

1. Define the following terms:

a. Acoustics

science of technology of sound

b. Trough

low pt. of wave

c. Crest

hi pt. of wave

d. Wavelength

dist. between each wave

e. Amplitude

dist. wave moves from midpt.

f. Wave speed

dist. wave travels / time unit

g. Frequency

how often wave repeats (# of waves passing a pt. ea. sec)

h. Period

time for 1 complete cycle

i. Pitch

"highness" or "lowness" of sound

j. Harmonic motion

motion that repeats in cycles

k. Cycle

unit of motion that repeats

l. Wave

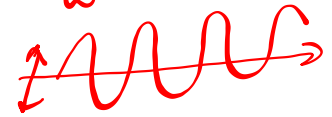
travelling oscillation

m. Transverse wave

medium is displaced perpendicular to direction of wave

n. Longitudinal wave

medium is displaced in same direction as wave direction



2. How are frequency and period related?

inverse $\text{freq} = \frac{1}{\text{period}} / \text{period} = \frac{1}{\text{freq}}$



3. What is the unit of frequency?

Hertz (1 wave/sec)

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

per = $\frac{1}{2}$ sec

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

FREQ = $\frac{1}{0.5} \text{ Hz}$ (2 Hz)

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

per = 1.6 sec

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

FREQ = 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?

frequency / wavelength

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?

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

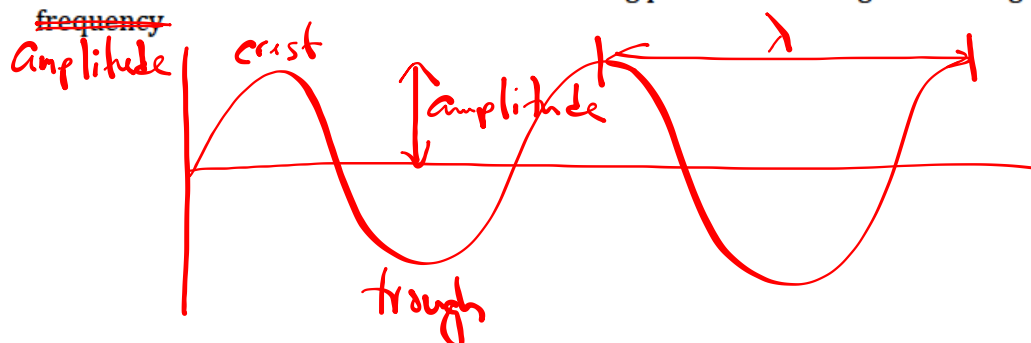
17. What kind of wave is an X-ray?

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,



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 - Carry Energy

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!)

$$v = f\lambda$$

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

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!)

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

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!)

$$\lambda = \frac{v}{f} = \frac{1200 \text{ m/s}}{500 \text{ Hz}} = \underline{2 \text{ m}}$$