

## **Learning About Sound with the Use of Tuning Forks**

**Standard VI: Students will understand properties and behavior of heat, light, and sound.**

**Objective 3: Describe the production of sound in terms of vibration of objects that create vibrations in other materials.**

**Indicators:**

- a. Describe how sound is made from vibration and moves in all directions from the source in waves.
- b. Explain the relationship of the size and shape of a vibrating object to the pitch of the sound produced.
- c. Relate the volume of a sound to the amount of energy used to create the vibration of the object producing the sound.

**Intended Learning Outcomes:**

**I. Use Science Process and Thinking Skills**

- a. Observe simple objects, patterns, and events, and report their observations.
- b. Sort and sequence data according to criteria given. (patterns)
- c. Compare things, processes and events. (similarities and differences)
- d. Plan and conduct simple experiments.
- e. Use data to construct a reasonable conclusion.

### **I. Making a Splash**

Material:

- E tuning fork (above middle C)
- A tuning fork (above middle C)
- C tuning fork (one octave higher than middle C)
- Bowl of water
- Colored paper

Procedure:

1. Put the bowl of water on a colored piece of paper.
2. With one of the tuning forks, hit it so it vibrates. Quickly put it in the water. Observe what it does. Measure how far the water splashes out.
3. Repeat #2 with each tuning fork.
4. Fill out the worksheet.

## II. Ping-pong Ball Vibrations

Materials:

- E tuning fork (above middle C)
- A tuning fork (above middle C)
- C tuning fork (one octave higher than middle C)
- Ping-pong ball
- String
- Cellophane Tape

Procedure:

1. Tape the string onto the ping-pong ball with cellophane tape.
2. With one of the tuning forks, hit it so it vibrates. With the ping-pong ball hanging in the air, quickly put the tuning fork against the ping-pong ball. Write down what you observe. Try to measure the distance it travels on its biggest bounce.
3. Repeat #2 with each tuning fork.
4. Fill out the worksheet.

## III. Dancing Rice

Materials:

- E tuning fork (above middle C)
- A tuning fork (above middle C)
- C tuning fork (one octave higher than middle C)
- Small plastic cup
- Balloon, 9-inch
- Rice

Procedure:

1. Cut the neck of a 9-inch balloon. Stretch it over the mouth of the plastic cup.
2. Put a few grains of rice on the balloon.
3. Hit one of the tuning forks and put it against the plastic cup near the top. Write down what you observe.
4. Repeat #3 with each tuning fork.
5. Fill out the worksheet.

## Making a Splash

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<b>Tuning Fork</b>	<b>Observations</b>
“E” Above Middle C	
“A” Above Middle C	
“C” on octave higher than Middle C	

## Questions

1. What are some similarities that you noticed with all the tuning forks?

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2. What are some differences that you noticed with all the tuning forks?

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3. Why do you think there were changes each time you used another tuning fork?

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4. What conclusion(s) can you come up with as about this experiment?

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## Ping-Pong Ball Vibrations

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