Name _____ Date: _____ CP: ___

Tuning Fork Lab

Hypothesis:
Which tuning fork will have the highest pitch? why?

Which tuning fork will have the loudest sound? Why?

Materials: Cup of water, tray, foil, salt, string, ping pong ball, short tuning fork, and long tuning fork.

Procedure and Observations: Complete the following tests with both the short and long tuning fork then answer the questions that follow.

Carefully strike a tuning fork on a rubber surface or book then listen.

1. Which tuning fork had the loudest sound? Long or short
2. Which tuning fork had the highest pitch? Long or short

Strike the tuning fork and place the base of the fork on the desk then press your ear against the desk.

3. Which tuning fork had the loudest sound? Long or short
4. Which tuning fork had the highest pitch? Long or short

Strike the fork and put the base of the fork to your elbow and put your finger to your ear.

5. Which tuning fork had the loudest sound? Long or short
6. Which tuning fork had the highest pitch? Long or short

Strike the tuning fork again place the tuning fork gently on your nose.

7. Which tuning fork had the most vibrations? Long or short
8. Which tuning fork had the least vibrations? Long or short

Strike the tuning fork and gently place the tip of the prongs in water.

9. Which tuning fork had the most vibrations? Long or short
10. Which tuning fork had the least vibrations? Long or short

Cover a tray with foil. Sprinkle a small amount of salt or sugar on the foil. Strike the fork and gently place the prongs on the foil.

11. Which tuning fork had the most vibrations? Long or short
12. Which tuning fork had the least vibrations? Long or short

Strike the fork and gently bring the ping pong ball tied to a string in contact with the fork.

13. Which tuning fork made the ball bounce the highest? Long or short
14. Which tuning fork made the ball bounce the least? Long or short

Conclusion:

15. Does sound travel in a transverse or compressional wave? Draw an example of a sound wave and label the following parts of the wave: rarefaction, compression, wavelength.

2. Create a T-chart. Group the words below into two groups. Explain how the words in each group are related. Loudness, frequency, amplitude, pitch, intensity, decibels, hertz

3. How are pitch and frequency related?

16. How are loudness and amplitude related?

17. Explain why the tuning fork with the longer tines created a lower pitch. (Use your electronic device to research this)

18. Draw 2 sound waves. One that represents the sound produced by the short tuning fork and another that represents the sound produced by the long tuning fork. Explain what is different in the two drawings.

Extension:

How Can You Change the Pitch?

1. Wrap two rubber bands of different thickness lengthwise around a 30-cm plastic ruler. The bands should not touch each other.
2. Place a pencil under the bands at the 10-cm mark.
3. Pluck each band. How are the sounds different?
4. Move the pencil to the 15-cm mark and repeat Step 3.

Think it over…

Why are the sounds you made in Step 4 different from the sounds in Step 3?

My notes

- Shorter tuning fork creates a higher pitch, not as loud, so high frequency waves with low amplitude.
- The longer tine tuning fork is able to move back and forth over a longer distance and displace more air molecules, resulting in longer wavelengths with higher amplitude.