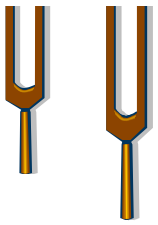
Name _____ Class _____ Date _____

Tuning Forks Lab 2 (HONORS)

Problem: How can we use tuning forks to investigate the different properties of sound?

Materials (per group):
2 tuning forks with matching frequencies
1 tuning fork with a different frequency
use your rubber sole as a striking point



Procedure and Observations: *Take turns performing each of the tests below and record your observations. Gently strike the tuning forks against the sole of your shoe or the back of your elbow or hand with just enough force to start them vibrating.*

1. Hearing Sound Vibrations: Strike the prongs of one tuning fork and then hold the fork close to your ear. What do you hear? _____

   _____

   What happens when you touch the prongs of the fork? _____

   _____Why?_____

   _____

2. Intensity of Sound Vibrations: Strike the prongs of one tuning fork gently and then hold the fork close to your ear. Strike the same tuning fork a little harder and listen. How do the sounds differ?

   _____

   Why?_____

   _____

3. Frequencies: Strike the prongs of two matching size tuning forks at the same time and listen to them both. What do you notice about the two sounds? _____

   _____

   Strike the prongs of two different size tuning forks at the same time and listen to them both. What do you notice about the two sounds? _____

   _____

   What do the numbers on the tuning forks mean? _____

   _____

4. Doppler Effect: Strike a tuning fork and hold it at an arm's length in front of you. Rapidly bring the tuning fork toward your ear then away again. How does the pitch of the sound change as the tuning fork approaches your ear? _____

   _____

   How does the pitch of the sound change as the tuning fork is moved away from your ear?

   _____

5. Resonance: Strike a tuning fork and bring it within a few centimeters of the other tuning fork with the same frequency. Then bring the second tuning fork near your ear and listen closely.

What do you hear? _____

Explain why this happens.

_____

_____

Repeat step 5 with two tuning forks having different frequencies. How are the results different?

_____

_____

6. Interference: Strike a tuning fork and bring one of the prongs to within 2 or 3 cm of your ear.

Slowly rotate the tuning fork completely. Describe any change in the loudness of the sound:

_____

As you are rotating the tuning fork, when do you think constructive interference occurs?

_____

As you are rotating the tuning fork, when do you think destructive interference occurs?

_____

Analyze and Conclude

1. Did the loudness of the sounds change in some tests? If so, give examples and explain why the loudness changed. _____

_____

_____

2. Did the pitch of the sounds change in some tests? If so, give examples and explain why the pitch changed. _____

_____

_____

3. How does one vibrating object make another object vibrate when they're not touching? What is true of both objects' vibrations when this happens? _____

_____

_____

_____

4. How does the Doppler Effect explain the change in pitch of a moving source of sound?

_____

_____

_____

_____