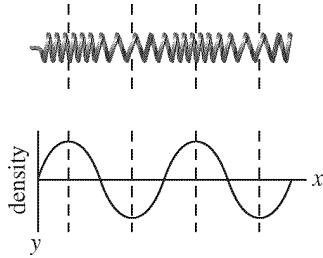


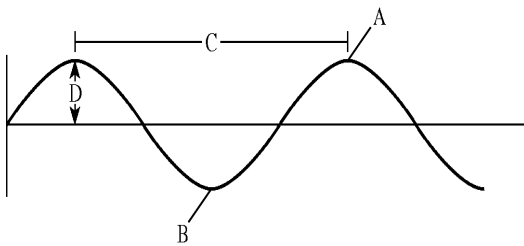
HW 6.3 Wave Behavior

Per _____ Name _____



1. In the waveform of the longitudinal wave shown to the left, the compressed regions correspond to _____, while the stretched regions correspond to _____.

2. What type of interference results when individual displacements on the same side of the equilibrium position are added together to form the resultant wave?
3. What type of interference results when individual displacements on the opposite side of the equilibrium position are added together to form the resultant wave?
4. In the wave shown below identify each letter.



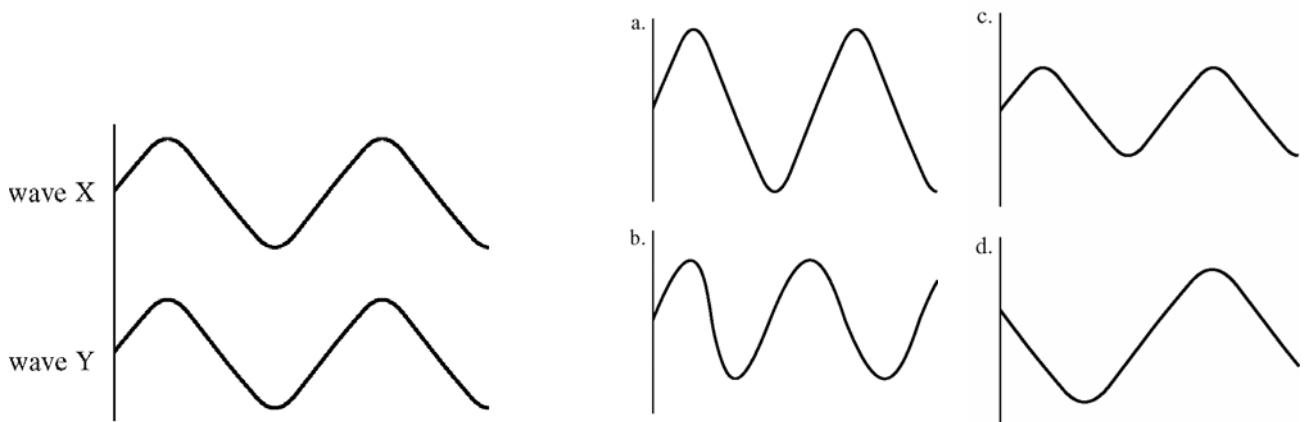
- A. _____
B. _____
C. _____
D. _____

5. What happens to the energy of a wave when the amplitude is increased?
6. What is pitch?
7. What is wave interference?
8. If you hear the pitch of a siren becoming lower you know the siren is moving away from you / towards you. (Circle the correct answer)
9. Two vibrating tuning forks held side by side will create a beat frequency of what value if the individual frequencies of the two forks are 216 Hz and 224 Hz, respectively?
10. Which carries a sound wave more rapidly, a solid or a gas? Explain.
11. When does resonance occur?

- ___ 1. Resonance occurs when you
- push an object
 - hit an object with a hammer
 - cause an object to vibrate at its natural frequency
 - vibrate an object
- ___ 2. Constructive interference occurs when
- a sound wave and a light wave overlap
 - the crest of one wave meets the trough of another
 - two waves have the same amplitude
 - the crest of one wave meets the crest of another
- ___ 3. Two waves arrive at the same place at the same time exactly in phase with each other. Each wave has amplitude of 1 m. The resulting wave has amplitude of
- 1 m
 - 2 m
 - 0 m
 - 0.5 m
- ___ 4. Five seconds after a gun is fired, the person who fired hears an echo. How far away was the surface that reflected the sound? ($v = 340 \text{ m/s}$)
- 1700 m
 - 850 m
 - 34 m
 - 68 m
- ___ 5. Sound waves can interfere with one another so that no sound results.
- impossible to say
 - true
 - false
- ___ 6. A tuning fork with a frequency of 256 Hz is held over an air column. Resonance of the first harmonic will occur at an air tube length of _____. (speed of sound is 340 m/s)
- 64 m
 - 0.19 m
 - 0.33 m
 - not enough info
- ___ 7. A wave created by shaking a rope up and down is called a
- longitudinal wave
 - constructive wave
 - standing wave
 - transverse wave
- ___ 8. Where can you touch a standing wave on a rope without disturbing the wave?
- at a node
 - at the wavelength
 - at any place along the wave
 - at an antinode



- ___ 9. Which of the following types of interference will occur in the figure above?
- partial constructive
 - partial destructive
 - complete constructive
 - complete destructive



- ___ 10. In the diagram above, use the superposition principle to find the resultant wave of waves X and Y.
- a
 - b
 - c
 - d