

Title: Fun With Sound!

Topic: Sound is created because of vibrations.

Grade: Second (2nd)

Time: Approximately 2-45 minutes lessons

Objectives	<p>2.P.1 Understand the relationship between sound and vibrating objects.</p> <p>2.P.1.1 Illustrate how sound is produced by vibrating objects and columns of air.</p>
Materials	<ul style="list-style-type: none">• 3 Glass Jars• Water• Mallet• Milk cartons with one side cut out, 1 per group• 2 rubber bands: one wide and one skinny, 1 set per group• Internet access/Computers• Musical Instruments (borrow from music teacher): Xylophone, cymbals, drums, etc.• Paper/Pencil• Science Notebooks
Engage	<ul style="list-style-type: none">• The teacher will begin the class by having 3 of the same size jars on a table, each filled with different amounts of water. The teacher will tell the students that today we will explore more about how sound is created. First, let's listen carefully to what we hear. It will give us clues to help us learn more about different sounds. The teacher will gently hit the jar that has the most water in it. Then the teacher will gently hit the jar that has a medium amount of water in it. The students should listen to the differences in the pitch of the sound. Discuss together why there is a difference in sound if the jars are the same size.• Then the teacher and students will predict what the pitch of the last jar with the least amount of water will sound like. Will it have a high pitch or a low pitch? Why? How do you know? The teacher will hit the last jar and compare the sound to the other jars. Ask the students to think about how the amount of water in the jar changed the sound, and why they think it happened.
Explore	<ul style="list-style-type: none">• The teacher will explain that one way to describe a sound is by its pitch. Today, in their small groups, they will discover what pitch is with their group.• The teacher will explain that each of the groups will get a milk carton set up with rubber bands. (Put different width of rubber bands around a cardboard milk carton the long way. Put one pencil under the rubber bands near each end of the carton.) The students will need to pluck the skinny rubber band and listen. Now pluck the fat rubber band and listen. Does the skinny rubber band have a higher or lower pitch than the fat one?• Pluck the rubber bands again and watch them vibrate. Does the whole rubber band vibrate or just the part between the pencils? The sound that it has, whether it's high or low, is the pitch. The vibration is the proof that it is moving and making sound! Students will take 5 minutes to record their new learning about pitch and sound in their science notebooks. TW walk around to monitor their responses and assist students with their discussions.
Explain	<ul style="list-style-type: none">• The teacher will ask the students to come back together as a class in order to discuss what happened with their exploration and what they learned.• Each group will have a representative share what they did and what they noticed about the rubber bands, the sound they created, what they noticed about the vibrations, and anything else they discussed as a group.• The students should share that they noticed that the skinnier rubber band vibrated

	<p>quickly, and made a higher-pitch sound. The wider rubber band vibrated slower, and made a lower-pitch sound. Sound must be created when there is a vibration.</p> <ul style="list-style-type: none"> For additional explanation, the teacher may choose to visit the website: http://scienceforkids.kidipede.com/physics/sound/.
Elaborate	<ul style="list-style-type: none"> The teacher will have a few different musical instruments in front of her. (Xylophone, drums, guitar, etc...) Ask the students to discuss with their team how I would make each of these instruments make a sound. The students will discuss and then share their ideas. (They should share that I would have to either blow into them or hit them in order to make a sound.) The teacher will demonstrate doing this for each instrument. Ask the students, what is causing the sound now that I have blown air into it or hit it? Students should be able to share that it is vibrating. Vibration is when something moves very quickly back and forth. This can be seen and felt. The teacher will allow students to feel the vibrations of at least one instrument. The teacher may also visit the website: http://datadragon.com/education/instruments/. By clicking on each of the instruments, the students will be able to hear each of the instruments and how they sound. Discuss how the larger the instrument, the lower pitch sound it creates.
Evaluate	<ul style="list-style-type: none"> To show what they have learned, the students will complete a mini-assessment, which is provided in the resources section below.

Resources

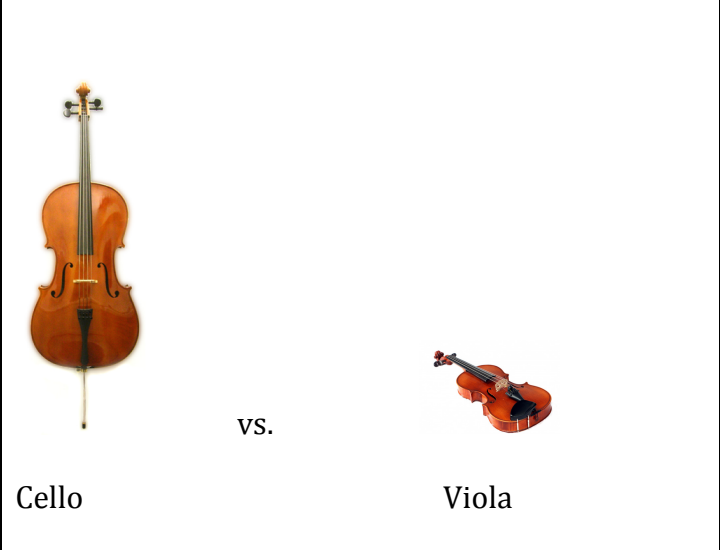


Evaluate:

Fun With Sound Mini-Assessment

Name _____

Date _____

1. Circle the instrument that would create the lower-pitch sound.

 <p>Cello</p> <p>vs.</p> <p>Viola</p>	 <p>Flute</p> <p>vs.</p>  <p>Oboe</p>
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2. How are sounds created?

Pictures References:

<http://www2.onu.edu/~m-blowers/processandresources.html>

<http://hyperphysics.phy-astr.gsu.edu/hbase/music/flute.html>

<http://math.fau.edu/viola/webpage.html>

http://en.wikipedia.org/wiki/Violin_family