



# Waves Lab Teacher Notes

For this lab your groups will need:

1 slinky per group

1 stopwatch per group

1 meter stick or metric ruler per group

Students will need to have an understanding of the following:

Longitudinal and transverse waves

The amplitude, frequency, and wavelength of a wave

Higher amplitude waves are higher energy

\*Note-It is easiest to measure out a one or two meter distance on the floor for each lab group and mark it off with tape for them to use. Instruct the students to stretch the slinky between the area that you have taped off, and then have them measure it on their own. Having a distance of one or two meters will make the calculations for wave speed in the chart for question #3 simpler.



# Waves Lab Procedures

1. With your lab group, stretch the slinky between two people on the floor.

Measure the length of the outstretched slinky.

Length- \_\_\_\_\_ cm

2. Create a wave by having one person quickly snap their wrist sideways.

Is this wave longitudinal or transverse? \_\_\_\_\_

3. Repeat step 2 and time three waves as they travel the length of the spring.

Record the times in the chart below

<b>Trial</b>	<b>Time (seconds)</b>	<b>Distance Traveled (meters)</b>	<b>Overall Speed of wave (m/s)</b>
1.			
2.			
3.			

4. Do the times in the chart above represent amplitude, wavelength, or the frequency of the wave? \_\_\_\_\_

5. Repeat step 2, but do not snap the spring as far. Which part of the wave was affected by this change: the amplitude, frequency, or the wavelength?  
\_\_\_\_\_

6. Repeat step 2, but snap the spring three times in a row. Which part of the wave was affected by this change: the amplitude, frequency, or the wavelength?  
\_\_\_\_\_

7. How could you make a higher energy wave than the wave you created in step 6?  
\_\_\_\_\_

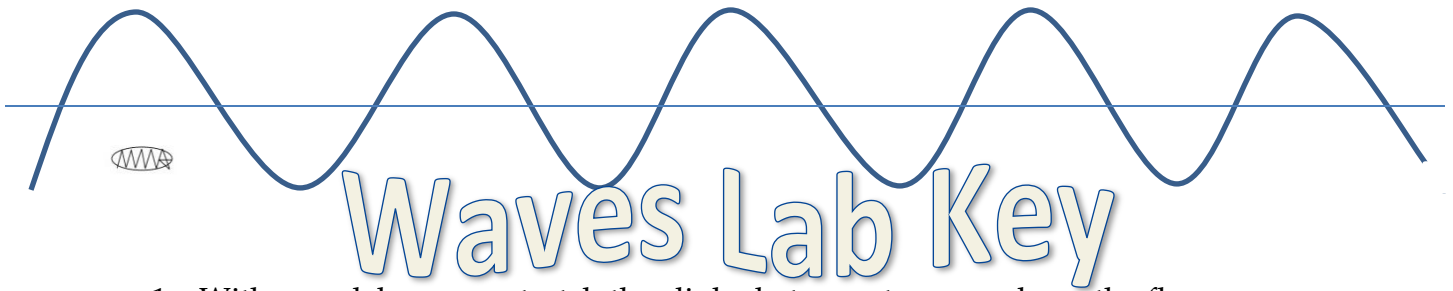
8. Squeeze together about 15 of the slinky coils, and then release them.

Is this wave longitudinal or transverse? \_\_\_\_\_

9. Have one partner quickly push the spring toward the other person (don't let go of the spring) then pull it back.

Is this wave longitudinal or transverse? \_\_\_\_\_

10. Draw a wave below and label the wavelength and amplitude of the wave.



# Waves Lab Key

1. With your lab group, stretch the slinky between two people on the floor. Measure the length of the outstretched slinky.

Length- Answers will vary cm

2. Create a wave by having one person quickly snap their wrist sideways.

Is this wave longitudinal or transverse? Transverse

3. Repeat step 2 and time three waves as they travel the length of the spring. Record the times in the chart below

Trial	Time (seconds)	Distance Traveled (meters)	Overall Speed of wave (m/s)
1.	<b>Answers will vary</b>		
2.			
3.			

4. Repeat step 2, but do not snap the spring as far. Which part of the wave was affected by this change: the amplitude, frequency, or the wavelength?

Amplitude

5. Repeat step 2, but snap the spring three times in a row. Which part of the wave was affected by this change: the amplitude, frequency, or the wavelength?

Frequency

6. How could you make a higher energy wave than the wave you created in step 6?

By snapping the spring farther to create a higher amplitude

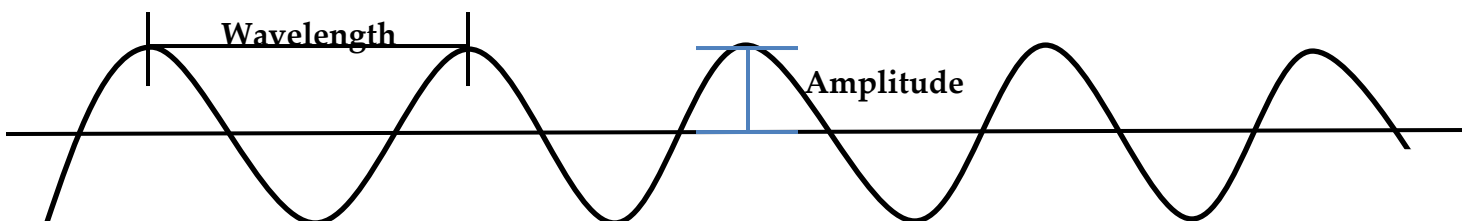
7. Squeeze together about 15 of the slinky coils, and then release them.

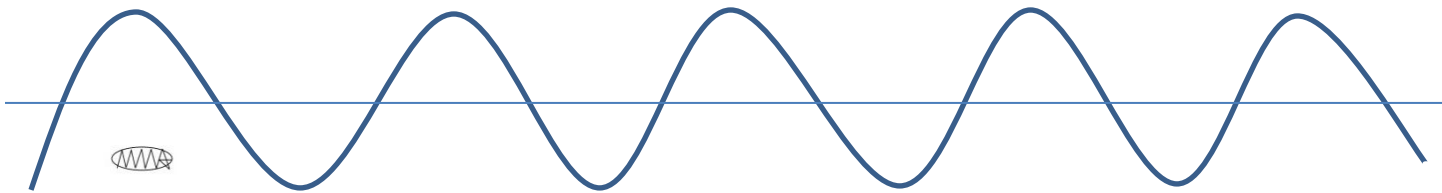
Is this wave longitudinal or transverse? Longitudinal

8. Have one partner quickly push the spring toward the other person (don't let go of the spring) then pull it back.

Is this wave longitudinal or transverse? Longitudinal

9. Draw a wave below and label the wavelength and amplitude of the wave.





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