



## Curiosity Guide #609

### Waves

Accompanies Curious Crew, Season 6, Episode 9 (#609)

#### Slinky Waves

Investigation #3

#### Description

You can wave to your friend, or you can make a wave with your friend!

#### Materials

- Slinky
- A friend

#### Procedure

- 1) Hold one end of the slinky and have a friend hold the other end.
- 2) Stretch the slinky out to eliminate sagging.
- 3) Strike one end of the slinky from the top to send a single pulse down the slinky.
- 4) What did you notice?
- 5) Try sending repeated pulses down the slinky.
- 6) What did you notice?
- 7) Try having both people strike their end of the slinky.
- 8) What happens when the waves meet?
- 9) Now pull back on several slinks or coil turns toward you from one end and let them go.
- 10) What did you notice?

#### My Results

## Explanation

Slinkys are great toys to demonstrate the motion of energy traveling in different kinds of waves. In this experiment, we observed both transverses and longitudinal or compression waves. When we strike one end with a single pulse of energy, the disturbance is perpendicular to the stretched slinky and the movement of the wave. The disturbance causes the slinky to bounce down and then up. This up-and-down movement is a transverse wave. A transverse wave can also move side-to-side if we strike the slinky on the side instead of the top. The wave moves down to the end and then reflects on the return.

The other kind of wave we saw was when the slinks or coils were pulled back and released. This is called a longitudinal or compression wave. Logitudinal or compression waves move in the same direction as the slinky and the wave. We are able to see the slinks move close together and then apart as the energy travels through the wire.

When both friends caused a pulse, sometimes the two transverse waves would collide and get bigger, and other times the waves would be out of sync. A peak and a valley would combine and cancel each other out. The waves got smaller due to the friction they encountered, and the energy spread out to the surroundings, like to the air particles.

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