

1. The speed of light is _____

2. Radio waves travel at what speed? _____

- 3. What other unit is a Hz equal to ? _____--
- 4.
- a. Find the speed of a wave if it has a frequency of 280 Hz and a wavelength of 2 meters. (*ans. 560 m/s*)
- b. How long will it take the wave in part a to travel one mile? (ans. 2.87 sec.)
- c. What is the period of the wave? (ans.0.0036 sec.)
- 5. A typical light wave has a wavelength of 580 nm. (1 nm = 10^{-9} m) Calculate the frequency of that wave. (ans. 5.17 x 10^{14} Hz)

- 6. A sound wave produced by a clock chime is heard 515 meters away 1.5 seconds later. The period of the sound wave is 0.00229 second. What is the wavelength of the sound wave? (ans. 0.79 m)
- 7. If a sound wave has a frequency of 133 Hz and a wavelength of 2.5 meters, how long would it take for you to hear the sound if you were 50 meters away from the source of it? (*ans. 0.15 sec.*)

8. The speed of sound in sea water is 1,530 m/s. A sonar signal is sent straight down from a ship at a point just below the water's surface, and 1.80 seconds later the reflected signal is detected. How deep is the ocean beneath the ship? (ans. 1,377 m) (Hint- the signal has to travel down and back up. Keep that in mind when you are asked for just the depth.)

9.

- a. Calculate the period of a wave from 101.3 FM- KDWB. (ans. 9.87 x 10-9 s)
- b. Calculate the wavelength of the signal from KDWB. (ans. 2.96 m)
- c. Calculate the wavelength of the signal from 1440 AM. (ans. 208.3 m)
- 10. If blue light has a wavelength of 450 nanometers, what is its frequency? (1 nm=1 x 10-9 m) (6.67 x 10¹⁴ Hz)
- 11. Explain why baseball bats have a "sweet spot." Include a sketch.
- 12. Show how we got the wave speed equation. (It's in your Wave notes.)
- 13. When you watch a fireworks display do you see or hear the fireworks first and why?