

FOUNDATIONS OF SCIENCE

WEEK 18—“GREATER LIGHT TO RULE THE DAY”

Day 1

Hear:

Scripture tells us, “And God made two great lights; the greater light to rule the day... (Genesis 1:16a, KJV). Of course, it is very obvious that the “greater light” that rules the day is the sun.

Before starting, each student should look up the following words, prefixes, and suffixes in a dictionary or online. Write out a *short* definition for each. Place these vocabulary words and definitions into a notebook.

- solar system
- core (of the sun)
- photosphere
- sunspots
- spicules
- chromosphere
- eclipse
- solar flares
- solar prominence
- corona
- solar wind
- diameter
- radius
- circumference

Keep:

- Review the vocabulary words and Hebrew words and definitions from Week 15 (Day 1).

Hear:

- The sun rules everything where its light shines. (Read Psalm 136:8.) Make a model showing the sun and the earth. A globe works well to represent the earth. How does the sun help to divide the light from the darkness over each 24-hour period? (Read Genesis 1:18.)
- High-school students: High-school students: Finish watching the following videos this week – <https://www.khanacademy.org/science/physics/forces-newtons-laws>

Do:

- Important Note:** Never view the Sun directly with the naked eye or with any unfiltered optical device, such as binoculars or a telescope! See <http://www.spaceweather.com/sunspots/doiyourself.html> for ways you can view the sun without getting hurt.

Day 2

Hear:

- Research: The sun does not *equal* light. It gives light. (Psalm 74:16) *How* does the sun give light? What is nuclear energy? How does the sun make it?
- Read about solar eclipses at <http://www.mreclipse.com/Special/SEprimer.html>. Make a notebooking page that tells about a solar eclipse, including diagrams of the sun, moon, and earth in the positions of a total solar eclipse, partial eclipse, and annular eclipse.

Learn:

- How large is the sun?
 - Cut out a one-inch piece of yarn and place it on the floor. Label it “Earth’s Diameter.”
 - Unroll a very long, straight piece of yarn across the floor. Measure out 109 inches, and cut the yarn to that length. Label it “Sun’s Diameter.”
 - The sun’s diameter is 109 times longer than the earth’s diameter. Do you understand what this means?

Day 3

Hear:

- Research: How does the sun affect the warmth and length of summer and winter? (Read Psalm 74:17.) Draw a diagram for your notebook.

Learn:

- What is a light year? About how far away is the sun from the earth? Research Friedrich Wilhelm Bessel and the method he used to measure the distance to the stars (parallax). Read Job 22:12. Make a notebooking page telling what you’ve learned.

Day 4

Do:

- You can make a sundial (or shadow clock) that you can use to mark off hours and keep track of the time.
 - Take a notebook-sized piece of cardboard.
 - Stick a 4-inch pencil into a small ball of modeling clay. Flatten the clay ball on one side so that the pencil will stand straight up.
 - Take your cardboard outside early on a sunny morning. Lay it on a flat surface away from any possible shade.
 - Using a compass, make sure the side of cardboard with the pencil is to the north.
 - Every hour, trace the pencil’s shadow on the cardboard. Write the time next to the point.
 - At day’s end, connect the points of the shadows into a curve. What time was the line the shortest? Why?
 - Can you use a sundial at night? Why or why not?
- Read about one mention of a sundial in the Bible, in 2 Kings 20:1-11; 2 Chronicles 32:24, 31; and Isaiah 38:7-8.
- Note: A more advanced project would be to find a tall pole (such as an electric pole) in your yard, away from any trees or objects that could interfere with the shadow from the pole. Each day, for several months or even a year, measure the length of the pole at exactly noon. Write down these measurements

in your notebook, and plot the shadows into a graph. What shape appears over the months? How long does it take the shadow to return to its original position? Why?

Day 5

Do:

- Find out the date of the next total, partial, and annular solar eclipses at your location. <http://eclipse.gsfc.nasa.gov/solar.html> and <http://www.timeanddate.com/eclipse/>. Use this website to help you make a device to help you view the eclipse better: <http://www.timeanddate.com/eclipse/make-pinhole-projector.html>.
- Read about “Joshua’s long day” in Joshua 10:12-14. Note the phrase, “The sun stood still.” What does this mean? Did it literally stand still, or is this figurative language that just describes how it looked to the person recording the event? Interview 3 different adults, if possible including a scientist (by email or phone). Write about what you learned, the results of your interviews, and what you personally believe happened, giving proofs for your view.