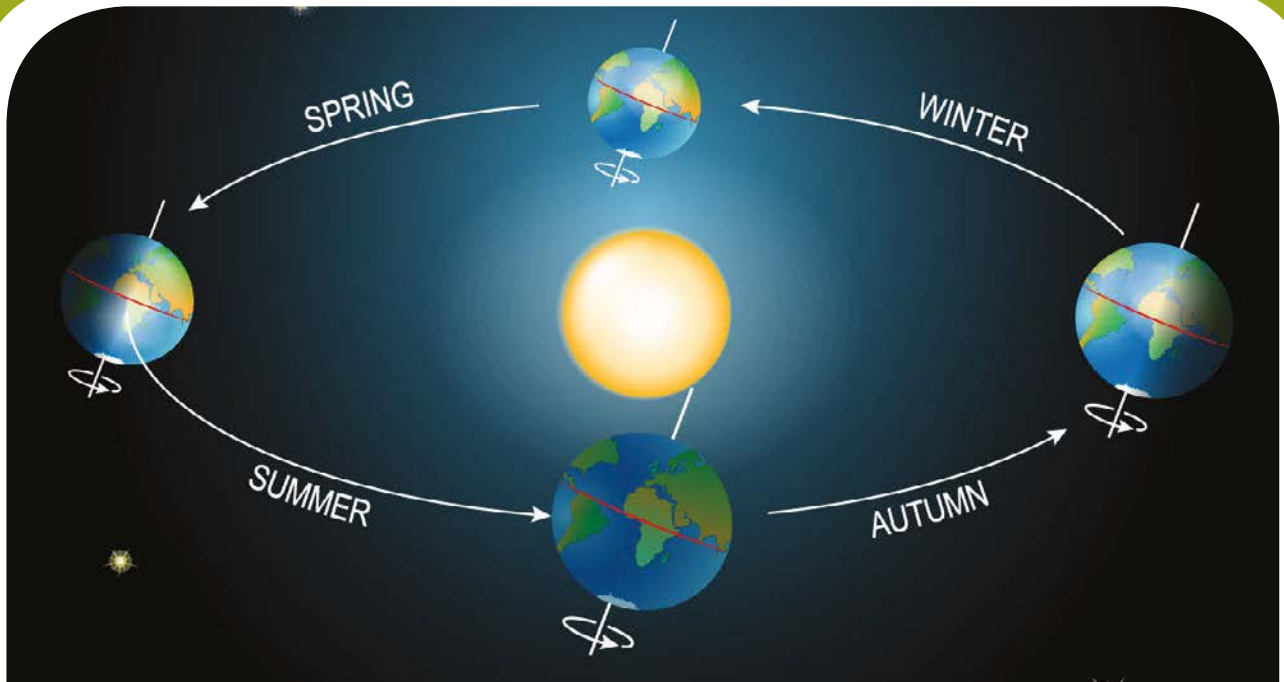
or the southern half of the earth. As the earth completes its orbit all the way around the sun, it is always tilted the same way — but why does this matter to the hemispheres?

When the earth is on one side of the sun in its orbit, the tilt of the earth means that the Northern Hemisphere will be angled toward the sun while the Southern Hemisphere will be angled away from the sun. If we imagine the earth's axis, the side on the Northern Hemisphere will point toward the sun.

This means that the Northern Hemisphere receives more direct light and heat from the sun. What season is the warmest and has the most direct light from the sun? Summer! When the Northern Hemisphere is angled toward the sun, it receives direct sunlight, and that makes it summer in the Northern Hemisphere.



However, the Southern Hemisphere is angled away from the sun. It still receives sunlight, but it is indirect. Indirect light from the sun spreads out farther and doesn't feel as warm. What season do you think it is in the Southern Hemisphere?



Winter! When the Southern Hemisphere is angled away from the sun, it still receives light from the sun, but the light and heat are indirect. They're spread out over a large surface, which makes the temperatures colder.

The earth continues its orbit until it reaches the other side of the sun. Remember, the angle of the axis stays the same so that when the earth reaches the other side of the sun, the Northern Hemisphere is now angled away from the sun. Now, the Northern Hemisphere receives indirect light from the sun — it's winter in the Northern Hemisphere! But that also means the Southern Hemisphere is angled toward the sun and is receiving direct sunlight, which makes it summer in the Southern Hemisphere!

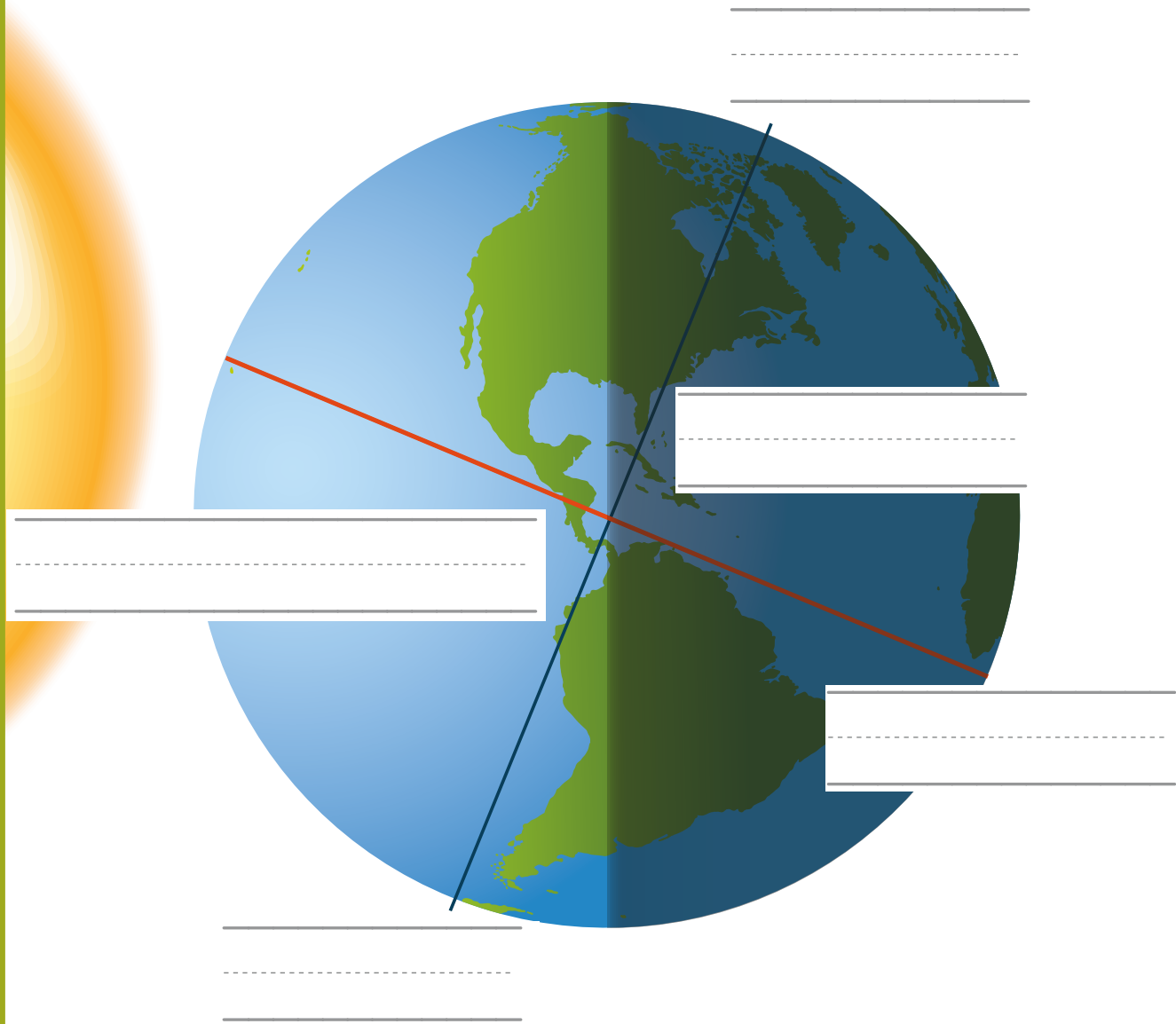
So that is the reason for summer and winter, but what about spring and fall? Let's look closely at the earth's axis again. When one side of the earth's axis is pointed toward the sun, it creates summer and winter. But sometimes the earth's axis doesn't point toward the sun at all.

When this happens, can you see how one hemisphere is still slightly tilted toward the sun? It still won't have the most direct light, though. This makes it spring for that hemisphere! The other hemisphere is angled slightly away from the sun, and it will be fall there.

Wow, it's really amazing to see how the tilt of the earth gives us seasons!

name _____

Label the image below **North, South, Equator, Summer, and Winter.**



Discussion Starters

Do you live in the Northern or Southern Hemisphere?

What season are you in now?

What do you think the earth would be like without seasons?



Experience

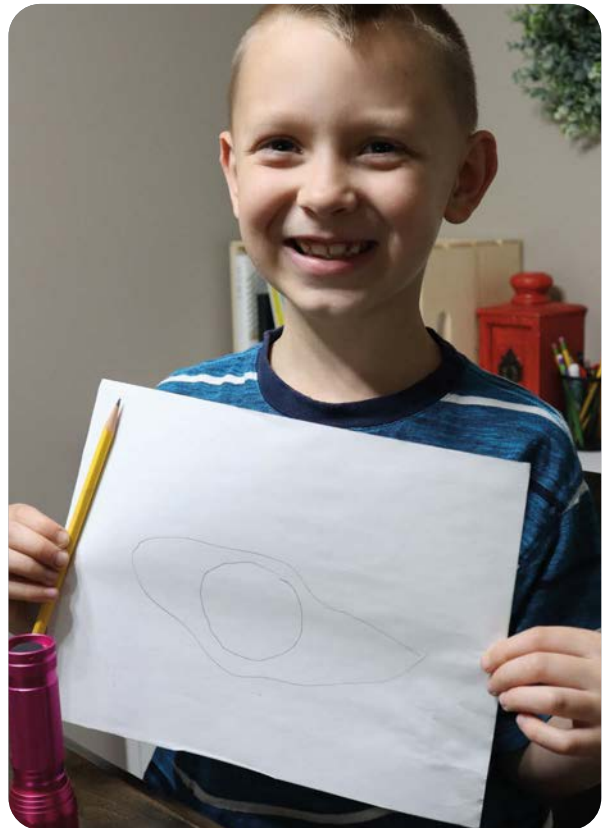
materials needed

- 4- or 5-inch Styrofoam™ ball
- Metal or wooden skewer (12+ inches long)
- Permanent marker
- Flashlight
- White paper
- Pencil
- Green and blue paint, paintbrush* (optional)

We're exploring the seasons this week, and today we have two activities as we explore direct and indirect light. What are we waiting for? Let's get started!

Activity directions:

1. Place the paper on the table and turn off the lights.
2. Shine the flashlight directly on top of the paper and ask your student to trace. This is like direct sunlight during the summer. There is a lot of heat and light energy focused on one place of our paper. But what happens if we make the light indirect?
3. Tilt the flashlight so the beam is now more diffused. Direct your student to trace around the light.
4. Now our light is more indirect. Our flashlight didn't change, but the light energy is now covering a bigger part of the paper. The indirect light isn't as strong and bright as the direct light was. This is how light from the sun shines on the earth during the winter.



Activity 2 directions:

*Optional: You may paint the Styrofoam™ ball to resemble planet earth and allow to dry.



1. Use the permanent marker to draw a line around the middle of the Styrofoam™ ball.
2. On the top half of the ball, write N for the Northern Hemisphere. On the bottom half, write S for the Southern Hemisphere. Show the hemispheres to your student.
3. Insert the skewer through the top of the Northern Hemisphere and push it all the way through the ball so that the ball lies on the half-way point of the skewer. This is our axis.

4. Tilt the skewer so the earth is at a slight angle.
5. Hold the flashlight 2–3 feet away from the earth, with the skewer tilted slightly toward the light. The height of the flashlight should be about even with the equator.
6. Turn on the flashlight (you may also turn off the lights in the room for a clearer view). Which hemisphere is the flashlight shining more directly on? Would it be summer or winter in that hemisphere? What about the other hemisphere?



7. Now tilt the earth in the opposite direction. The top of the skewer should now be tilted slightly away from the light. Which hemisphere is the flashlight shining more directly on now? Would it be summer or winter in that hemisphere? What about the other hemisphere?



Share

So, what is the reason for the seasons? It's the tilt of the earth as it orbits the sun! Isn't it amazing that God made the earth with just the right amount of tilt to give us four unique and beautiful seasons? I see God's wisdom in the tilt of the earth. What about you? It reminds me of Daniel 2:20–21 (NIRV), which says, *“May God be*

praised for ever and ever! He is wise and powerful. He changes times and seasons. He removes some kings from power. He causes other kings to rule. The wisdom of those who are wise comes from him. He gives knowledge to those who have understanding.”

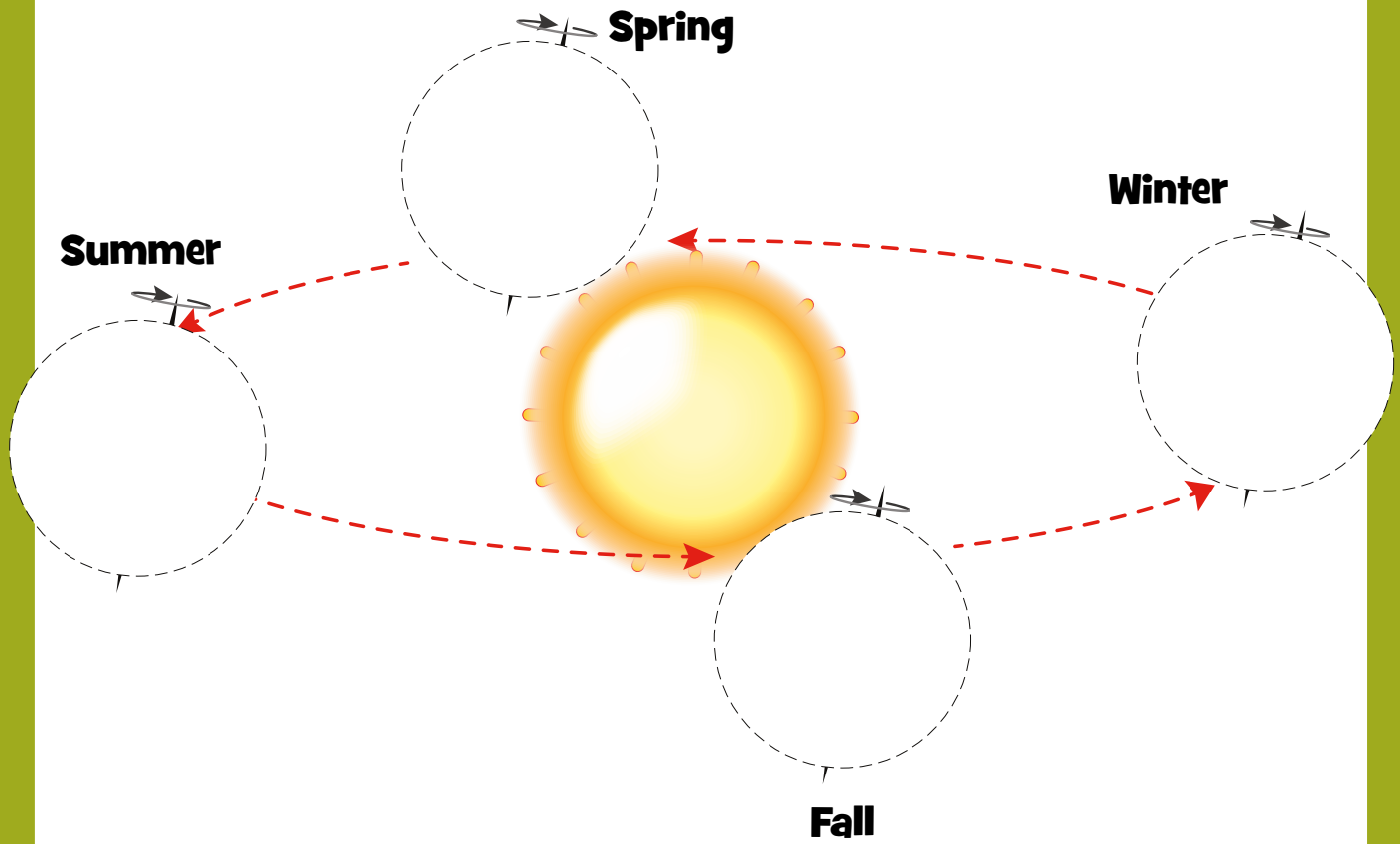
That verse reminds us that, ultimately, God is in control of everything. As the seasons change, remember that God's amazing design gives us each season and remember to praise Him! Now let's add a new page to our Science Notebook and share what we learned this week with someone else.

What is something you want to remember about the seasons?

Handwriting practice lines consisting of solid top and bottom lines with a dashed midline, repeated seven times.

name _____

Cut out the images of the earth on the next page, then glue them in the correct spot to show the earth's tilt for the season.



Spring



Summer



Fall



Winter



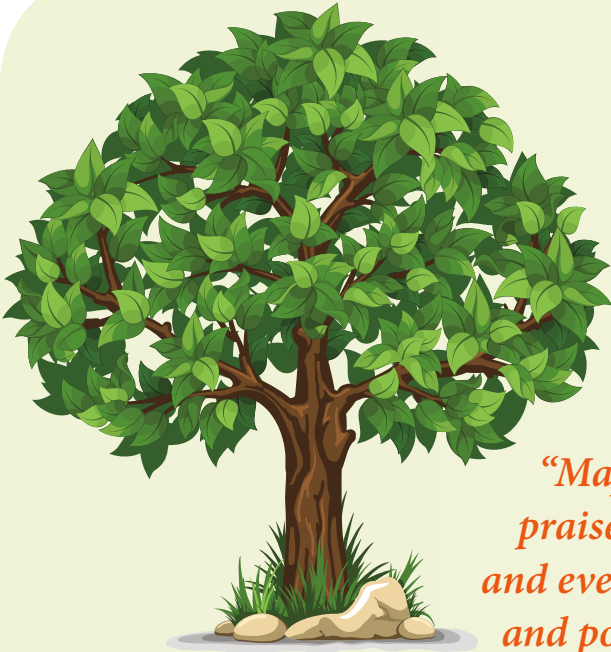
Let's memorize

Daniel 2:20–21 (NIRV)

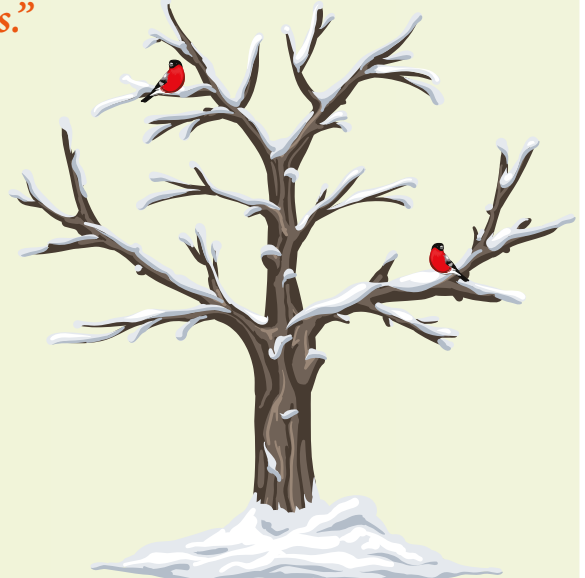
“ May God be **praised** for ever and ever! **He** is wise and powerful. He changes **times** and **seasons**. He removes some **kings** from power. He causes other **kings** to **rule**. The **wisdom** of those who are wise comes from him. He **gives** knowledge to those who have understanding.”

	Actions
praised	Raise your hands or pretend to sing.
He	Point to the sky.
times	Point to your wrist, like you're wearing a watch.
seasons	Hold up four fingers for the four seasons.
kings	Pretend to place a crown on your head.
rule	Point your finger like you're giving directions.
wisdom	Point to your forehead.
gives	Hold out your hands, as if offering a gift.





*“May God be
praised for ever
and ever! He is wise
and powerful. He
changes times and
seasons.”*



Blank for cutting.

Answer Key

Week 1-Day 1

Science helps us **ask** questions, **test** our ideas, and **share** what we've learned with others.

Week 1-Day 3



Week 2-Day 1



potential



potential



potential



kinetic



kinetic



kinetic



potential



kinetic



kinetic

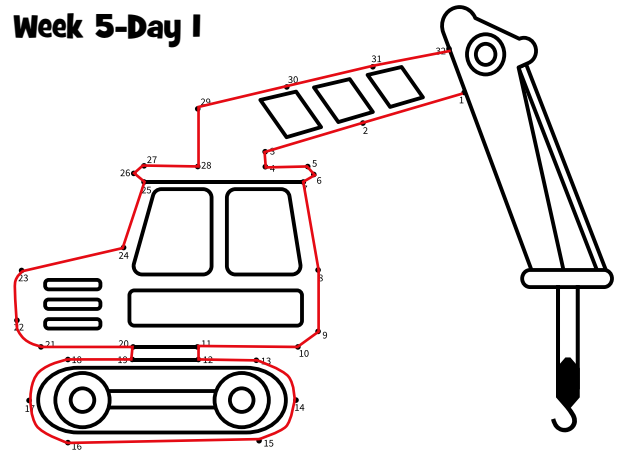
Week 3-Day 1



Week 4-Day 3



Week 5-Day 1



Week 5-Day 3

