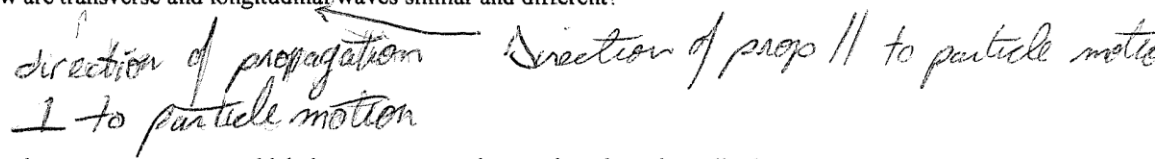


Waves Review

1) For any wave the angle of incidence and angle of reflection are *equal*

2) All angles should be measured from *Normal*

3) How are transverse and longitudinal waves similar and different?



4) Sketch a transverse wave and label one crest, trough, wavelength, and amplitude.



5) A siren approaches you, as a result of *Doppler effect* its frequency will be *higher*, wavelength will be *shorter*, and sound will be *high pitch*.

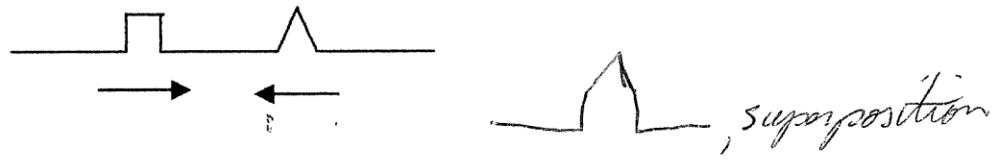
6) After the siren passes you what will happen to each of these?

lower
longer
low pitch

7) What are blue shift and red shift of stars, relate these terms to doppler effect.

★ approaching compresses λ = blue shift
★ receding stretches λ = red shift

8) Sketch the result of the two pulses meeting, what is the principle called which causes this result?



9) What happens when a crest meets a trough? *destructive interference*

10) What happens when a crest meets a crest? *constructive interference*

11) Calculate the speed of a wave which travels 15m in 10 seconds.

$$v = \frac{d}{t} = \frac{15}{10} = 1.5 \frac{m}{s}$$

12) Calculate the speed of a wave which has a wavelength of 2.0 m and frequency of 5.0 Hz.

$$v = \lambda f = 2 \times 5 = 10 \frac{m}{s}$$

13) What is the period of the above wave?

$$T = \frac{1}{f} = \frac{1}{5} = 0.20 \text{ s}$$

14) Calculate the wavelength of a blue light ray with frequency 1.86×10^6 Hz.

$$\lambda = \frac{v}{f} = \frac{3 \times 10^8}{1.86 \times 10^6} = 161 \text{ m}$$

15) Waves on Okanagan Lake pass by a point every 1.5 seconds. If they travel 20 meters in 30 seconds find their speed, frequency, and wavelength.

$$v = \frac{d}{t} = \frac{20}{30} = 0.67 \frac{\text{m}}{\text{s}}$$

$$\frac{v}{f} = \lambda = 1 \text{ m}$$

$$f = \frac{1}{T} = \frac{1}{1.5} = 0.67 \text{ s}$$

16) Sketch diffraction as light passes between the opening of a barrier as shown below:



17) What angle should be between polarizers to block light waves from passing through them?

$$90^\circ$$