Name: _____

Period: _____

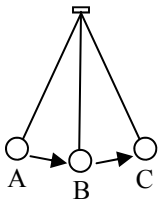
Ch 11-15 Rev

Harmonic Motion and Light Review

Harmonic (H), Linear (L), or Wave (W) motion?

Person running: _____	A swing: _____	Music: _____
The moon: _____	A car moving: _____	Bird flying: _____
Clock pendulum: ____	Jumping Jacks: _____	Bouncing spring: ____
Ocean waves: _____	X-rays: _____	Radio Signals: _____

1. Frequency	A. The number of cycles per second.
2. Period	B. The size or strength of a cycle.
3. Cycle	C. Time it takes to complete one cycle.
4. Hertz	D. A part of motion that repeats over and over with a set series of events.
5. Amplitude	E. A unit of one cycle per second.



One cycle of the would be from C to ____.

One half cycle would be from A to ____.

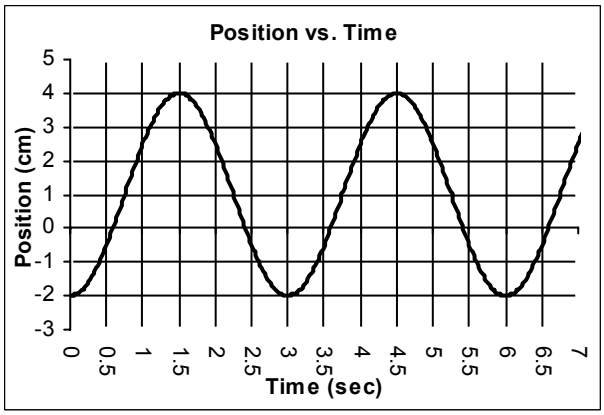
The amplitude would be from C to ____.

To shorten the period you would have to shorten or lengthen the string?

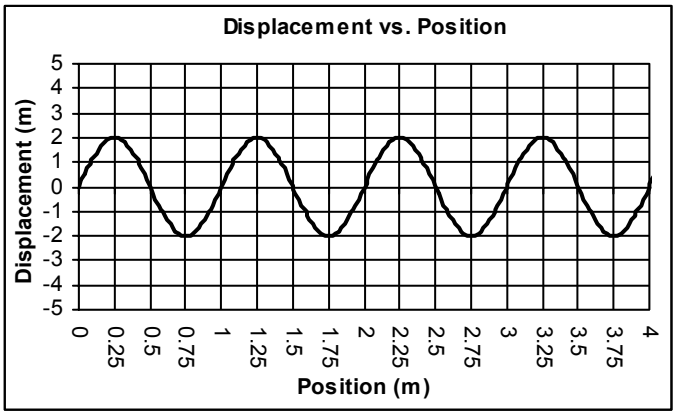
If the mass at the end was greater period would be?
If the amplitude was greater the period would be?

If the frequency of a pendulum is 2 seconds, what is the period?

If the period of a wave is 4 seconds, what is its frequency?



Mark 1 cycle of the harmonic motion.
Starting at 1.5 secs, when does the 1st cycle end:
Number of complete cycles: Period:
Frequency: Amplitude:



Mark 1 cycle of the wave. / Is it a standing or moving wave?
Mark the crests and troughs.
Starting at 0.75 m, where does the 2nd cycle end:
Number of complete cycles: Wavelength:
Amplitude: If f = 4 Hz, find speed:

If a wave is 30 m long and 4 Hz, find its speed.

If a 150 m/s wave has a frequency of 15 Hz, find its wavelength.

Find its period: _____

What harmonic is this? _____

Mark the nodes and anti-nodes.
How many wavelengths is it? _____

Can we hear this frequency? _____

Find the fundamental frequency:

_____

3rd harmonic frequency:

_____

200 Hz

Absorption, Reflection, Refraction, or Diffraction?

Light waves hit a mirror and bounces off by: _____

You can hear around a corner by: _____

If a wave hits a soft boundary, it dies by: _____

A wave bends inside a clear boundary by: _____

A pillow reduces sound by: _____

Light between your fingers causes darkness by: _____

A prism makes a rainbow by: _____

Name: _____

Period: _____

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1. Transverse	A. Faster than 340 m/s.
2. Longitudinal	B. How we hear changes of frequency in sound.
3. Pitch	C. Light is this kind of wave, moving 90° to the linear motion.
4. Loudness	D. Sound is this kind of wave, with the vibrations in the same direction as the motion.
5. Supersonic	E. How we hear amplitude in sound.

To be twice as loud a sound has to change by:

To be half as loud a 50 dB sound would have to become:

Humans can hear frequencies between:

A sound wave has a frequency of 4 Hz. Find its wavelength.

You hear the crack of a bullwhip 3 seconds after you see it move. How far away is it?

You yell into a cave and 4 seconds later you hear the echo return. How deep is the cave?

Where does light come from?

Two polarizers cancel out light if they are:

Why do we see lightening and hear the thunder a few seconds later?

What is the speed of light?

What has more energy: Visible light or X-rays?

What has a shorter wavelength: Microwaves or Ultraviolet rays?

What has a higher frequency: Radio waves or Infrared?

All light, visible or invisible is part of the:

Visible light is a big/small part of this spectrum?

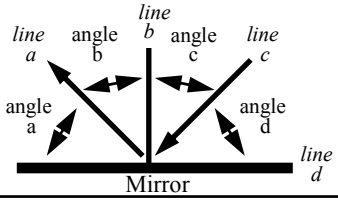
The angle of incidence is: _____

The angle of reflection is: _____

Line b we call the: _____

The incident ray is: _____

The reflected ray is: _____



1. Radio waves	A. EM waves that can pass through skin and have short wavelengths.
2. Ultraviolet	B. Electromagnetic waves we feel as heat.
3. X-rays	C. Dangerous EM waves that have very high energy and come from nuclear reactions.
4. Gamma rays	D. EM waves that have very low energy and long wavelengths.
5. Infrared	E. EM waves with more energy than visible light and can cause sunburns.
6. Microwaves	F. Long wavelengths; used in cell phones.

Additive or Subtractive Colors and Why

Using paints: _____ Why? _____

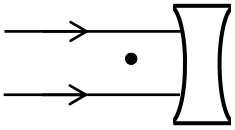
Computer screen: _____ Why? _____

White light can be separated by a _____ into these colors:

What kind of light bulb is less efficient and why?

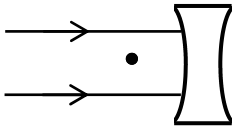
Use RGB to make these colors.		Use CMYK to make these colors.	
Black _____	Yellow _____	Black _____	Cyan _____
Cyan _____	Magenta _____	Blue _____	Green _____
Blue _____	White _____	White _____	Red _____

Draw the ray diagrams



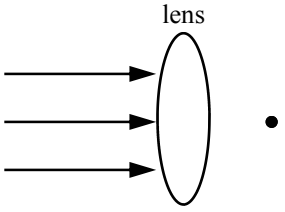
mirror

Convergent/Divergent
Magnifying/ Reducing



lens

Convergent/Divergent
Magnifying/ Reducing



Show where the 3 light rays will go.

Concave or convex lens?

What do we call the dot?

Magnifying or reducing?

Convergent or divergent?

If the angle of incidence is 50°, what is the angle of reflection?

An image looks to be 12 m away from a mirror. How far is the object?

An object is 3 ft away from a mirror; the image looks: