Name: _____KEY_____ Period: _____

Physics Test – Wednesday, April 27, 2016

This is a review guide…none of these questions are on the test. You have to understand the skills necessary to answer these questions and apply those skills to the questions on the test. Practice! Take your time.

Topics: Waves and Sound

1. Fill in the following table:

Variable	Concept	Units
v	velocity	m/s
λ	wavelength	m
f	frequency	Hz

2. Know the following *vocabulary terms*:

pitch	Doppler Effect	frequency	period
decibel	crest	trough	pulse
wavelength	reflection	medium	wave
transverse	longitudinal	constructive interference	amplitude
resonance	destructive interference	mechanical wave	antinode
fixed end	free end	natural frequency	rarefaction
electromagnetic wave		compression	diffraction
node			

3. If you give a rope an up and down pulse on one end, what happens to the position of point A on the rope as the pulse passes?

Upright

4. Why don't incoming ocean waves bring water onto the shore until the beach is completely submerged?

Because a wave is energy going through matter, not moving it

5. Differentiate between a mechanical wave and an electromagnetic wave.

Mechanical waves need a medium- solid, liquid, or gas to travel through.
Electromagnetic waves don't need a medium- can travel through a vacuum (space).

6. Give three examples of transverse waves:

1.electromagnetic wave
2.wave on a string
3. ocean waves

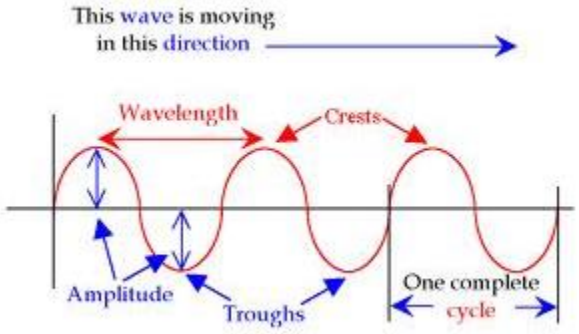
Give three examples of longitudinal waves:

1. sound
2.seismic waves
3.

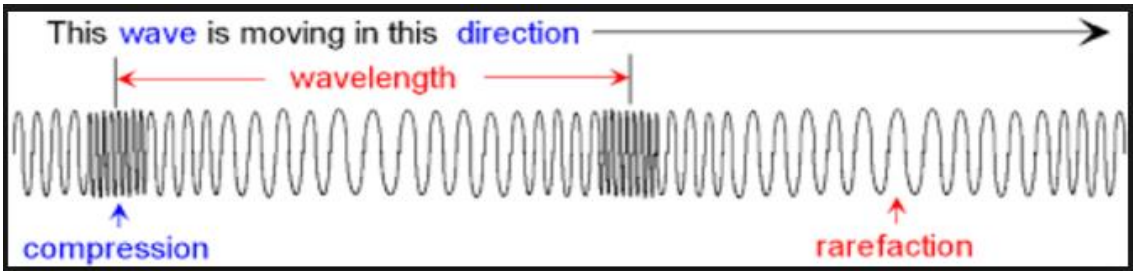
Give three examples of electromagnetic waves:

1. Microwaves
2. light waves
3. ultraviolet rays

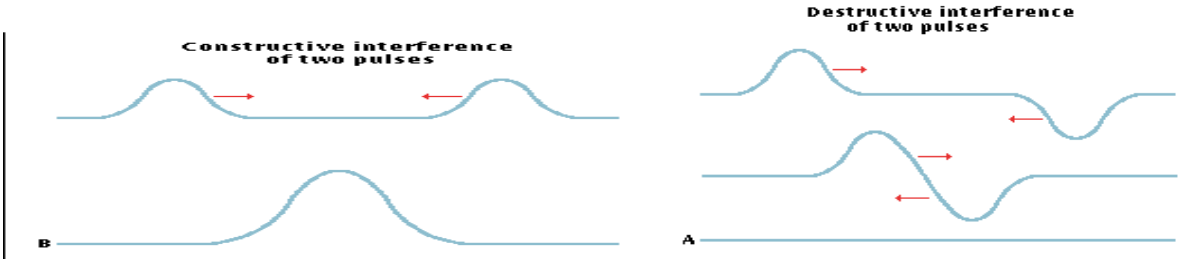
7. Draw a diagram of a transverse wave. Be sure to label the crests, troughs, amplitude, and wavelength.



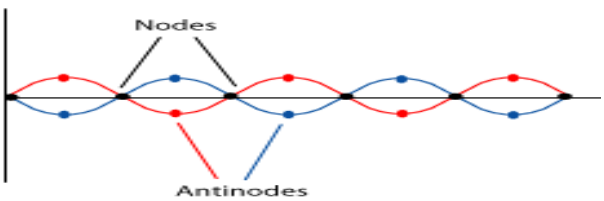
8. Draw a diagram of a longitudinal wave. Be sure to label the wavelength, compressions, and rarefactions.



9. Explain destructive and constructive interference. What happens to sound wave with each? (draw a diagram of each)



10. Draw a standing wave and label the nodes and antinodes.



11. A wave that encounters a fixed end boundary reflects on the (SAME or INVERTED) side as the incoming pulse.

12. A wave that encounters a free end boundary reflects on the (SAME or INVERTED) side as the incoming pulse.

13. A wave crosses from a denser boundary to a less dense boundary. Does the wave speed up or slow down? Speeds up.

14. A wave crosses from a less dense boundary to a denser boundary. Does the frequency speed up, slow down, or stay the same?

15. The speed of a wave is fastest in which type of medium: SOLID LIQUID GAS

16. Wavelength depends on ___Frequency_____. Speed depends on __medium_____.

17. Why does a moving sound appear to be higher pitch approaching you than it does moving away from you?
Sound waves get compressed causing their frequency to increase. Higher frequency waves have a higher pitch

18. What is the frequency of a wave with a wavelength of 14 m and a velocity of 37 m/s?

$$v = f\lambda$$

v = velocity
f = frequency
λ = wavelength

37= f X 14 37/14= 2.64 hz

19. What is the wavelength of a wave moving at 6 m/s with a frequency of 9 Hz?

$$v = f\lambda$$

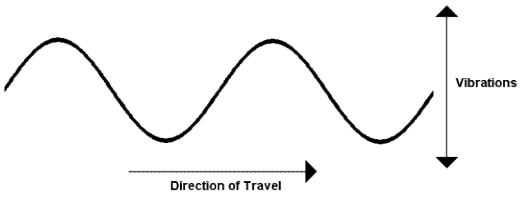
v = velocity
f = frequency
λ = wavelength

6=9 X λ 6/9= .67 m

20. What types of waves need a medium to be transmitted? __mechanical_____

What types of waves can be transmitted without a medium? ___electromagnetic_____

21. A wave in which the particles of the medium move in right angles to the direction of the wave is called ___Transverse_____.



22. If a wave has a wavelength of 4 m and a frequency of 16 Hz, what is the speed of the wave?

$$v = f\lambda$$

v = velocity
f = frequency
λ = wavelength

V= 16 x 4 64m

23. What do you call an apparent change in pitch due to the motion of the source or the listener?
Doppler effect

24. As frequency of sound increases, the intensity of the sound (increases, decreases, stays the same).

As the frequency of sound increases, the pitch (increases, decreases, stays the same).

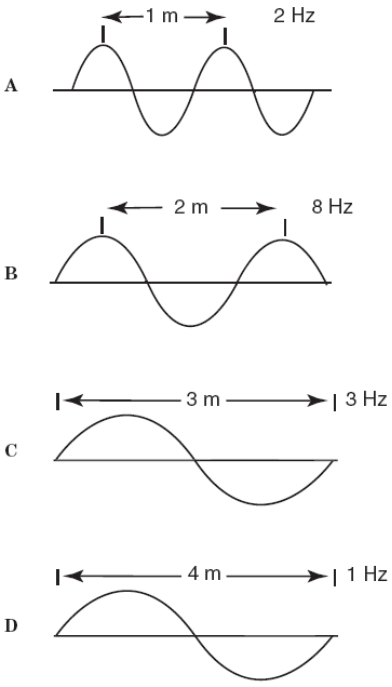
25. What is the formula to calculate the velocity of a wave?

Calculate the velocity of each wave below.

$$v = f\lambda$$

v = velocity
f = frequency
λ = wavelength

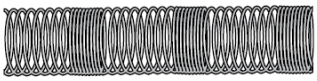
a. 1 x 2= 2 m/s
b. 2 x 8 = 16 m/s
c. 3 x 3 = 9 m/s
d. 4 x 1= 4 m/s

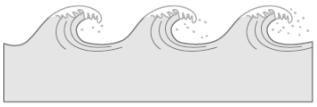


Which wave from the above figures has the smallest velocity? ___A___

26. Identify the type of wave shown in each illustration:

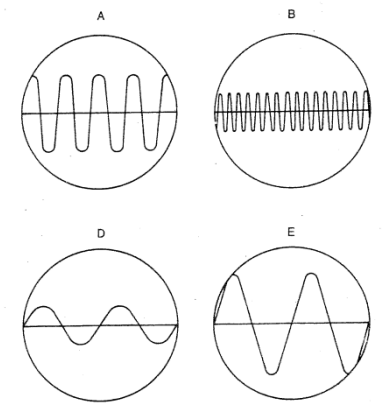
A  __Transverse____

B  _longitudinal_____

C  ___transverse_____

D  _transverse_____

Use the following graphic to answer questions 27-29.



27. Which wave has the lowest frequency?
A. B. D. E.

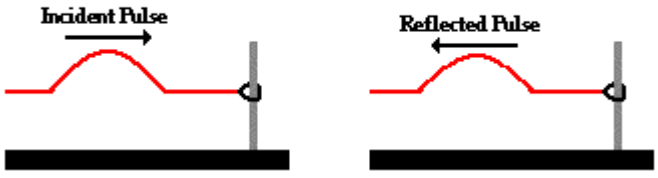
28. Which wave has the smallest amplitude?
A. B. D. E.

29. Which wave has the most density and pressure?
A. B. D. E.

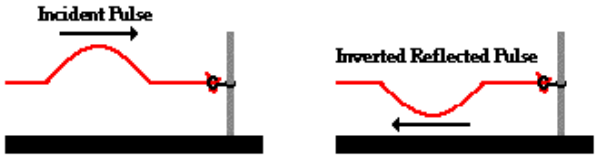
30. What is the angle of reflection? angle between the reflected ray and the norma

31. Label each as fixed end or free end reflection?

A.___free end_____ _____



B. ____fixed end_____



32. Speed of sound waves is affected by _____medium_____

33. A sound measured at one instant to have a loudness of 150 dB. At a later time, the same sound has a loudness of 200 dB. By what factor has the intensity increased?

200- 150= 50 db

10 x 10 x 10 x 10 x10 = 100, 000 more intense

34. Waves transfer __energy_____ so waves __can occupy_____ the same space?