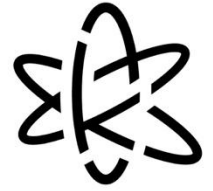




Fourth Grade Science



4th Grade Science: Summer Activity 3

Can you see a sound?

Directions: This handout can also accompany a KCSatHome Teacher Video. If you have access to the video, watch the video before doing this activity. You can find the videos at <https://www.knoxschools.org/Page/21816>

Can You See a Sound?

Sounds happen all around us. Some sounds are high, like the sound a recorder makes when it is being played. Some sounds are low, like the type of sounds a tuba might make. Some sounds can barely be heard, like a whisper. Other sounds, like fire alarms, are so loud that you might have to cover your ears.

Sounds are Waves

When you drop a basketball on the ground, it's likely that you will hear a loud sound. This is because when the ball hit the ground, its kinetic energy was transformed into sound energy. Sound energy, like all energy, travels in the form a wave. A wave is simply the movement of energy. Sound waves are just one type of wave. There are many different types of waves, such as the ones you might see at the beach, when the water rolls across the ocean.

So, what causes a sound wave to occur? When an object vibrates, or moves back and forth quickly, some of its energy is turned into sound energy. A good example of this is to put your finger gently against your throat. If you talk or hum you'll feel the vocal chords in your throat vibrating as they make sound.

When an object vibrates, the smallest parts of the object's matter vibrates too. These small parts are called particles. So, when an object vibrates, its particles bump into any other particles that surround it. As these particles collide, their energy is passed from one to the other. This causes the other particles surrounding the object to vibrate as well.

If you felt your vocal chords vibrate, the particles in the air that was in your throat also vibrated. The energy created from the particles bumping in to each other together this way caused a type of kinetic energy called sound waves.

Part 2: Making Sounds Visible!

Materials Needed:	Optional:
* 1 Metal baking pan (or cookie sheet) * A Metal Spoon *Cling Wrap *Empty bowl *A pinch of rice	*Tape your cling wrap

Directions:

In this activity, you'll be investigating how energy travels in waves. You'll be using a metal spoon to produce sound energy, and making observations on the phenomenon that you'll see happening.

1. Stretch your cling wrap so that it covers the top of your bowl. You'll want your cling wrap very tight, so that it makes a smooth surface over the opening of your container. Just don't pull your cling wrap too tight, or it might tear. If your wrap is not sticking to the sides of your container you can use tape to keep it in place.
2. Take your pinch of rice and place it on top of the cling wrap. If you don't have any rice, a pinch of salt could also be used.
3. Leave your bowl on a stable surface, like a table. Hold your metal baking sheet in the air very close to the bowl, but make sure these objects are not touching each other.
4. Take your metal spoon and tap your baking sheet while holding it close to your bowl.
5. Observe what happens with the grains of rice. Experiment with angle of your baking sheet to your bowl. Try different variations of taps with your metal spoon.

Optional: This activity can also be done by pairing a small Bluetooth speaker to an electronic device that has access to music. With your guardian's permission, pair your device to the speaker, and place the speaker inside the bowl. Just like the activity above, cover the opening with cling wrap, and place a pinch of salt or rice on top. Play some of your favorite music on your speaker and observe what happens!

Describe what you observed happening to the grains of rice.

How Energy Travels

Sound waves can travel through different states of matter like solids, liquids, and gases. Whatever substance a sound wave is traveling through is called the **medium**. When a wave occurs, the energy passes through the particles of a medium. The particles will vibrate as the wave passes through them!

Use your observations from this activity to create an explanation about what you think caused the motions of the grains of rice?

Do you think we were actually able to “see” sound during this activity? Explain your answer.
