

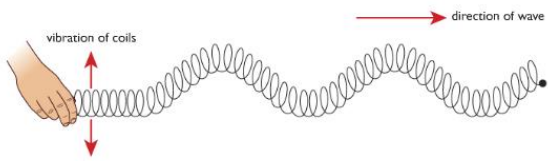
# LAB: ENERGY OF WAVES

**Materials:** slinky, meter of tape, calculator

1. With your lab group, stretch the slinky between the pieces of tape on the lab table. Measure the length of the outstretched slinky. Length= \_\_\_\_\_ m

## PART: 1

2. Create a wave by having one person quickly snap their wrist sideways while the other student is holding the slinky. Is this wave longitudinal or transverse? \_\_\_\_\_



3. Repeat step 2 and time three waves as they travel the length of the spring (from one side of tape to the other and back to the original tape). Record the times in the chart below.

Trial #	Distance Traveled (m)	÷	Time (s)	=	Frequency (m/s)
1		÷		=	
2		÷		=	
3		÷		=	

4. Repeat step 2, but do not snap the spring as far. What changed about the wave?  
\_\_\_\_\_

5. When a wave has less energy it has (more or less) amplitude, (longer or shorter) wavelength and (higher or lower) frequency. Circle all 3 answers.

6. How could you increase the amplitude of the wave made in step 2? \_\_\_\_\_

7. If a wave has greater amplitude, what will its energy be? (circle one) More or Less

8. Repeat step 2, but snap the spring three times in a row. What changed about the wave?  
\_\_\_\_\_

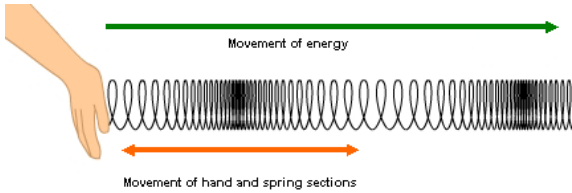
9. The wave in step 8 would have what type of **amplitude** when compared to the wave in step 2. (circle one) Increased or Decreased

10. The wave in step 8 would have what type of **wavelength** when compared to the wave in step 2. (circle one) Increased or Decreased

11. The wave in step 8 would have what type of **frequency** when compared to the wave in step 2. (circle one) Increased or Decreased

# PART: 2

12. Stretch the slinky out to the 1 meter mark. Squeeze together about 15 slinky coils, and then release them. Make sure not to let go of the slinky, you are just releasing the additional coils.



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

13. Repeat step 12 and time three waves as they travel the length of the spring. Record the times in the chart below.

Trial #	Distance Traveled (m)	÷	Time (s)	=	Frequency (m/s)
1		÷		=	
2		÷		=	
3		÷		=	

14. Repeat step 12, this time only squeeze together 7 coils. What changed about the wave?

\_\_\_\_\_

13. How could you increase the speed of the wave you created in step 12?

\_\_\_\_\_

14. 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? \_\_\_\_\_

15. Draw a longitudinal and a transverse wave below and label the **wavelength** and **amplitude** of each of the waves.

longitudinal

transverse