**Tuning Fork discovery**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. *Prediction:* Do you think longer tuning forks have larger or smaller frequencies?
2. *Prediction:* Do you hear a lower or higher pitch with larger frequencies?
3. Walk around to other tables and compare your tuning fork to others. Find at least 5 different comparisons. Try and determine

a) how fork length relates to frequency, and

b) how frequency relates to the pitch that you hear.

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| **Frequency of your fork** | **Frequency of other** | **Length (compare)** | **Pitch (compare)** |
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1. How does fork length compare to frequency based on your above observations?
2. How does the pitch that you hear compare to the frequency of the tuning fork?
3. Now test other frequencies of tuning forks to see if one fork that is vibrating can make another fork start vibrating by simply holding them next to each other – do not physically touch them. (NOTE: be sure that the quiet fork is *completely* silenced first. Hold the tines firmly in your hand, to silence the fork, before beginning your test)

|  |  |
| --- | --- |
| 440 Hz – 440 Hz |  |
| 440 Hz – 261.6 Hz |  |
| 523.2 Hz – 261.6 Hz |  |
| 440 Hz – 880 Hz |  |
| 883 Hz – 885 Hz |  |

1. Which pairs of forks, if any, can make another vibrate?
2. If you had to classify this phenomenon as resonance or sympathetic vibration, which would it be and why do you think that?
3. Now you’ll get two tuning forks, with very close frequencies, vibrating and hold them near each other. Use 880 Hz and 883 Hz or 880 Hz and 885 Hz or 883 Hz and 885 Hz. Listen to how the sounds blend. What do you hear?

The 261.6 Hz fork is “middle C” and the 523.2 Hz fork is the C one octave higher on the musical scale.

The 440 Hz fork and the 880 Hz forks both make an A note on the musical scale.

1. Based on the above information, how do the frequencies of notes an octave apart compare?
2. **Vibrating tuning fork and calm water**: Watch very closely and touch the fork very very gently to the surface of the water. What do you see?