Name: _____

Unit #8 Study Guide: Waves and Sound

1. Know key unit vocabulary: wavelength, frequency, amplitude, crest, trough, node, antinode, Doppler Effect, transverse wave, longitudinal wave, standing wave, period, red shift, blue shift, constructive interference, destructive interference, bow wave, compression, rarefaction, pitch, and resonance.

2. Be able to answer wave speed, frequency, and wavelength problems using the following formulas:

   $v = \lambda f$ $\quad \lambda = \frac{v}{f}$ $\quad f = \frac{v}{\lambda}$ $\quad v = \frac{d}{t}$ $\quad d = vt$

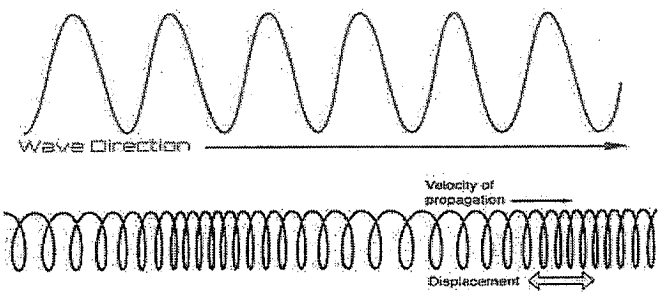
3. The spin rate of a CD-ROM varies according to the location on the disc from where data is being accessed. When accessing data from the inner circles of the disc, the CD can spin at a rate as high as 400 revolutions per minute. Determine the frequency (in Hertz).

4. What is the period of the sound wave produced by a 220 Hz tuning fork?

5. The speed of a wave is 50 m/s. If the wavelength is 2 m, what is the frequency?

6. A wave travels 4 m in .2s. What is the wave's velocity?

7. A wave has a frequency of 10 Hz and a wavelength of 1 m. What is the speed of the wave?



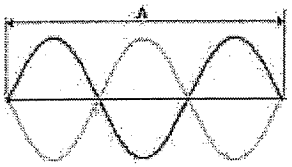
8. Identify each wave as transverse or longitudinal. Label the above waves with key features. How are transverse and longitudinal waves different? What are some examples of each type of wave?

9. What are three different types of wave behavior? Sketch an example of each.

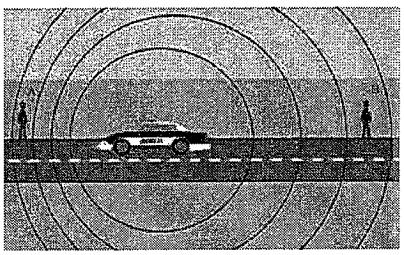
A. _____

B. _____

C. _____

10.  In the standing wave shown to the left, how many nodes and antinodes are there?

11. Explain what is being shown in the picture below. How does pitch play into the situation?



12. What are the units for wavelength, frequency, amplitude, and velocity?

13. What does the word medium mean as it is used in waves? Does the medium travel when waves are produced?

14. Draw a picture of constructive and destructive interference.

15. How do you determine the beat frequency of two tuning forks? What is the beat frequency of a 430 Hz and a 440 Hz tuning fork?