Physical Sc. 20 **Waves** **Chapter 10**

A wave is a _____ of _____ in the form of a _____, usually through a _____ medium (air, or _____, or a solid, etc)

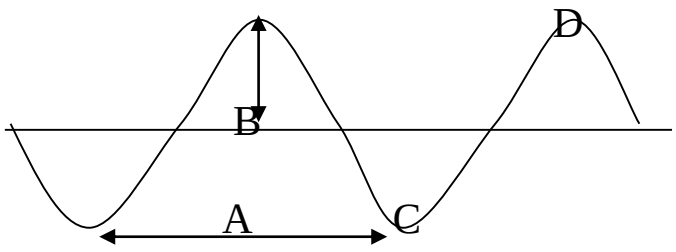
Waves are all around us – some are _____ (water, ropes, etc), some are _____ (radio, _____, nuclear radiation, etc)

Most waves _____ from a _____ source. These sources are often vibrating too fast to see. We study objects we can see vibrating _____, or in _____ motion, to study the properties of waves. _____ motions are repeated at regular time _____.

When we describe the motion of a vibrating object, one complete _____ (rotation, or back and forth motion) is called a _____.

The number of cycles in a given amount of _____ is called the _____**,** usually measured in _____ (cycles per second).
This can be seen on a wave diagram as the number of _____ or troughs passing by a certain point. A **crest** is the _____ section of the wave, while a **trough** is the _____ section of a wave diagram. (P. 312)

Completely label the following diagram:



The time it takes for one cycle is called the _____ **(T)**

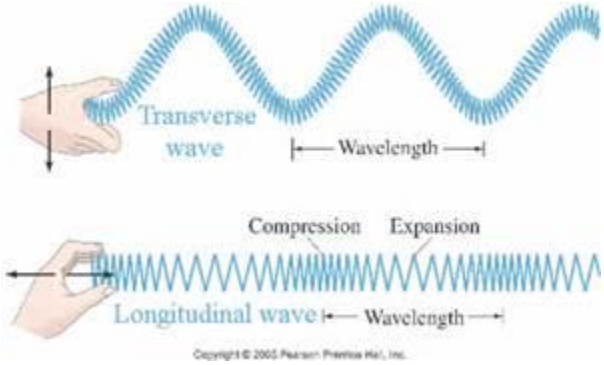
F = 1/T also, T=1/F

The maximum _____from the rest position of a wave is called the _____**.**

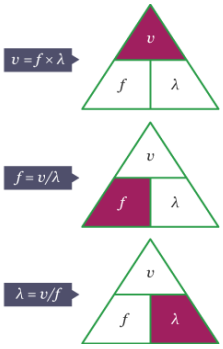
If a wave consists of a _____disturbance, like a wave along a skipping rope (garden hose), it is called a _____.

The two types of waves described in the text are _____and _____.

A transverse wave occurs when particles move at _____angles to the direction of travel. Examples are _____waves, and waves made by rapidly moving a rope side to side.



_____ waves occur when the particles in the medium move in the same direction as the wave motion. Examples are sound waves and cars bumping into each other like a _____ (ie. if one does not stop at a stop light and bumps into the one ahead of it).

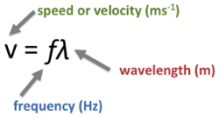


The parts of a longitudinal wave are _____ and _____ (sometimes called expansions). Compressions are the _____areas of particles and the rarefactions are the _____dense sections of the wave.

Read 10.1 – 10.5

10.4

The wave _____relates the velocity, frequency and the _____of a wave as follows:



Since frequency is the _____of Period (1/T), the equation could take this form:

$$v = \frac{\lambda}{T}$$

v : speed $(m.s^{-1})$
λ : wavelength (m)
T : period (s)

The wave equation can be rearranged to solve for _____or _____as well.

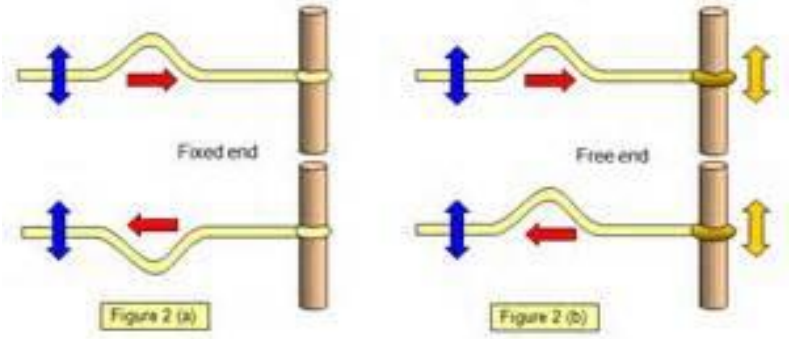
Make sure that when doing your calculations, the _____ 'line up'. This means that if frequency is cycles per second, that the velocity should be 'per second' as well. Also if the wavelength is meters, the velocity will be 'meters per ____'

10.5

Transmission and reflection of waves

When waves strike a _____, the reflection of the wave depends upon the _____of the surface. If the surface is _____, the wave reflects in the _____position.

If the surface is _____to move, the wave reflects in the _____upright position. This can be easily seen with a single pulse travelling along a rope or spring.



Waves can also exhibit '_____reflection' if the medium changes.

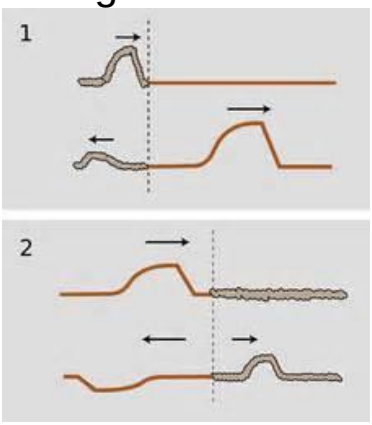


Diagram #1 shows the transmission of a wave when travelling into a medium that is _____dense. The velocity and amplitude of the transmitted wave is increased.

The reflected wave is upright but has less _____because energy is lost in the _____.

Diagram #2 shows the transmission of a wave when travelling into a medium that is _____dense. The transmitted wave is _____and has less _____.

The reflected wave is _____, slower, and less amplitude

p. 309 #1-4, p 316 #1,3,5

10.6

When waves strike a surface, the angle of _____ equals the angle of _____. (equal but opposite)

The angle of incidence is the angle the wave hits the surface compared to a perpendicular line from the surface. The _____ line from the surface is called the "_____"

10.7 Interference of Waves

When two or more waves act upon the same particles simultaneously, the waves '_____' with each other. The **Principle of _____** states that the resultant wave is the _____ of all waves acting upon the particle. P.323

Constructive interference: occurs when waves combine to form a _____ wave.

_____ **interference:** occurs when waves combine to (at least partially) "_____" each other out. Ex. When a positive pulse and a negative pulse interfere.

Ch. 10 Review asn't

- **Read and study "Chapter Summary" points page 337-338 (you may omit points 15, 21-24)**
- **Do the following questions from the text p. 339 #9,11,12ac,13ac,15,16,17,21,23,25,33,37**