

## **Mini-Lab: WAVES & the SLINKY**

**PURPOSE:** To use slinky toys to demonstrate wave properties and make observations of wave types.

### **Procedure:**

1. **Each person** in your group should write a "lab report" in his/her notebook with a title, purpose, etc...
2. Obtain one slinky. **Please be careful...** despite the fact they are fun toys, they are for lab now. You will also need a meter stick.
3. Use at least 2 people to stretch the slinky across the desk table and manipulate the slinky in the ways described below to complete the lab and record observations and conclusion based on what you see.

### **MANIPULATIONS:**

- A. Create a longitudinal wave by applying a jolt to the spring in the *same direction as the wave will travel*. **Record** both the term **longitudinal wave** and **how you created it**. **Draw a picture** that illustrates what the wave looked like as it traveled through the spring.
- B. Create a transverse wave by applying a jolt to the spring that is *perpendicular (at right angles) in direction as the wave will travel*. **Record** both the term **transverse wave** and **how you created it**. **Draw a picture** that illustrates what the wave looked like as it traveled through the spring.
- C. Create a longitudinal wave by applying a jolt to the spring in the *opposite direction as the wave will travel*. **Record your observations of the wave and compare it to the wave in part A**.
- D. Create a **wave train** of transverse waves by continually moving the end of the slinky back and forth perpendicular to the direction of the wave. Have one person use the meter stick to estimate the wavelength from crest to crest. **DRAW the wave train and label the wavelength** of one crest to crest.
- E. Observe the phenomenon of **reflection** by applying *one strong jolt* to create a transverse wave that travels through the slinky. **Record what side the pulse traveled down the slinky and what side it returned up the slinky**.

**When you are finished, return the slinky and answer the following questions:**

### **QUESTIONS:**

1. State what the difference is between the way a longitudinal and transverse wave are formed.
2. Which do you think carries more energy? WHY?
3. What is the difference between **refraction** of a wave (like in water) and **reflection** of a wave like you saw.
4. What types of things in the world around you would create transverse waves?
5. What types of things in the world around you would create longitudinal waves?