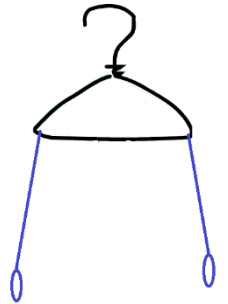


EXPLORING SOUND STATIONS

TEACHER NOTES

MATERIALS (for each station):

1. Slinkys
2. Ruler with 6 marbles
3. Thick and thin rubber bands
4. Plastic ruler
5. Tuning fork, bowl of water- (a large bowl 1/3 full is best as the water will splatter)
6. Tuning Fork, Kosher salt, Soup can with both side cup open. Stretch a balloon over one opening and secure with a rubber band.
7. Straw (1 per student), Scissors
8. Table
9. 3 hangers, one with string tied to it, one with rubber bands tied to it and one with wire tied to it. Make loops at the end of the strings for students to put their fingers in (their fingers then go in their ears and sound travels through the strings to their eardrum. Shown here→
10. Cup and string phones (cups connected by a string through a hole in the bottom of each cup)



TEACHER DIRECTIONS

Stations are awesome for students led and self-paced learning. I set up these 10 stations (and the sound information card) around the room and have students visit them (in no particular order). I have students work in groups of 2 to do these stations.

Students read the directions, then complete the activities (while I circulate). They answer while questions in their booklets as they complete each station. I tell students they need to check in with me every 2 stations. I then will ask some comprehension questions and they continue (or repeat the stations!)

If students finish early, they can build or research a musical instrument and how it works, or help other students at the stations.

This is a neat video to show about sound...<http://www.wonderville.ca/asset/how-we-hear>

EXPLORING SOUND STATIONS

What is Sound?

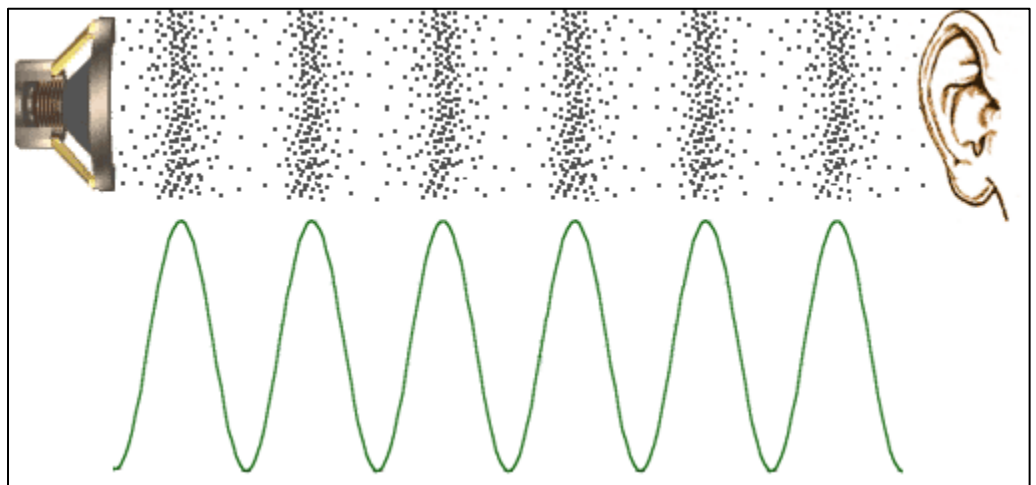
Sound is a type of energy made by vibrations. When an object vibrates, it causes movement in the air particles. These particles bump into the particles close to them, which makes them vibrate too. This causes them to bump into more air particles. This movement, as energy is passed from one molecule to another is called sound waves. If your ear is within range of the vibrations, you hear the sound.

Picture a stone thrown into a still body of water. The waves make circles outward from where the stone dropped into the water. Water is moved, but it returns to its original position after the wave passes through.



The same is true with sound. A disturbance (Like hitting a drum) creates waves that move through air molecules. Irregular repeating sound waves create noise, while regular repeating waves produce musical notes.

The material a wave travels through is called a medium. Air, water or solids can be a medium.



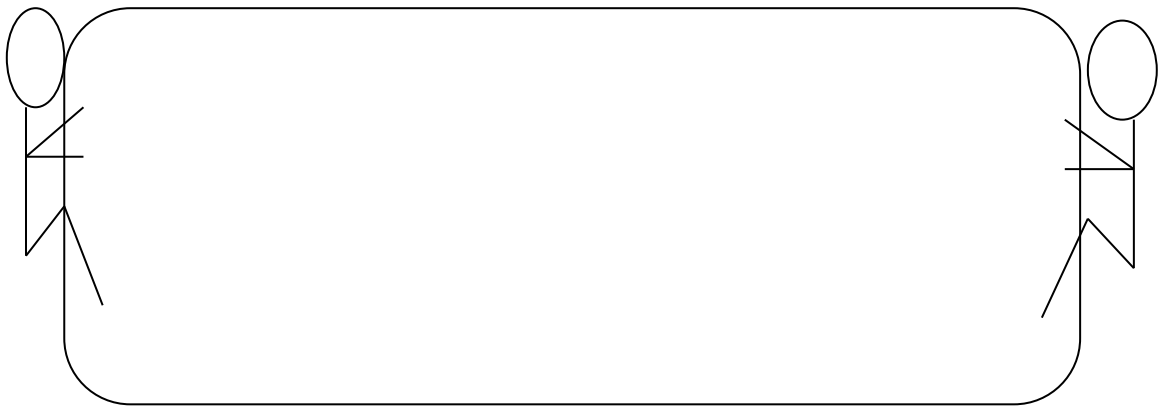
EXPLORING

SOUND STATIONS

STATION 1: SURFS UP!

1. Get a Slinky.
2. Have 1 partner squeeze together several of the Slinky's coils at one end.
3. Release these coils and observe wave move along the Slinky.
4. Now Stretch the Slinky out again. Have one person flick one end of the Slinky and watch the wave travel.
5. Draw what the slinky looks like while it is moving. Include arrows showing the direction of motion *in your booklet*.

Side View

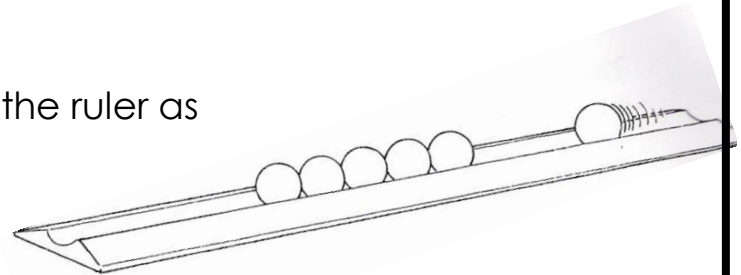


The WAVE you see is showing ENERGY moving through the slinky!

EXPLORING SOUND STATIONS

STATION 2: CANNONBALL!

1. Place 5 marbles along the groove in the ruler as shown.
2. Now take a 6th marble and flick it against the end of the row.
3. Draw what happens *in your booklet*.



4. Describe what you see happens to the marbles *in your booklet*.
5. Explain why you think this happened *in your booklet*.

Energy is transferred from the 1st marble through the other marbles to the last one. You saw that energy travels through the marbles!

EXPLORING SOUND STATIONS

STATION 3: RUBBER BAND VIBRATIONS

1. Stretch the thin long rubber band between your hands as shown



Answer the following questions in your booklet.

2. Have your partner pluck the center of the rubber band. What do you hear?
3. What do you see vibrating?
4. Now repeat this with the thick rubber band. What do you notice is the difference in sound?

EXPLORING SOUND STATIONS

STATION 4: SINGING RULERS

1. Place a ruler on the counter so that about half of the ruler sticks out beyond the counter's edge.
2. Hold the ruler down firmly with one hand. With the other hand, press down on the free end of the ruler, then let it snap up.



Answer the following questions in your booklet.

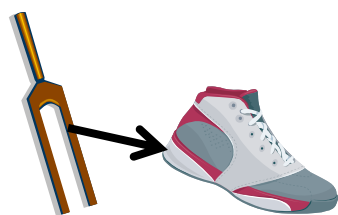
3. Did you see the ruler vibrate?
4. Did it make a sound?
5. Move the ruler so that less is hanging off the edge. How does the sound change?

EXPLORING SOUND STATIONS

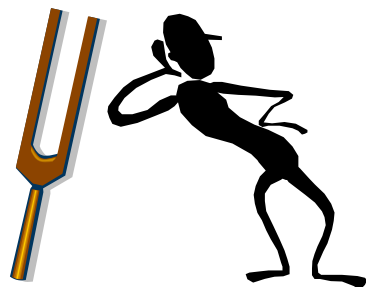
STATION 5: TUNING A FORK?

At this station you will find a tuning fork and a bowl filled with water.

1. Tap the tuning fork firmly against the sole of your shoe.



2. Bring the tuning fork **near** you ear and listen.



3. What do you observe? *Answer in your booklet.*
4. Again, tap the tuning fork firmly against the sole of your shoe.
5. Place the tip of fork in the water.
6. What do you observe? *Answer in your booklet.*

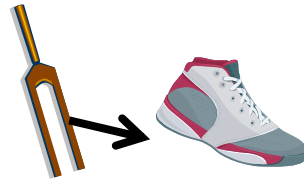


EXPLORING SOUND STATIONS

STATION 6: SALT DRUM

This salt drum acts just like your eardrum when you are hearing sounds. You will see a can tightly covered in rubber at this station to represent a drum.

1. Sprinkle a few grains of salt on top of the drum.
2. Have your partner hold the can.
3. Tap the tuning fork firmly against the sole of your shoe.



4. Bring the tuning fork up inside the can, but **do not** touch the can or the rubber.



Answer the following questions in your booklet.

5. What happens to the salt?
6. Why is this happening?

Make a connection: When you bang a drum and make a sound, something is vibrating all the way to your eardrums- what is it?

EXPLORING SOUND STATIONS

STATION 7: STRAW MUSIC

Materials: straw, scissor, ruler, your mouth!

Directions:

1. Flatten one end of the drinking straw and cut the end to form a point.



2. Blow through the end of the straw you just cut.

Answer the following questions in your booklet.

3. Describe the sound you hear. Is it high or low? _____
4. What can you think of that also sounds like that? _____

How high or low a sound is called PITCH.

Predict: What can you do to the straw to change the pitch?

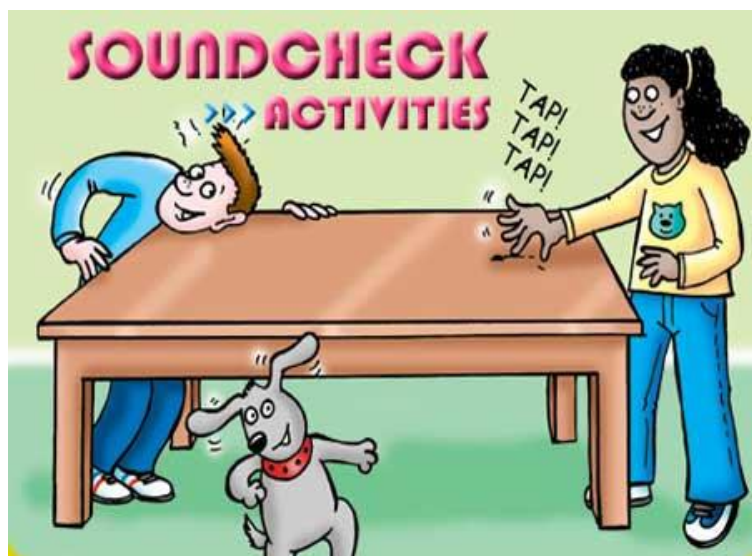
5. **Try it!** Record in your booklet what you tried and how the pitch changed.

Describe how you changed the straw.	How did the Pitch Change (HIGHER or LOWER)

EXPLORING SOUND STATIONS

ACTIVITY 8: TAP-TAP-TAP...

1. Listen carefully as you tap your finger firmly and loudly against the table/counter.
2. Now lay your ear on the table/counter, and tap your finger loudly and firmly again.



Answer the following questions in your booklet.

3. Which time did you hear the sound of our tapping finger louder?
4. Based on this experiment, does sound travel better through solid materials (table) or gas materials (air)?
5. Why do you think sound travels better through this material?

EXPLORING SOUND STATIONS

STATION 9: RUBBER, STRING OR METAL?

1. At this station, you have a metal coat hanger attached to a string, some rubber bands and a metal wire.
2. Hold one end of the string in one hand and the other piece of string in the other hand.
3. Wrap each end of string around one of your index fingers. Bring your index fingers to your ears.



4. Gently swing the coat hanger so it **taps** a table or chair. Listen and observe.
5. Repeat steps 2-4 for the rubber bands and the metal wire (BE CAREFUL WITH THE WIRE just put your index fingers into the loops provided.)

Answer the following questions in your booklet.

6. Through which medium (string, rubber or metal) did you hear the sound of the vibrating coat hanger best?
7. Why do you think that material transferred sound best?

EXPLORING SOUND STATIONS

STATION 10: TELEPHONE

1. Have each person hold a cup and pull the string tight.
2. One person talk softly into their cup.
3. The person at the other end should be able to hear you.
4. Now try it with the string loose.

Answer the following questions in your booklet.

5. Which works better: When the string is TIGHT or LOOSE?
6. Why do you think this is?

