

Wave Book Assignment (Ch. 14)

Define the following terms starting on p. 388:

1. **Wave:**

2. Examples of the **medium** of a wave (material it travels through) are: _____

3. Transverse Wave: Wave in which the particles travel **parallel / perpendicular** to the motion of the wave's travel (Circle one)

4. Longitudinal Wave: Wave in which the particles travel **parallel / perpendicular** to the motion of the wave's travel (Circle one)

5. Draw the transverse wave on p. 389 and label the amplitude, crest, trough and one wavelength. (top picture on p. 390 will help too)

Define the following terms: (p. 390-391)

6. **trough:**

7. **crest:**

8. **wavelength (λ):**

9. **Period** of a wave (T):

10. **Frequency** of a wave (f):

11. What is the equation that links frequency and period? Write it in the box and **label each variable** and what **UNIT** it is measured in.

$f =$ _____ measured in _____

$T =$ _____ measured in _____

12. What is the frequency of a wave with a period of 0.04 seconds? _____
13. Look at the equation for speed of a wave below and **label each variable** and what **UNIT** it is measured in.

$$V = f \times \lambda$$

$V =$ _____ measured in _____

$f =$ _____ measured in _____

$\lambda =$ _____ measured in _____

Name _____ Hour _____

$$V = f \times \lambda$$

14. According to the equation, if the speed remains constant but the frequency increases, what should happen to the wavelength? _____
15. Frequency and wavelength are _____ related. (directly or inversely)
16. A sound wave has a frequency of 192 Hertz and travels the length of a football field (91.4 m) in 0.271 sec.
 - a. What is the speed of the wave? (Waves move at **constant speed...**) (337.3 m/s)
 - b. What is the wavelength of the wave? (1.76 m)
 - c. What is the period of the wave? (0.0052 sec)
 - d. If the frequency were changed to 442 Hz but velocity remained constant, what would be the new wavelength and period? (0.762 m, 0.0023 sec)

Define the following terms: (p. 394-397)

17. **Reflected wave:**
18. **Superposition:** (Use the "in other words" definition)
19. **Interference:**
20. **Destructive interference:** 2 waves meet and subtract to form a smaller / larger wave.
21. **Constructive interference:** 2 waves meet and add to form a smaller / larger wave.
22. **Node:** Point on a standing wave where **very little / a lot of** movement occurs. (Circle one)
23. **Antinode:** Point on a standing wave where **very little / a lot of** movement occurs. (Circle one)
24. **Standing Wave:**
25. Draw the middle standing wave on p. 397 and label the node and antinode:
26. In your own words, what is the difference between frequency and period?
27. A sound wave produced by a clock chime is heard 515 m away 1.50 seconds later.
 - a. Based on these measurements, what is the speed of sound in air? (343.3 m/s)
 - b. The sound wave has a frequency of 436 Hz. What is the period of the wave? (0.002 sec.)

Name _____ Hour _____

c. What is its wavelength? (0.79 m)