

Unit IV - Wave Phenomena

I. Introduction to Waves

Wave – _____ disturbance that travels through a material or space

Ex) _____

A. Waves and Energy

1. Waves _____ from one place to another
with no transfer of _____
2. Waves can be produced in two ways:
 - a. Vibration of _____ (requires a _____
ex) _____
 - b. Small _____ in the strength of an _____

(requires _____)

ex) _____

B. Pulses & Periodic Waves

1. Pulse – _____ vibratory disturbance that moves from point to point
 - a. When the pulse reaches a boundary with another medium, part is _____ and part is _____
 - b. When a pulse reaches a _____, unyielding boundary, then
the pulse is completely _____
2. Periodic Wave – series of _____ disturbances in a medium

pulse	periodic wave
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C. Vibrations and Waves

1. Longitudinal - a vibrational disturbance which is _____ to the direction in which the wave travels

ex) _____(think of a guitar string)

2. Transverse - vibrational disturbance which _____ to the direction in which the wave travels

** Unlike longitudinal, transverse waves can be _____ in many different planes.

Ex) _____

II. Characteristics of Periodic Waves

A. Frequency - $f =$ _____ Units (_____)

Frequency is determined by _____

How many cycles are shown from dot to dot? _____
(one single vibration)

Ex) 10 cycles pass a fixed point in a wave train in 5 seconds.

What is the frequency of the wave?

Ex) A wave generator operating for 4 seconds produces the waves drawn above.
What is the frequency of this periodic wave train?

How many waves are drawn? _____ (Be careful!!)

$f =$ _____

- In Sound, frequency determines _____.
- In Light, frequency determines _____.

The human ear can detect a frequency between _____

B. Period – _____ given point in a medium

C. Amplitude – _____ during a single vibration
determined by _____

Ex) Compare waves A & B

1. _____ of a wave shows the amount of _____ in the wave
 - a. Amplitude is a measure of _____

D. Phase

"In Phase" – points on a single periodic wave that has the _____ from the equilibrium position, and moving in the _____

_____ number of wavelengths apart

A & _____ A & _____ A & _____ B & _____ B & _____

Out of Phase "- (_____) _____ displacement from equilibrium position but going in a _____ direction