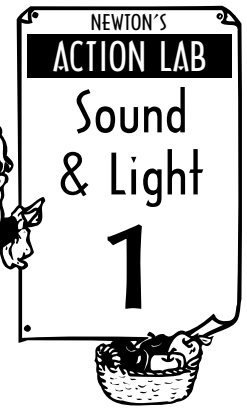


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# Vibrating Sound

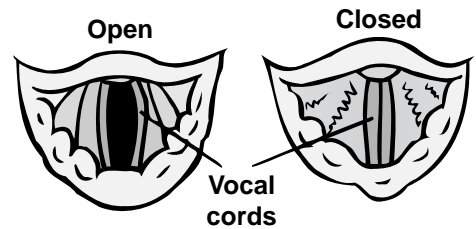


## Newton Explains Sound

There are many kinds of sounds in the world. All sounds have one thing in common. All sounds are caused by something **vibrating**.

### Your Vocal Cords

Place your fingers lightly on the place on your throat that is called your Adam's apple. It is your voice box or larynx. Your voice box has two thin muscles that vibrate. By controlling these two muscles, you can make all the sounds of speech.

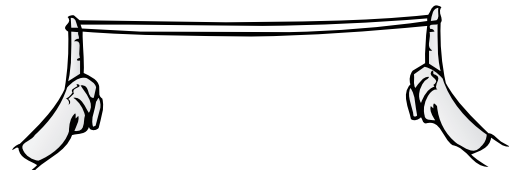


1. Say "ah" and gently touch your Adam's apple. Say "ah" softly and then very loud.

What did you feel your Adam's apple doing? \_\_\_\_\_

### Rubber Band Vibrations

1. Stretch a rubber band between your hands.
2. Have someone pluck the center of the rubber band.



What do you hear? \_\_\_\_\_

What do you see vibrating? \_\_\_\_\_

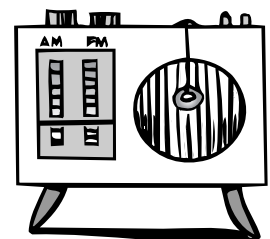
3. Try stretching your rubber band to make it longer and shorter. Pluck its center as before.

Describe the differences in sound and vibration between the long and short rubber band. \_\_\_\_\_

\_\_\_\_\_

### Radio Cereal

1. Tie a light piece of thread to a small bit of O-shaped cereal.
2. Tape the thread to a radio so that the cereal is hanging freely, directly in front of the speaker.



# Vibrating Sound

Name \_\_\_\_\_

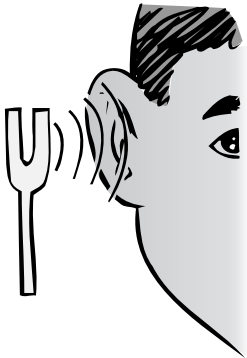
3. Turn your radio on **full blast** to a voice or music program.

Describe what happened to your cereal. \_\_\_\_\_

What must the speaker be doing to cause the air and cereal to move? Hint: It's making sound and what is sound? \_\_\_\_\_



## Identifying Sounds



You know that vocal cords and radio speakers vibrate to make sound. Sound travels from the vibrating object to air molecules. Air molecules bump into one another and cause your eardrums to vibrate. Your brain interprets what you are hearing.

1. Have everyone around you be especially quiet for three minutes.

Write down all the sounds that you hear in your inside and outside environment.

\_\_\_\_\_  
\_\_\_\_\_

2. Compare what you heard to what others in your class heard.

What did you or they miss? \_\_\_\_\_

\_\_\_\_\_

Newton wants your class to have a sound contest. Try to come up with sounds that will stump your classmates. Here are the rules.

1. Your sound can be real or on tape.
2. Limit of three sounds per contestant.
3. You have three days to prepare your mystery sounds.
4. Forget the easy sounds. Make your sound different and hard to identify.



## Humans and Sound

Sound plays a big part in your life. You learn through sound. You communicate through sound. A good tape or CD gives you pleasure.

# Vibrating Sound

Name \_\_\_\_\_

Sound can also be polluting. Loud sounds such as those given off by trucks, lawn mowers and airplanes can damage your ears.

1. Have someone blow up and then pop a balloon.

Did you find that a pleasant or unpleasant sound? \_\_\_\_\_

2. Obtain a radio and turn on some quiet music that you enjoy. Add numbers 1, 3, 5, 7, 9 and 11 in your head.

What is the answer? \_\_\_\_\_

3. Now turn your radio to a point in between stations to obtain static. Turn the volume up to its maximum. Add the numbers 2, 4, 6, 8, 10 and 12 in your head.

What is the answer? \_\_\_\_\_

Was it easier to add with pleasant music or loud, unpleasant static? Can you explain why? \_\_\_\_\_

\_\_\_\_\_



## Newton's Sound Riddle

Newton would like to finish this sound vibration unit with a riddle for you to solve. A tree falls to Earth deep within a forest. There is no human or animal around. Does the falling tree make a sound as it hits the Earth?

What is your answer to the riddle? \_\_\_\_\_

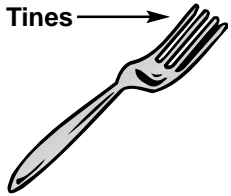
\_\_\_\_\_



Name \_\_\_\_\_



# Sound Fun



## The Vibrating Fork

You can make a table fork vibrate like a bell. Use two old all-metal forks, one for vibrating and the other as a hammer for striking.

1. Strike the tines of one fork with the handle of the other.

Can you observe the tines? \_\_\_\_\_

2. Strike the fork again and place it near your ear.

What did you hear? \_\_\_\_\_

3. Tie a light string to your fork. Tie a large button to the other end. Place the button on your ear and strike the fork. The string carried the sound to your ear.

Was the sound louder or softer? \_\_\_\_\_



## A Sound Experiment

1. Obtain an empty plastic tennis ball container.
2. Make a hole in the bottom about the size of a pea.
3. Cut off the neck of a balloon. Place the remainder of the balloon over the open end. You may have to use a rubber band to make it tight and secure.
4. Hold the end with the hole near your face. Tap the balloon end sharply.

What did you feel on your face? \_\_\_\_\_

\_\_\_\_\_

