

Lab 4 – Slinky Lab

Introduction:

Write 10 sentences that talk about the topics in chapter 17. You can use your notes, the textbook, vocabulary, etc. to help you.

Materials: (copy the materials into the lab notebook)

Slinky

Ruler

Timer/Phone

Procedure: (copy the procedure into the lab notebook)

1. Pull the slinky out on a smooth floor to a length of about 2 to 3 meters.
Student 1 will firmly hold the slinky at one end and not move that end.
2. At the opposite end, Student 2 will move their hand very quickly from left to right to make waves travel down the slinky.
3. Student 2 will make one wave and have Student 3 time how long it takes the wave to travel from Student 1 to Student 2. (If that time is too short, then you can time how long it takes to travel both directions and double the distance.) This is the period of the wave.
4. Student 2 will repeatedly make waves while Student 3 sets the timer for 10 seconds. Student 2 will count how many waves are produced in 10 seconds.
5. Now repeat steps 2 – 4, but make the waves by having Student 2 grab a lot of spirals of the slinky and make waves by releasing the extra spirals. Fill in the second data chart with this information.

Data: (You can tape the data charts ONLY in the lab notebook. All other sections must be hand written in BLACK INK.)

Type of Wave Formed	
Direction of the Wave	
Direction of the Coils	
Period of the Wave (s)	
Waves in 10 seconds	
Frequency (Hz)	

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Period of the Wave (s)	
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Frequency (Hz)	

****Data hints (You do not need to copy the hints into the lab notebook).**

Frequency = (# of waves in 10 seconds)/10 seconds

Questions: (Copy the questions and answer them in the lab notebook)

1. Draw a transverse wave and label the crest, trough, wavelength, rest position, and amplitude.
2. Draw a longitudinal wave and label the compressions and rarefactions.
3. What would happen to the amplitude if you moved the slinky over a larger distance? Why?
4. What is the difference between reflection, refraction, diffraction, and interference? (Draw a picture of each.)
5. For waves traveling the same speed, how is wavelength related to frequency?

Conclusion:

Write 3 sentences for the conclusion. They can be about anything that you learned, mistakes that you made during the lab, or any real life connections that you can use to relate to the lab.