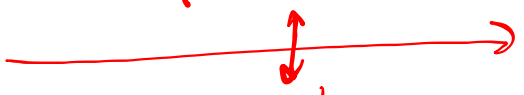
1. Define the following terms:
   a. Acoustics
      Sci. + tech of sound
   b. Trough
      bottom of transverse wave
   c. Crest
      top of " "
   d. Wavelength
      dist. between 2 same pts on adjacent wave
   e. Amplitude
      dist. above or below mid-line of wave
   f. Wave speed
      how fast wave moves from place to place
   g. Frequency
      # waves passing a pt. per sec.
   h. Period
      how much time it takes for 1 wave to pass
   i. Pitch
      how "high" or "low" sound is
   j. Harmonic motion
      motion that repeats in cycles
   k. Cycle
      unit of measure of harmonic mot.
   l. Wave
      travelling h. motion (oscillations)

m. Transverse wave

matter is disturbed perpendicular to wave direction



n. Longitudinal wave

matter is disturbed parallel to wave dir.

2. How are frequency and period related?

inverse freq = $\frac{1}{per.}$ per. = $\frac{1}{freq.}$

3. What is the unit of frequency?

Hertz (Hz) (1 cycle/sec)

4. If a wave has a frequency of 2 Hz, what is its period?

$\frac{1}{2}$ sec.

5. If a wave has a period of 0.5 seconds, what is its frequency?

$\frac{1}{0.5}$ Hz (2 Hz)

6. If a pendulum swings back and forth one time every 1.6 seconds, what is its period?

1.6 sec

7. If an electric tooth brush vibrates 65 times each second, what is the frequency?

65 Hz

8. What is the unit for measuring the strength or intensity of a sound?

decibel

9. What property of a sound wave is related to its pitch?

freq.

10. What property of a sound wave is related to its loudness?

amplitude

11. What causes a pendulum to swing back and forth?

gravity

12. In the lab "Harmonic Motion," which variable affected the period of the pendulum the most?

(24A) length

13. What symbol do we use to indicate wavelength?

λ

14. What kind of wave is a sound wave?

longitudinal

15. What kind of wave is a microwave?

transverse

16. What kind of wave is a water wave?

transverse

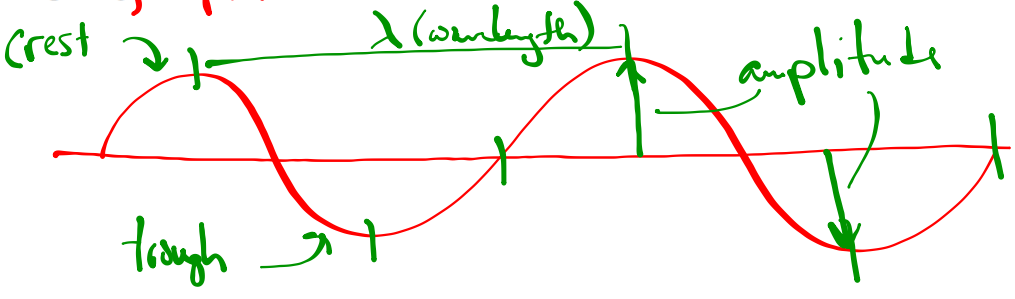
17. What kind of wave is an X-ray?

transverse

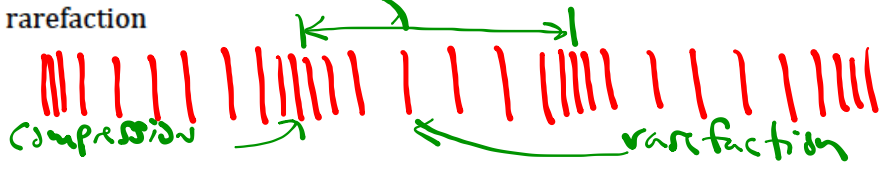
18. What is the formula relating wave speed, wavelength and frequency?

$V = f\lambda$

19. Draw a transverse wave and label the following parts: crest, trough, wavelength, frequency, amplitude



20. Draw of longitudinal wave and label the following parts: wavelength, compression, rarefaction



21. Do waves carry matter from place to place? If not, what DO waves carry from place to place?

NO — energy only

22. If a wave has a frequency of 400 Hz and a wavelength of 1.5 m, what is the speed of this wave? (show your work, don't forget sig digs!)

$v = f\lambda$

$v = (400\ \text{Hz})(1.5\ \text{m}) = 600\ \text{m/s}$

23. If a wave has a wavelength of 0.05 m and is traveling at 70 m/s, what is the frequency of the wave? (show your work, don't forget sig digs!)

$f = \frac{v}{\lambda} = \frac{70\ \text{m/s}}{0.05\ \text{m}} = 1400/\text{s} = 1000\ \text{Hz}.$

24. If a wave has a frequency of 500 Hz and is traveling at 1200 m/s, what is the wavelength of the wave? (show your work, don't forget sig digs!)

$\lambda = \frac{v}{f} = \frac{1200\ \text{m/s}}{500\ \text{Hz}} = 2.4\ \text{m}$