



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at [www.projectexploration.org/stemathome](http://www.projectexploration.org/stemathome).

## In this activity, you will:

Learn about how different sounds are made!



## Supplies Required:

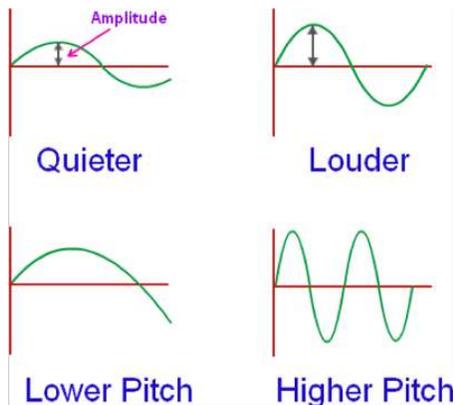
Two pencils  
Rubberband

## Video

What is sound? <https://tinyurl.com/ydcflcl2>

## Overview

Sound is made up of waves traveling through air or another medium! Different sounds are made depending on a number of different factors: frequency of waves, amplitude of waves, and the length of the medium the wave travels through. Frequency of waves is how many waves travel past a point in a certain amount of time. The higher the frequency, the higher the pitch of the sound, and the greater the amount of energy! Amplitude refers to how tall soundwaves are. The higher the amplitude, the higher the intensity of the sound! You might know intensity as volume. Different notes come from the length of the medium that the wave travels through. You will observe some of these in today's experiment!



## Instructions

1. Have a friend or family member hold two pencils about six inches apart. Place the rubber band around both pencils so that the rubber band is taut.
2. Pull back one side of the rubber band about an inch back and note the sound it makes when you let go.
3. Repeat with varying distances. What do you notice about the difference in sound?
4. Now hold onto the middle of one side of the rubber band and pull back on one of the shorter segments. Note the sound it makes.
5. Repeat but hold onto different parts of the rubberband. What do you notice about the difference in the sound?

## Additional Resources

**Think About It!** Why do you think the sound changed when you changed the distance or where you held onto the rubberband? What if instead of holding onto the rubberband you looped it around something metal or plastic? Would that change the sound? Explain your thinking.

1. What frequencies can you hear? Try it out with people of different ages and your pets! <https://tinyurl.com/omuyoon>
2. The science of hearing <https://tinyurl.com/y9rwsn3h>

## Share It Out

**Share on social media:** Try making a song out of the different sounds from the rubberband and other items around the house! Record your song and share it on social media. Use the hashtags:

#RubberbandSound  
#ProjectExploration  
#StemAtHome

**Share via PE's website:** Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 232. Learn more at [www.projectexploration.org/explore-store](http://www.projectexploration.org/explore-store)

### Join PE's character contest!

Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at: [www.projectexploration.org/character-contest](http://www.projectexploration.org/character-contest).



Call or text us for help: 312-772-6634

[www.projectexploration.org](http://www.projectexploration.org)