

Worksheet  
#1 Exploration  
Names in  
group \_\_\_\_\_

Sound

Date \_\_\_\_\_

1. Describe the object.
2. Describe the sound it makes.
3. What could you do to be able to hear this sound louder?
4. What can you do to stop the sound?
5. How do you think this sound is created? Where does it come from?

**#2 Sound through Matter**

**Names in**

**group** \_\_\_\_\_

**Date** \_\_\_\_\_

**Read all directions first!**

Directions:

Lay bags filled with matter on the table, compare how sound travels through each of the states of matter, sand, water, and air by placing your ear to the bag as a group member taps the table near the bag with a pencil. Cover your ear that isn't touching the bag. This will block out outside noises. Compare the volume (loudness) of the sound as it travels through a liquid, solid and a gas. The matter that allows the sound to vibrate through it the easiest will have the loudest sound Predict first, then test.

Prediction: We think the \_\_\_\_\_ will allow sound to pass through it easiest. We think this because \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

1. After pressing your ear to the bag with the sand and the air, record which did your group think was louder and therefore allows sound waves to travel better.

\_\_\_\_\_

2. Repeat the process above tapping and listening through the bag filled with water and then the air. Record your results. Which does your group think carries the sound waves better.

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

3. Which of the baggies allowed the sound to travel better, the sand or the water?

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4. Which of the states of matter solid, liquid, or gas allowed the sound waves to travel through it the easiest?

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5. Why does your group think this happened?

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6. Was your groups' prediction correct?

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Create something new. Drawings are accepted with an explanation.

6. What does your group think now about how sound waves travel? Using what you found out, how could you make the sound of a guitar louder? Why would it work?

7. What could you do in class to hear what your neighbor is saying without getting in trouble? Why would it work?

8. What could a Mom do if she wants to reduce the noise of children playing? Why would it work?

**#4 Learning Centers – What changes the sound**

**Names** \_\_\_\_\_

**Date** \_\_\_\_\_

**Directions:** For each Learning Center answer the questions after completing each test and recording your group's observations.

**Learning Center #1 SIZE**

**1. Directions:** Using strings as a carrier of the sound waves, wrap the strings around both of your pointer fingers so that the string is hanging down. Place the fingers in your ears, not the strings. Have a group member tap the spoons one at a time with a pencil. Listen to the different pitches that each spoon creates.

Record what you believe to be the correct statement as to the difference size makes in pitch.

**Questions:** A) Which spoon had the highest pitch?

\_\_\_\_\_

B) Write a true statement based on your results of testing.

C) Give an example in the world of instruments to prove your statement about the size and sound.

D) What is vibrating to create the sound?

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### **Learning Center #2 LENGTH**

A) By plucking the rubber bands on the board, what statement can you make about the length of the bands and the pitch of the sound?

B) Give an example from the world of instruments and explain how the length plays a part in the sound.

C) What is vibrating to create the sound?

### **Learning Center #3 VOLUME**

Directions: Tap below the water line with a pencil.

A) Listen to the different pitches and write a statement about the amount of water and pitch.

B) What is vibrating?

### **Learning Center #4 TIGHTNESS**

Directions: Pluck each string one at a time.

A) What do you notice?

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## Sound

- B) What do you think changes the pitch of each string?
- C) What statement can you make about tightness and vibration?
- D) How can you relate this experiment to the world of instruments?

### Learning Center #5

Directions: This make take some practice so use the empty bottles to blow into until you get a good tone. Sticking you bottom lip out and blowing lightly over the top of the opening may help. You will be testing the pitch result on different sizes of *column of air*. The water will help take up some of the space that air could fill.

- A) What do you think about the pitch of the longest column of air and the one with the shortness air column?
- B) Is there a similarity to the results to Learning Center #2 and this experiment?
- C) Explain:

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D) What is doing the vibrating to create the sound?

E) What is frequency?

F) What is pitch?

