Name _____ Hour _____

Fun With Waves and Sound-Station Activity

You can do these in any order. It is O.K. if you do not know the answer. I am looking for educated guesses. You will understand all of this by the time we are done studying Waves and Sound. Today- just have fun with it and try to figure things out!

Station #1: Wine Glasses

Fill the wine glass with some water. Get one finger wet and rub in around the outside of the glass. This takes a little practice. Not everyone can get this to work. *Tip: Don't press down very hard on the rim.*

1a) *What do you suppose causes this noise from the glass?*

Station #2: Tin Can Telephone

Stretch the string tight and attempt to listen to one another.

2a) What is the **medium** for the sound? _____

Station # 3: Tuning Forks

3a) Using just one tuning fork**,** strike the tuning fork with the rubber hammer or activator and put just the tip of it onto a tightly pulled string (the telephone from station 2). What happens? Put your ear up to it.

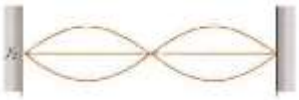
3**b)** If the speed of sound is approximately 340 m/s, calculate the wavelength of your tuning fork. (The frequency in Hz is stamped into the tuning fork.) $v = f \times \lambda$

3c) Strike a tuning fork with the rubber hammer and put just the tip of it into the container of water. What happens?

Station #4: Standing Wave

4a) Using a Slinky carefully, have one person hold it on either end. Shake it up and down slowly until a pattern like the one shown below forms and remains the same. Can you get it to look like that pattern? _____

4b) Shake as fast as you can, until a different pattern forms. See below. Can you get it? _____



4c) What are these patterns called? _____ _____ **Label the nodes and antinodes**.

Station #5: Boomwhackers (the colorful plastic tubes)

Play with the Boomwhackers (the colorful plastic tubes) Can you play a song? If you and your friends can play a song, practice it, then call me over and play it for me!

5a) Which variable in the $v = f \times \lambda$ equation would change when you use different lengths of Boomwhackers?

5b) The shorter the tube is, the _____ the pitch of the sound will be. (higher or lower)

Station #6: Test Your Hearing

6a) Listen to the hearing test. What is the lowest frequency you can hear? _____ highest? _____

http://www.youtube.com/watch?v=qNf9nzvnd1k

Name _____ Hour _____

Station #7 Fun thing from the dollar store

Swing the tube in a circle above your head parallel to the floor.

7a) What happens to the pitch of the sound as you make it go faster and faster?

7b) Which variable in the $v = f \times \lambda$ equation is changing when you swing it faster? _____

Explain why the pitch changes when you swing it faster using your previous answer:

7c) Your vocal cords work the same way. If you increase the *f* of your vibrations, the pitch will _____

(Men average a frequency of 115 Hz in conversation, women average 200 Hz.)

Bucket questions for Waves:

The unit for frequency

The unit of period

A transfer of energy from one point to another with no transfer of mass.

The unit of wavelength

The material through which a wave travels

A wave whose particles vibrate parallel to the direction of the wave.

High point of a transverse wave

A wave in which the particles vibrate perpendicular to the direction of the wave.

Part of a standing wave where the maximum vibrations occur.

Distance from 1 part of a wave until it repeats

Measurement of the height of a transverse wave

The low point of a transverse wave

The number of waves per second

The higher the frequency the higher the _____.

The time it takes for 1 wavelength to pass

The area of greater concentration in a longitudinal wave.

Place with very little movement in a standing wave

2 waves meet and are added together to form a larger wave

2 waves meet and are subtracted to form a smaller wave

Area of lesser concentration in a longitudinal wave

FM stands for

The units of FM radio stations

AM stands for

The units of AM radio stations