

Unit 3 | Handout 6

Lesson 2: Testing the Motion of Waves Analysis

Purpose: To reflect on your inquiry with P-waves and S-waves

Guiding Questions: - What is a wave?
- How are the waves generated by an earthquake similar and different to each other?

1. Describe your observations of each type of wave.
 - a. Describe the type of wave created each time you moved the spring.

 - b. What was the purpose of using the floor tiles in this investigation?

 - c. What could explain differences between groups' wave times?

2. Below is a data table that shows the actual speeds of p-waves and s-waves. Use this table to answer the following questions.

Wave	Speed (m/s)	Speed (mph)
P-Wave	300-6500 m/s	671-14540 mph
S-Wave	100-3600 m/s	223-8052 mph

- a. Which wave moves faster?

- b. What are some reasons the speeds of the waves vary (i.e. why isn't the speed of either wave always the same, why is there a range)?

3. Read "Earthquake waves and the transfer of energy" on page 18 of the XPT book and respond do the following.

a. In what directions do earthquake waves move?

b. Why are P-waves called push-pull waves?

c. Why are S-waves called side-to-side waves?

d. What happens when the energy from the wave travels through earth's particles?

e. In our pre-summative I asked you what drives changes in the geosphere. How are earthquake waves related to changes in our geosphere?

4. Read "Designing Earthquake-Resistant Buildings" on pages 19-23 of the XPT book and respond to the following.

a. Use examples from the from the reading selection to explain the causes for a building to collapse in an earthquake.

b. Describe several design features that can be added to a building to make it earthquake-resistant.