

Discover what sound is and how it travels. Learn about and apply the scientific method. Try a few easy experiments to model and experience how sound travels.

*Standards listed on next page*

## Supplies:

**\*Order Eligible, Limited Quantity**

- Slinky (opt. / Teacher only)
- Measurement Tool (opt.)
- Dominoes (Teacher)\*
- Notebook/Record Log (template attached)

## Objective

Students understand what sound is (vibration) and how it travels (longitudinal wave). Students will complete experiments related to sound and practice hypothesizing outcomes.

## Outline & Procedure *using the video*

1. Students think about sound, notice sound, and understand that sound is vibration. Students write down sounds they hear in life.
2. After discussing different sounds, students close eyes and notice the sounds around them at the moment, writing at least five down.
3. The method of movement of sound via longitudinal waves is introduced.
  4. Option if you have a slinky to pause the video after the experiment is explained and try the slinky demonstration with two students. If all students are remote, watch the example in the video and discuss.
5. If you have dominos, set them up in a line, then have students write their hypothesis on what will happen when the first domino in the line is knocked over.
6. Knock the first domino, or if you do not have dominos, watch the video's example. Students observe and write down what happened, and then compare the actual result to their original hypothesis.
  7. If you do not have dominos, watch the video demonstration and discuss.
8. Students consider and write about whether sound could exist without anything to vibrate.
9. If possible, students find a partner for the sound distance experiment. If all virtual, ask students to try with a family member after class. Students will estimate how far they think sound from one person to another can travel. One student sings the "ABCs" continuously, backing away from the second student. As soon as the second student can no longer hear the singing, write down how many feet (or steps) they traveled.

**Kentucky Standards:**

K-PS2-B, K-PS2-1. Types of Interactions: When objects touch or collide, they push on one another and can change motion.

K-PS2-1, K-PS2-2. Simple tests can be designed to gather evidence to support or refute student ideas about causes.

KPS2-1. Scientists use different ways to study the world.

KLS1-1. Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

K-LS1-1. Patterns in the natural and human designed world can be observed and used as evidence.

K-ESS3-3. Events have causes that generate observable patterns.

K-PS3-1. Make observations (firsthand or from media) to collect data that can be used to make comparisons.

K-LS1-1. Scientists look for patterns and order when making observations about the world.

1-PS4-1 Science investigations begin with a question. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

PS4.A: Wave Properties - Sound can make matter vibrate, and vibrating matter can make sound. K-LS1-1: A sound wave needs a medium through which it is transmitted.

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-4. Scientists search for cause and effect relationships to explain natural events.

3-LS1-1. Patterns of change can be used to make predictions.

3-LS2-1. Construct an argument with evidence, data, and/or a model.

3-PS2-1. Objects in contact exert forces on each other.

3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

3-LS3-1. Similarities and differences in patterns can be used to sort and classify natural phenomena.

3-LS3-2, 3-LS4-2. Cause and effect relationships are routinely identified and used to explain change.

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.

4-PS3-4. Science affects everyday life.

4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

**Ohio Standards:**

K.PS.1: Objects and materials can be sorted and described by their properties.

K.PS.2: Some objects and materials can be made to vibrate and produce sound

2.PS.1: Forces change the motion of an object.

3.PS.1: All objects and substances in the natural world are composed of matter.

3.PS.2: Matter exists in different states, each of which has different properties.

3.PS.3: Heat, electrical energy, light, sound and magnetic energy are forms of energy.

5.PS.2 Light and sound are forms of energy that behave in predictable ways.

**SCIENCE & MUSIC** | My Science Log—[Lesson 1](#)

**Name & Teacher:** \_\_\_\_\_

**What are some sounds you can think of?**

**What sounds do you notice when you close your eyes?**

***What will happen when we knock over the first domino in the line?***

**HYPOTHESIS:**

**If there was nothing to vibrate, would there be sound?**

**DIY at home: Have a partner sing the ABCs, while slowly backing away from you. As soon as you can no longer hear their singing, stop and measure, or count, the distance to see how far the sound could travel!**