

# FOUNDATIONS OF SCIENCE

## WEEK 2—OVER THE FACE OF THE WATERS...

### Day 1

#### Learn:

We're going to learn about waves this week. Before starting, each student should look up the following words in a dictionary or online. Write out a *short* definition for each. Place these vocabulary words and definitions into a notebook.

- ☐ Wave
- ☐ Medium
- ☐ Crest
- ☐ Trough
- ☐ Transverse wave
- ☐ Longitudinal wave
- ☐ Wavelength
- ☐ Amplitude
- ☐ Frequency
- ☐ Speed
- ☐ Reflection
- ☐ Refraction
- ☐ Diffraction
- ☐ Interference

#### Hear:

Discuss the following together:

- ☐ Read [Genesis 1:1-2](#). What did the Spirit of God hover over?

Soon we're going to learn about the first things God made – sound and light. We'll discover that both of those forms of energy use waves to travel. Do you see that before God created anything, He was “hovering over the face of the waters”? We'll learn more about water later, but this week, let's talk just about waves.

Try this activity:

- ☐ Tie a rope or heavy string to something, and hold the opposite end in your hand. Begin making waves with the rope. Make both large and small waves, fast and slow waves.
- ☐ Tie a knot somewhere in the rope. Now watch the knot as you make waves in the rope. Does the knot actually travel? What does it do?
- ☐ Using the definitions you wrote down for this week's vocabulary words, can you explain the following things on your rope?
  - Wave
  - Medium

- Crest
- Trough
- Transverse wave
- Longitudinal wave
- Wavelength
- Frequency

- ☐ In your notebook, draw a wave and label the *crest*, *trough*, and *wavelength*.
- ☐ Optional: Watch video “[Introduction to Waves](#).”

## Day 2

### Hear:

- ☐ Watch video “[Amplitude, Period, Frequency and Wavelength of Periodic Waves](#).”
- ☐ Older students: Can you explain this mathematical formula?

$$\text{Speed (velocity)} = \text{wavelength} \times \text{frequency}$$

## Day 3

### Hear:

Discuss the following together:

- ☐ Watch video “[What Is a Ripple Tank?](#)”
- ☐ Read more about [ripple tanks](#).
- ☐ Can you make a simple ripple tank in your home? (Hint: What kinds of waves could you observe in an ordinary bathtub? Could you add lighting? Visit [http://tpt.aapt.org/resource/1/phteah/v50/i1/p17\\_s1?isAuthorized=no](http://tpt.aapt.org/resource/1/phteah/v50/i1/p17_s1?isAuthorized=no))

## Day 4

### Do:

- ☐ Here is a fun experiment to do with waves: [http://www.eduplace.com/rdg/gen\\_act/ocean/wave.html](http://www.eduplace.com/rdg/gen_act/ocean/wave.html)
- ☐ Be sure to ***write your predictions down*** before starting the experiment!
- ☐ Could you design a better experiment? What would make it better?

## Day 5

### Do:

- ☐ Notebooking – Make a page for your notebook. Be sure to include a paragraph that tells what you learned this week.

- ❑ Research – What do you think it means that the Spirit of God hovered over the face of the waters? What happens when a helicopter hovers over water? Look it up, then tell about it in a few paragraphs. Include pictures if they will help explain it. *(Note: Do not copy others' pictures or words. Use your own. If you need to, tell your mother what you want to say, and ask her to write it down for you. Another idea is to speak into a voice recorder on a cell phone, etc.)*
- ❑ High School – Share what you have learned about Sir Isaac Newton or Galileo Galilei.