Gen 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 provided on the test. Make sure you know how to use each of them.

$x = A\cos(\omega t)$	$\mathrm{KE} = \frac{1}{2}\mathrm{m}v^2$
$v = -\omega A \sin(\omega t)$	$PE_E = \frac{1}{2}kx^2$
$v = \sqrt{\frac{k}{m} (A^2 - x^2)}$	$v = \lambda/T = \lambda f$
$v_{\text{max}} = -\omega \mathbf{A}$	$T = 2 \pi \sqrt{\frac{L}{g}}$
$a = -\omega^2 A\cos(\omega t)$	$T = 2 \pi \sqrt{\frac{m}{k}}$
$\theta = \theta_0 \cos(\omega t)$	
f = 1/T	
$\omega = 2\pi f$	
$\omega = \sqrt{(g/L)}$	
$\omega = \sqrt{(k/m)}$	
$F_s = -kx$	