Light as a Wave: Part 1

SNC2D

What is a wave?

A **wave** is a disturbance which carries _____ from one location to another.

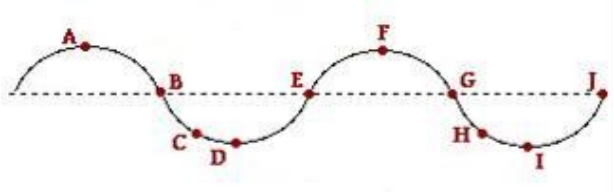
The material the disturbance travels through is the _____.

The movement of the disturbance is referred to as _____.

2 types of waves:

- A _____ **wave** is a wave in which the particles of the medium move in a direction _____ to the direction of propagation.
- A _____ **wave** is a wave in which the particles of the medium move in a direction _____ to the direction of propagation.

Snapshot of a wave:



The dashed line represents the _____ position of the particles.

The positions of maximum displacement are referred to as _____ (positive displacement) and _____ (negative).

The maximum displacement is the _____.

The distance between one crest and the next crest (or one trough and the next trough) is the _____, represented by _____.

The time it takes one complete wavelength to pass a single point is the _____, represented by _____.

The _____

_____ is the **frequency**, represented by *f*.

$f =$

Frequency is measured in units of _____.

Wave speed:

The speed of a wave is therefore:

$v =$

Practice Question:
What is the wavelength of a wave with a speed of 344 m/s and a frequency of 256 Hz?

Light is a "EM" wave:

Light is actually a _____ wave, but the perpendicular-to-propagation disturbance is not of particles of a medium but of _____.

Because light waves do not need a medium, they can travel through a _____ (empty space) and do so at the speed of light: c = _____.

Practice Question: How far (in metres) is 1 light-year?

Light will travel _____ in _____ media (e.g. glass), but the speed in air is still effectively c.