

Activity

Waves in Different Mediums

Lab Preview

Directions: Answer these questions before you begin the Activity.

1. How do you represent the travel of waves through different mediums in this experiment?

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2. Why do you use the spring toys in this experiment?
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Have you ever swum underwater? If so, even with your head underwater, you probably still heard some sounds. Sound waves can travel through more than one medium, including air and water. The noises probably sounded different underwater than they do in air. How do waves change when they pass through different mediums?

What You'll Investigate

How is the speed of a wave affected by the type of material it is traveling through?

Possible Materials

small coiled spring toys (made out of metal and plastic)
rope, both heavy and light
string
long rubber band, such as those used for exercising
strip of heavy cloth, such as a towel
strip of light cloth, such as nylon pantyhose
ribbon
stopwatch

Goals

- **Demonstrate** transverse waves.
- **Compare** the speed of waves traveling through different mediums.

Safety Precautions

Procedure

1. Use pieces of each material that are about the same length. For each material, have a partner hold one end of the material still while you shake the material back and forth between two set points to make a wave. Identify the points by placing markers or chairs on the floor. Shake each material in the same way.
2. Have someone time how long a pulse takes to reach the opposite end of the material.
3. Tie two different types of rope together or tie a heavy piece of cloth to a lighter piece. **Observe** how the wave changes when it moves from one material to the other.
4. **Observe** compressional waves using coiled spring toys. You can connect two different types of coiled spring toys together to see how a compressional wave changes in different mediums.

Activity (continued)**Conclude and Apply**

1. Did the waves traveling through the different mediums have the same amplitude? Explain why or why not.

2. Did the waves travel at the same speed through the different mediums? **Explain.**

3. **Explain** how the waves changed when they moved from one material to another.

4. Waves carry energy. Where did the waves created in this activity get their energy?
