

Transmitting Sound

Engage

A good place to pause in the story is after Horton is tied up with 10 miles of rope. Direct students' attention to the rope. Ask students to explain why or how this could be a possible tool based on their prior knowledge, and also by what they have experienced in the first two activities. Many students will recall that sound is caused by vibrations that make waves through the air and that you can make devices to catch more sound. At this point their interest in the rope will be peaked because most do not realize that sound can travel through solids as well.

Explore

Provide a metal Slinky and two pieces of yarn or cotton string for each pair or group of four. Have the groups take the yarn and tie one piece to each end of the slinky. Students should then take turns placing the end of each piece of yarn in each hand, and wrapping the ends once around their index fingers. Next, the students will place their index fingers that are wrapped in yarn against each ear and allow the slinky to hang freely in the air. The string must be taut to transmit the sound. Remind students that they should not place objects in their ears.

Explain

Students should notice the sound of the Slinky being transmitted by the string. Let each group member explore the sound before having the group communicate and record results in their science logs. Student journal comments usually include that the sound is louder, different, and even "like the sound of a laser gun from *Star Wars*." Have students share their observations with the class on how the vibrations traveled. Most students realize quickly that the sound waves travel much better through the string than the air. Discuss why that may be, allowing students to come to the conclusion that sound waves move by pushing the particles (molecules) of air or string. These particles are closer together in the string making it easier to vibrate them with sound waves (in a chain reaction), as compared to moving the molecules in air that are more spread out. The class

can role play this by passing an object representing a sound wave. Have the students stand in a line close together and pass the object as fast as they can. Repeat this but have the students stand far enough apart that they have to walk several steps before handing the sound wave to the next student.