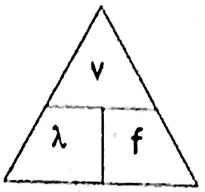
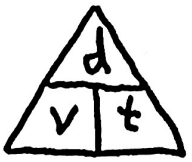
Physics 100
2014-2015 Test: Waves

Name: _____

Key Equations:





f = waves/seconds
T = seconds/waves

$T = \frac{1}{f}$ $f = \frac{1}{T}$

1-4. Answer Choices. Use each answer once: A. . mechanical wave B. transverse wave C. Longitudinal wave D. electromagnetic wave

1. A B C D An oscillation in matter
2. A B C D Oscillations are parallel to the direction of travel
3. A B C D Oscillations are perpendicular to the direction of travel
4. A B C D An oscillation that can travel through a vacuum (empty space)

5. Which of the following is <u>not</u> a property of <u>all</u> waves
   a. They transfer energy
   b. They include oscillations
   c. They travel from one point to another
   d. They can travel through the vacuum of space.

Match the abbreviations and units below to the correct quantities.

A. Frequency B. Wave Speed C. Period D. Wavelength

6. λ A B C D
7. T A B C D
8. s A B C D
9. hz A B C D

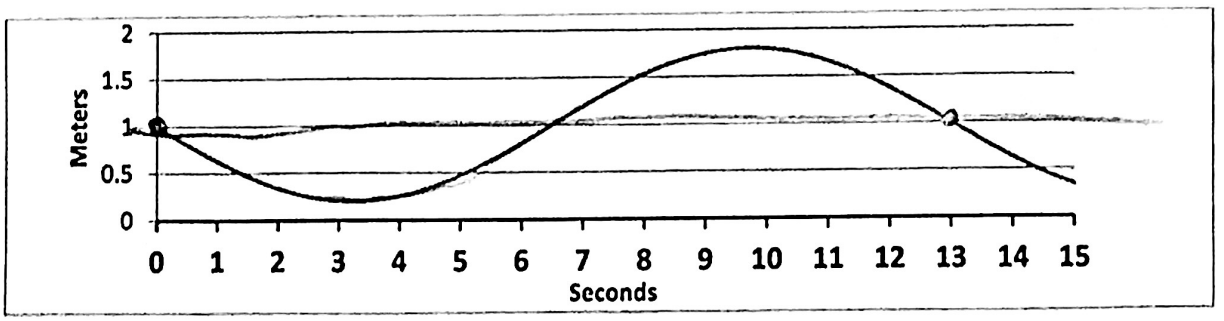
10. m/s A B C D
11. m A B C D
12. v A B C D

12.5 Darken the approximate period and frequency of the wave on the right.

$f = \frac{1}{T}$

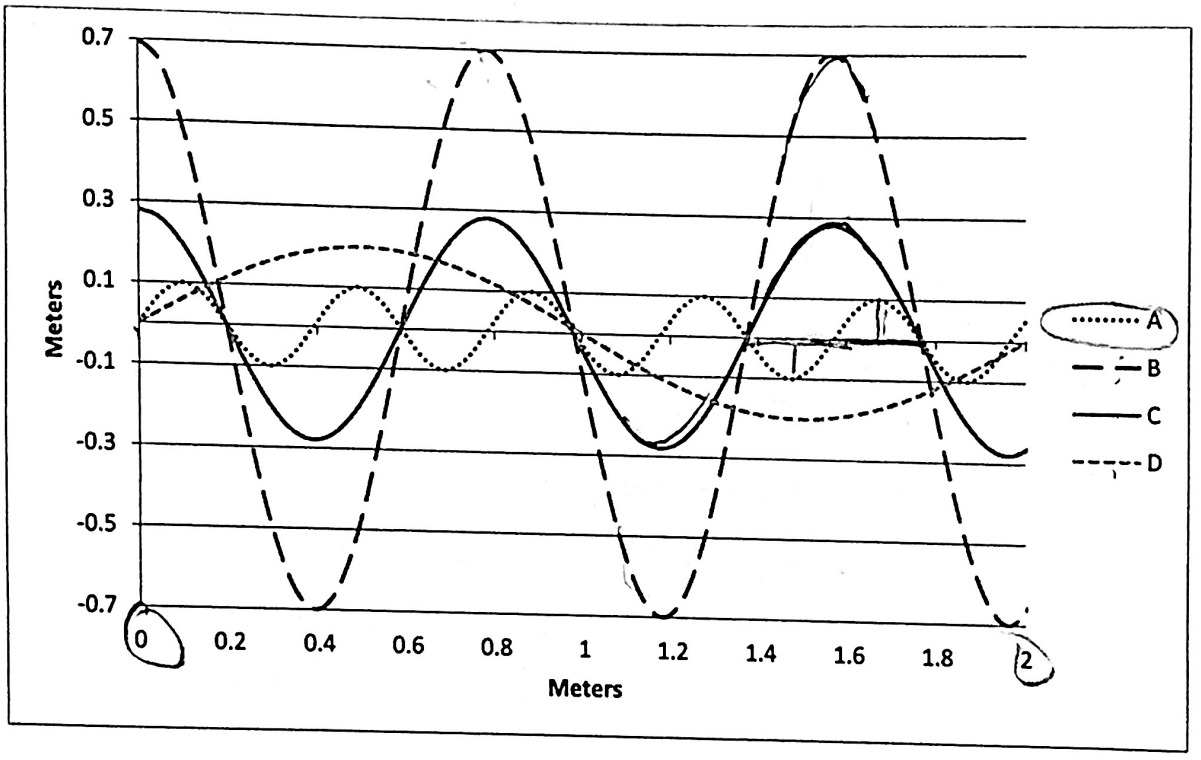
Period = 3s 5s 7s 9s 11s 13s 15s 17s 19s

Frequency = 1hz 1/3hz 1/5hz 1/7hz 1/9hz 1/11hz 1/13hz 1/15hz 1/17hz 1/19hz



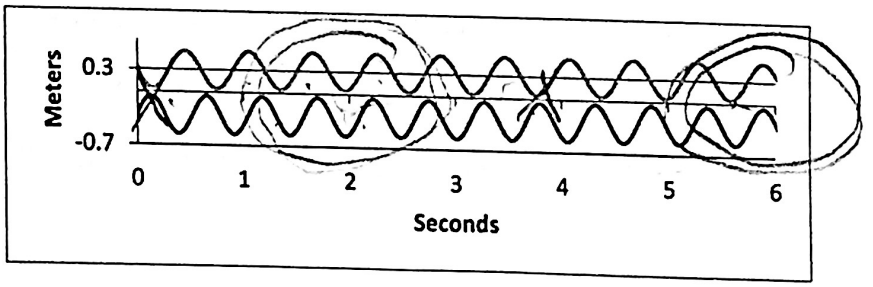
13-17. Answer the following questions using the graph below.

13. Which wave has the longest wavelength? A B C D
14. What is that wavelength, in meters?
    0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
15. Which wave has the smallest amplitude? A B C D
16. What is that amplitude, in meters? 0.1 0.2 0.3 0.4 0.5 0.6 0.7
17. Which two waves, when added together, always produce constructive interference?
    A&B A&C A&D B&C B&D C&D



18. When the two waves on the right interact, they will create beats. How many beats can you see during the time span shown on the graph?

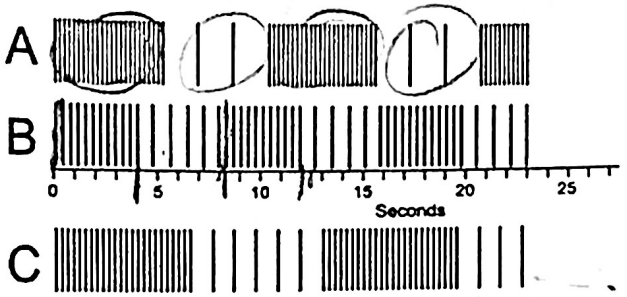
    0 1 2 3 4 5 6 7 8 9



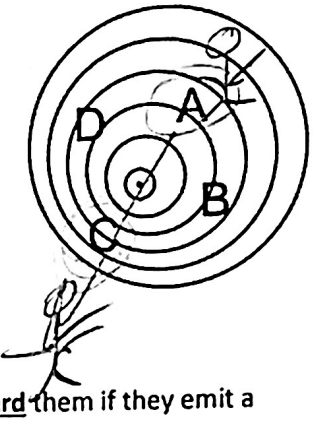
19. Which of the sets of waves below represents the **loudest** sound? A B C

20. Which of the sets of waves below has the **least** amplitude? A B C

21. What is the **period** of the waves shown in answer choice B? 2 4 6 8 10 12 14 16 18 20



The diagram to the right shows an object moving and giving off sound waves:



22. Darken the arrow that shows the direction of travel of the object on the right.

23. At which location will an observer hear the **highest** frequency?
A B C D

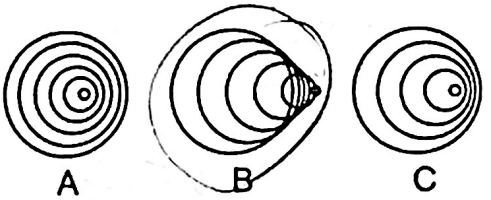
24. At which location will an observer hear the **lowest** frequency?
A B C D

25. Bats use echolocation to find their prey. Bats can tell that a moth is flying **toward** them if they emit a screech and...

a. the frequency of the echo is lower than the original screech
b. the frequency of the echo is higher than the original screech
c. the echo is quieter than the original screech
d. the echo is louder in the bat's left ear

26. A singer is singing a very clear note (A – 220hz). The singer's sound wave consists of a series of rarefactions and compressions. When one of those **compressions** reaches your ear, what happens to the air pressure felt by your ear?
a. it increases b. it decreases c. there is no change d. frequency increases e. frequency decreases

27. The pictures on the right show sound waves produced by moving objects. In which case is the object is moving the **fastest?**



A. B. C.