Name: _____ Date: _____ Hour: _____

What is Sound? Exploration Lab

Directions: Carefully follow the directions for each activity. Record your observations below.

Questions:

1. *How are sounds produced?*
2. *How do sound waves transfer energy?*
3. *What type of waves are sound waves?*
4. *What senses can be used to detect sound waves?*
5. *How can we change sound?*

Activity A: Tuning Forks and Ping Pong Balls

1. Grasp the end of the string and hold it out in front of you so that the ping pong ball hangs down.
2. Strike the tuning fork and place it next to the Ping-Pong ball so that it barely touches. Try it!
3. Record your observations.

Observations	**Diagram**
Senses used to identify the sound? **Hearing seeing feeling**	**What form of matter did the sound wave travel through?** **Solid liquid gas**

Activity B: Tuning Forks and Water

1. Strike the tuning fork and gently touch the surface of the water.
2. Record your observations.

Observations	**Diagram**
Senses used to identify the sound? **Hearing seeing feeling**	**What form of matter did the sound wave travel through?** **Solid liquid gas**

Activity C: Tuning Forks and You

1. Strike the tuning fork and gently touch it to your opposite index finger.
2. Repeat the process; only gently touch it to your cheek or chin.
3. Record your observations.

Observations	**Diagram**
Senses used to identify the sound? **Hearing seeing feeling**	**What form of matter did the sound wave travel through?** **Solid liquid gas**

Activity D: Tuning Forks and Air

1. Strike the tuning fork and place it near your ear, but don't touch your ear.
2. How far can you hold the tuning fork away from your ear and still hear it?
3. Record your observations.

Observations	**Diagram**
Senses used to identify the sound? **Hearing seeing feeling**	**What form of matter did the sound wave travel through?** **Solid liquid gas**

1. Support the following statement with evidence from the exploration.

Sound is a mechanical wave.

Mechanical waves move through _____. I observed sound moving through _____, which is matter. Therefore, sound is a _____ wave.

2. Support the following statement with evidence from the exploration.

Sound waves transfer energy.

Energy can cause a change is a substance. I know that sound transferred energy because I saw _____ change.

3. Support the following statement with evidence from the exploration.

A sound wave is a disturbance that begins with a force.

Forces are pushes and pulls. I know that sound waves start with force because I

_____ to the tuning fork to make the sound.

4. Support the following statement with evidence from the exploration.

A sound wave can be detected using several senses.

I observed the sound wave by _____,

_____, and _____.

STRAW FLUTE – How will sound be produced by a straw?

_____

Here's what you do:

1. Take a straw and scissors, and cut off the tip of the straw to a point, like so. (Try to get both sides to be the same!)
2. Now, *gently* chew on the straw to soften the tip, and to get the edges to be smooshed together. You would like the two tips to be *almost* touching each other.

Prediction

When the straw gets shorter, the sound gets _____.

3. Cut the non-pointy end of the straw off.
4. Cut holes in the straw so that you can play it like a real flute. **What happened?**

_____

_____

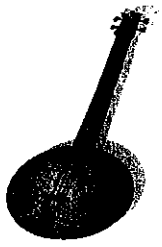
BANJO – How will sound be produced using by rubber bands?

_____

Procedure:

1. Place 2 rubber bands around the plastic container.
2. Put a ruler or pencil under the rubber bands and slide it to one side of the container.
3. Pluck the "strings" and listen to the sound.
   Prediction

   When the "strings" get shorter, the sound gets _____.
4. Move the ruler/pencil a little toward the other side of the container, pluck the "strings" again. **Pay attention to any changes to the sound.**
5. Repeat the process of moving the ruler/pencil until you have reached the other side.



What do you know about sound?

Patterns

1. What patterns did you observe about **how sounds are produced**?

   Sound waves, like all waves, start with a _____.

3. What patterns did you observe about **how the sounds were changed**?

   When the "instrument" got shorter, the sound got _____. When the "instrument" was longer, the sound was _____.

3. What **unanswered questions** do you have about sound?

_____

_____

_____

_____