

# Ames Public Library @HOME Activities

## Sound!

Sound is all around us. We can hear sounds when we are out in the open, when we are at home, and some sounds we can even hear under water. Some sounds are pleasing and enjoyable while others are not. What is sound made of, how does it travel, and how do we hear? For answers check out some of these materials and activities, and see a related video on the Library's YouTube Channel at <http://bit.ly/APLvideos>.

### Books and media:

Title	Author / Performer	Call no:
<i>Making a Telephone</i>	Rowe, Brooke	ETR 534.078 ROW
<i>Science Projects About Sound</i>	Gardner, Robert	J 507.8 GAR
<i>Sound</i>	Gregory, Josh	J 534 GRE
<i>Sound Waves</i>	Marsico, Katie	J 534 MAR
<i>The Science of Music</i>	Pinto McCarthy, Cecilia	J 534 MCC
<i>Sound All Around</i>	Pfeffer, Wendy	J 534 PFE
<i>Max Axiom. Adventures in Sound</i>	Sohn, Emily	J GR NOVEL MAX
<i>Bill Nye the Science Guy: Sound</i>	Nye, Bill	J 534 (DVD) NYE
<i>The Way Things Work. Sound</i>	(DVD)	J 534 (DVD) WAY

### Websites:

URL	Notes
<a href="http://www.youtube.com/watch?v=TsQL-sXZOLc">www.youtube.com/watch?v=TsQL-sXZOLc</a>	A Youtube video about sound
<a href="https://sciencing.com/paper-cup-phone-work-5243530.html">https://sciencing.com/paper-cup-phone-work-5243530.html</a>	

## Vocabulary

Vibration – Vibration is when an object moves or shakes back and forth. This vibration cause the molecules in the medium (water, air etc.) around it to vibrate. Sound is produced when such vibrations happen.

Pulse – A single vibration or short burst of sound.

Tone – A steady, periodic sound.

Pitch – The highness or lowness of a tone. Objects that vibrate quickly produce a higher pitch sound.

Sound Waves – Vibrations in air, water, or solid that can be heard.

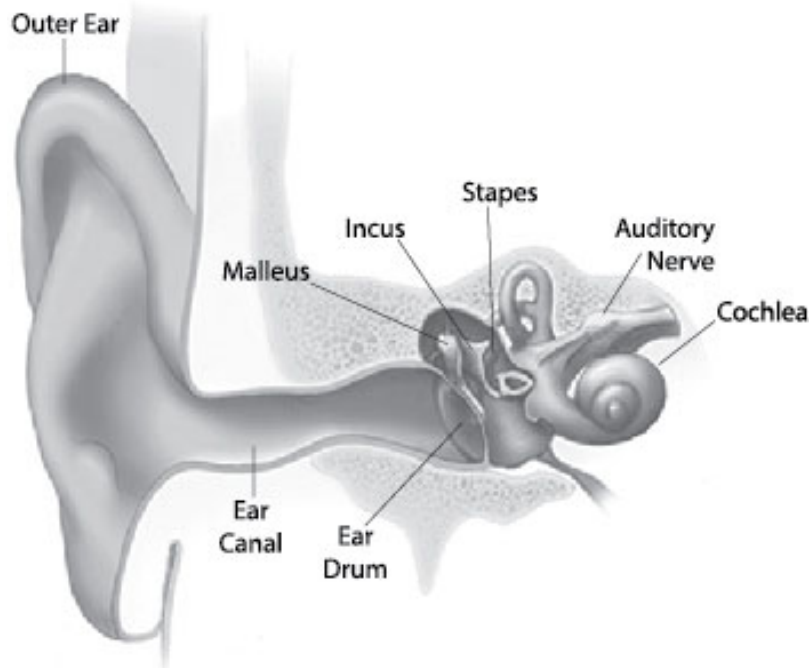
Frequency – The speed of the vibration, this determines the pitch of the sound. The unit used to measure frequency is Hertz (Hz).

Amplitude – (here), the loudness of sound.

## Sound Waves – How do we hear?

Sound is made up of VIBRATIONS, or SOUND WAVES, that we can hear. Sound waves are formed when objects vibrate. The sound waves travel as vibrations through air, water, and solid objects. When the sound waves enter our outer ear they travel through the ear canal to the ear drum and make it vibrate. Then through a complex process the sound vibrations are amplified, and transmitted to the brain by the auditory nerve as an electrical signal. The brain recognizes the vibrations as sounds made by different things that we recognize and understand.

(Source : U.S. Department of Health & Human Services [\(here\)](#))



# Cup phone

*To make a cup phone you need:*

- String or yarn
- 2 disposable cups

Make a small hole in the bottom of both the cups.

Cut a piece of yarn or string to the length you want, about six feet is a good length to use.

Push the string through the hole in the bottom of the cup from the outside so that the end of the string is inside of the cup.

Knot the end to prevent the string from slipping out of the hole.

Repeat with the other cup on the opposite end of the yarn.

Now your cup phone is ready. With a partner stand far enough apart so the string is pulled tightly. You can talk to your partner by whispering into the “phone” while your partner holds the opening of the cup to their ear. Take turns to talk to and listen to each other.

You can vary the type and thickness of the yarn and use different cups to see how the changes influence the sound quality.