



Your Mission: Work in a group of 3 carefully moving and timing the slinky to create and understand the differences between P-waves, S-waves and L-waves.

Materials:

- Spring Stop Watch Timer Pen/Pencil

Procedure:

1) Partner A will hold one end of the spring firmly in place on the floor or desk while Partner B moves the other end of the spring in each wave motion. Partner C measures the time it takes for one wave to travel one complete trip back and forth through the spring.

2) First create a P-wave (Push & Pull)

- Practice creating P-waves by first pulling the spring toward you a bit and then pushing it away. Notice the way the wave travels along the spring.
- Your group will do 3 trials of the P-wave, timing the wave as it does one complete trip back and forth.
- Write down your times and find the average.

P-wave	Trial 1	Trial 2	Trial 3
Time (s)			

Average Time (s) = _____

Sketch:

3) Next create an S-wave (Side to Side)

- Practice creating S-waves by wiggling the spring from side to side. Notice the different type of wave that travels along the spring.
- Your group will do 3 trials of the S-wave, timing the wave as it does one complete trip back and forth.
- Write down your times and find the average.

S-wave	Trial 1	Trial 2	Trial 3
Time (s)			

Average Time (s) = _____

Sketch:

4) Next create an L-wave (Up & Down)

- Practice creating L-waves by reducing your spring length so that when you lift the spring into the air and create up & down motions, the wave amplitudes are the same size as the P- and S-waves. Notice the different type of wave that travels along the spring.
- Your group will do 3 trials of the L-wave, timing the wave as it does one complete trip back and forth.
- Write down your times and find the average.

L-wave	Trial 1	Trial 2	Trial 3
Time (s)			

Average Time (s) = _____

Sketch:

Investigation Questions:

- 1) a) Which type of wave moved through the spring most quickly?

b) Write the order of the wave average time from fastest to slowest.

c) How would each of these waves move differently through the earth during an earthquake?
- 2) Which wave do you think would be most destructive to property? Why?
- 3) If a seismogram records P-waves and L-waves but not S-waves, where was the earthquake epicenter located relative to the seismograph? Explain your thinking.