FOUNDATIONS OF SCIENCE
WEEK 15—"AND GOD SAID, LET THERE BE LIGHTS…"

Day 1

Hear:
This week we are starting our study of what YHWH created on the fourth day, which are all the heavenly bodies. The study of astronomy is not as sure as most textbooks lead us to believe. Almost everything we know about space is still a theory. As we learned in Week 1, science must be observable. However, the vastness of our universe makes it difficult to observe. Mathematical principles from the field of geometry have helped scientists make predictions and propose theories, especially with the help of observable principles from the field of physics. We will start our overview of this subject by looking at the only source of absolute truth, the Scriptures, and learning how to discern truth and evaluate scientific theories.

> *Note: This is a busy week! You may wish to omit activities, to assign some activities to older students as independent work, or to spend more than a week on these topics.*

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.

- ❑ evolution
- ❑ macroevolution
- ❑ microevolution
- ❑ Big Bang Theory
- ❑ principle of causality
- ❑ verbal inspiration
- ❑ plenary inspiration
- ❑ geo-
- ❑ helio-
- ❑ -centric
- ❑ astro-
- ❑ -logy
- ❑ -nomy

In addition, look up each of the following words in *Strong's Hebrew Dictionary*. Give the Hebrew word, the Strong's number, and the definition. You may wish to look at related Hebrew root words to expand your understanding of the words. Note: The following words are based upon the King James Version.

- ❑ created (Genesis 1:1)
- ❑ lights (Genesis 1:14)
- ❑ firmament (Genesis 1:14)
- ❑ heaven (Genesis 1:14)
- ❑ divide (Genesis 1:14)
- ❑ day (Genesis 1:14)
- ❑ night (Genesis 1:14)
- ❑ signs (Genesis 1:14)

- ❑ seasons (Genesis 1:14)
- ❑ years (Genesis 1:14)
- ❑ earth (Genesis 1:15)
- ❑ light (Genesis 1:3, 15)
- ❑ stars (Genesis 1:16)
- ❑ evening (Genesis 1:19)
- ❑ morning (Genesis 1:19)
- ❑ month (1 Kings 6:1)
- ❑ month (1 Kings 6:2) *the word is used twice in this verse, but the Hebrew uses two different words

Hear:

- ❑ Astronomy and astrophysics can get extremely complicated. However, read Romans 1:19-20. Who can understand what YHWH has created? Read Deuteronomy 31:9-13. Who was to be in the audience when the Torah was read aloud every seven years? Do you think even children can understand YHWH's Torah?
- ❑ After looking up the definitions above, explain what is meant by verbal plenary inspiration.

Hear:

- ❑ High-school students: Watch the following videos over the following *two* weeks: https://www.khanacademy.org/science/physics/newton-gravitation. Make a schedule of when you will watch each video, and be sure that your parents know your schedule and hold you accountable.

Day 2

Hear:

- ❑ Watch http://science.howstuffworks.com/big-bang-videos-playlist.htm (scroll down and click "Assignment Discovery: The Big Bang). Length: 1:16
  - Optional: You may wish to read http://science.howstuffworks.com/dictionary/astronomy-terms/big-bang-theory.htm.
  - Optional: You may wish to explore https://www.khanacademy.org/science/cosmology-and-astronomy/universe-scale-topic/big-bang-expansion-topic/v/big-bang-introduction if you would like to learn about the Big Bang more extensively.

Learn:

- ❑ How does the Principle of Causality disprove the Big Bang theory?
- ❑ The "Big Bang" teaches that the sun and many other stars formed before the earth, while Genesis teaches that they were made on the fourth day *after* the beginning of creation, and only about 6,000 years ago rather than billions of years ago.
- ❑ Why is evolution's story of the big bang only a theory? (because no human was there to observe it) Why is YHWH's account of creation only a theory? (because no human was there to observe it)
- ❑ What are some ways that we know the Bible is true? http://www.answersingenesis.org/articles/2011/03/22/bible-is-true

Day 3

Keep:

- ❑ Do you remember what Newton's First Law of Motion is? (Week 1, Day 2) Review his laws at http://www.youtube.com/watch?v=mn34mnnDnKU.

Hear:

- ❑ Learn about Einstein's theory of relativity: http://www.youtube.com/watch?v=ev9zrt__lec.

Day 4

Keep:

- ❑ What is the heliocentric model of the solar system?
- ❑ For fun: http://www.webdev20.pl/skins/default/js/demos/solar_system/index.html is a computer model of solar system (heliocentric).

Do:

- ❑ Coloring picture of the heliocentric model: http://www.enchantedlearning.com/subjects/astronomy/activities/coloring/Solarsystem.shtml
- ❑ Make a heliocentric model of the universe: http://www.enchantedlearning.com/crafts/astronomy/solarsystemmodel/

Day 5

Hear:

- ❑ Watch this video explaining the geocentric model: http://www.youtube.com/watch?v=8MiqVtqFcgc
- ❑ For fun: http://www.youtube.com/user/JohnDMick shows computer models of the solar system (geocentric).
- ❑ For more information on the geocentric model: http://www.youtube.com/watch?v=CUdaTH3T3Ok or visit http://geocentricity.com/geocentricity/index.html.

Do:

- ❑ Can you make a diagram of the geocentric model of the earth, similar to the heliocentric model you colored yesterday? (See http://geocentricity.com/geocentricity/images/modtycho.jpg)
- ❑ Can you make a geocentric model of the earth?

Learn: ***(optional)***

- ❑ Why are both models (heliocentric and geocentric) only theories?
- ❑ How can we know which is true? Does the Bible have anything to say about them? Read http://geocentricity.com/geocentricity/whygeo.html.
- ❑ For an opposing biblical view, see http://www.answersingenesis.org/articles/tj/v15/n2/geocentrism.
- ❑ Optional: Watch "Heliocentrism: False Science" https://youtu.be/229Y4F8SCFc

THE HIGH-SCHOOL STUDY OF ASTROPHYSICS

If you have an older student who seems to be especially interested in the fields of physics, engineering, or astronomy, you would be wise to require him to do an astrophysics unit on his own time. This will introduce him to Newton's laws of motion, Einstein's laws of relativity, and other essential physics concepts.

(Note: Students will learn the laws of physics that relate to both a geocentric and heliocentric view, because the laws of physics are the same for both views.)

We recommend starting that at this point of your year.

Student Study Method:

1. Download *A Geocentricity Primer*, by Gerardus D. Bouw, Ph.D., at http://geocentricity.com/geocentricity/primer.pdf.
2. Have notebook paper handy, or dedicate a specific journal to this unit of study.
3. Read one chapter at a time.
4. When an unknown word, concept, or historic person is encountered, you should write it down.
5. At the end of each chapter, each unknown concept should be looked up on the Internet. Expect this step to take several days.
6. If any new questions arise, those should also be written down and researched.
7. As you research, make notes defining words and concepts. Draw illustrations as needed, labeling everything carefully.
8. Write one-paragraph biographies of scientists or scholars mentioned, noting when and where they lived, and the major theories they proposed.
9. If you come across mathematical concepts or formulas, note them and practice using them. (Google can help you find additional examples.)
10. Can you think of any experiments, demonstrations, or models which you would like to do to help you understand these concepts? Have any of these already been done, and if so, can you find scholarly articles about them or videos made of them? Take careful notes! (Remember to follow the scientific method learned in Week 1.)
11. The chapter should be re-read. Is everything clear to you?
12. Write a 1-2 page summary of the chapter, putting what you have learned into your own words. (Do not plagiarize.)
13. Make a list of the most popular arguments opposing the views presented into this chapter. Next to each argument, mention if you agree or disagree with the views presented in this chapter.
14. Show your study materials to your parents and invite them to discuss it with you.
15. Continue to the next chapter.
16. At the end of the book, make a list of the major concepts you have learned. (Keep this to shorter than one page.) Give it to your parents to keep for your high-school transcript.