

All About Waves

Investigation Data Sheet



Making Waves

Energy travels in waves. Some waves, called transverse waves, move up and down as they travel. Other waves move back and forth.

Objective

Demonstrate two ways that waves move using a spring toy.

Materials

- a spring toy
- a flat surface
- some helpers

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. Hold both ends of the spring toy, and move them up and down, over and over again. Observe how the spring moves up and down, too.
2. Working with a partner, stretch the spring toy on the floor between the two of you. One person should hold their end still, while the other moves his or her end back and forth, again and again. Try it at different speeds.
 - Sketch a picture of the wave, making sure to observe the high points and low points. Label this a transverse wave.

3. Now make another kind of wave, one that doesn't travel up and down like a transverse wave, but moves by squeezing together. Have one person hold one end of the spring still while the person on the other end pulls it, squeezing 10 to 15 coils tightly together. Now release those coils suddenly, but continue to hold on to the end of the toy. Observe the waves as they travel from the source to the opposite end.

4. Try it a number of times, and watch how the spring squeezes together as the energy moves from end to end. Is this movement very different from the 'up and down' wave?

- Try to draw a sketch of this wave, being sure to show some coils close together and some coils stretched apart.