HW 6.2 Waves and Sound Per ____ Name_____

1. My favorite FM radio station in Austin is KASE100.7 MHz and my favorite AM station is KVET 1300 kHz. Radio waves are a form of electromagnetic radiation and, just like light, travel at 3.0 E 8 m / s. What are the wavelengths of my favorite radio stations?

2. A cork bobber resting on the surface of a pond bobs up and down two times per second on some ripples having a wavelength of 8.5 cm. If the cork is 10.0 m from shore, how long does it take a ripple passing the cork to reach the shore?

3. When a particular wave is vibrating with a frequency of 4 Hz, a transverse wave of length 60 cm is produced. Determine the speed of the wave pulses along the wire.

4. A wave is traveling along a rope. It is observed that the wave completes 40 vibrations in 30 seconds. Also, a given crest travels 425 cm along the rope in 10 seconds. What is the wavelength of the wave?

5. For a certain transverse wave, it is observed that the distance between two successive crests is 1.2 meters. It is also noted that eight crests pass a given point along the direction of travel every 12 seconds. What is the speed of the wave?

6. How long does it take **light** from the sun to reach us (in minutes)? (The sun is 93 million miles away; 1600 meters = 1 mile) SHOW ALL CALCULATIONS!!!

7. An astronaut communicates with Earth from the Moon (3.84 E 8 meters away). How long does it take his signal to reach us?

8. How long does it take **light** from Proxima Centauri (the star nearest our sun) to reach Earth which is 4 E 16 meters away?

____ 1. Through which of the following does sound travel fastest?
a. water b. helium c. alcohol d. iron

____ 2. Resonance occurs when you
a. push an object
b. hit an object with a hammer
c. cause an object to vibrate at its natural frequency
d. vibrate an object

____ 3. The normal range of hearing for a human is
a. 20-2,000 Hz b. 20-40,000 Hz c. 10-10,000 Hz d. 20-20,000 Hz

____ 4. Beats are formed by _____ interference of two waves
a. both constructive and destructive
b. beats are vegetables and have nothing to do with sound.
c. constructive
d. destructive

____ 5. In a very famous Memorex commercial, Ella Fitzgerald makes a wine glass shatter with her voice. This is a demonstration of
a. interference c. sound refraction
b. beats d. resonance

____ 6. A tuning fork of frequency 200 Hz will resonate if a sound wave incident on it has a frequency of
a. 300 Hz b. 400 Hz c. 200 Hz d. 100 Hz

____ 7. If you hear the pitch of a siren become lower, you know that
a. the siren is getting farther from you
b. neither you nor the siren is moving.
c. you are moving toward the siren
d. the siren is getting closer to you

____ 8. The speed of a sound wave in air depends on
a. its frequency c. its wavelength
b. its amplitude d. the air temperature

____ 9. Five seconds after a gun is fired, the person who fired hears an echo. How far away was the surface that reflected the sound? (v =340 m/s)
a. 1700 m b. 850 m c. 34 m d. 68 m

____ 10. Two whistles produce sounds of wavelengths 3.4 m and 3.3 m. What is the beat frequency produced? (speed of sound = 340 m / s)
a. 1 Hz b. 2 Hz c. .1 Hz d. 3 Hz

11. What is forced vibration?

12. What is meant by natural frequency?

13. Describe resonance