

Name: _____ Date: _____ Period: _____

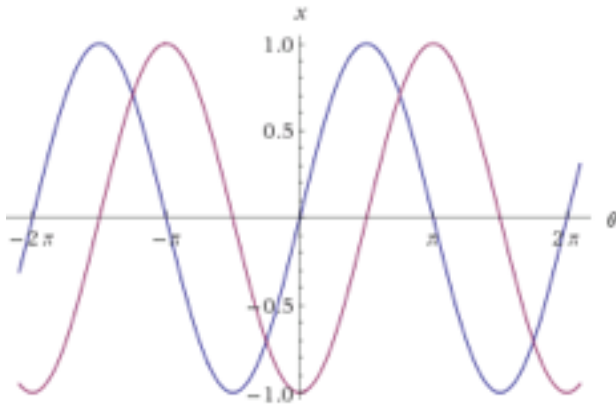
Honors Physics Waves and Sound Review WS 2

Use your notes to answer the questions below.

Review the Concepts: Waves

1. What's a wave? What creates them?
2. What's a vibration?
3. What do waves carry?
4. If the speed of a wave stays the same, what must happen to wavelength if the frequency increases? If the period increases?
5. In one oscillation, how many wavelength? Crests? Troughs?
6. What's the amplitude of a wave?
7. What's the difference between a transverse and longitudinal waves?
8. Describe the two different types of interference we've talked about.

9. What's the phase difference between the waves in the picture below?



10. What's a standing wave?

Review the Concepts: SHM

1. What's simple harmonic motion?
2. What's a restoring force?
3. What is the restoring force of a simple pendulum? A spring-mass system? A guitar string?
4. Which of the following will have *no* impact on the period of a simple pendulum? *Amplitude, gravity, length of string, mass*
5. What's the spring constant a measure of? What will a stiffer spring do to the period of a spring-mass system?

Review the Concepts: Sound

1. What are the areas of high and low pressure in a sound wave called?
2. What is pitch?
3. What are infra- and ultrasonic frequencies?
4. What about the medium dictates the speed of sound?
5. How do the speeds of sound compare between liquids, solids, and gasses?
6. What is loudness?
7. How many times more intense is 20 dB than 10 dB?
8. What is resonance?
9. What about the sound wave allows us to distinguish between a trumpet and a clarinet even if they play the same pitch with the same volume?

10. What is the harmonic series?

11. How would the frequency and velocity of the sound wave produced by a police siren if the car was driving toward you compared to if it were parked?

Below are the equations I will provide on the test. Make sure you know how to use each of them.

$$x = A\cos(\omega t)$$

$$KE = \frac{1}{2}mv^2$$

$$v = -\omega A\sin(\omega t)$$

$$PE_E = \frac{1}{2}kx^2$$

$$v = \sqrt{\frac{k}{m}(A^2 - x^2)}$$

$$v = \lambda/T = \lambda f$$

$$v_{\max} = -\omega A$$

$$T = 2\pi\sqrt{\frac{L}{g}}$$

$$a = -\omega^2 A\cos(\omega t)$$

$$T = 2\pi\sqrt{\frac{m}{k}}$$

$$\theta = \theta_0\cos(\omega t)$$

$$\beta = 10 \log(I_1/I_0)$$

$$f = 1/T$$

$$I = P/A$$

$$\omega = 2\pi f$$

$$f' = \frac{f}{(1 \pm v_s/v)}$$

$$\omega = \sqrt{g/L}$$

$$\omega = \sqrt{k/m}$$

$$F_s = -kx$$