

Light as a Wave – Introduction

History: Our Understanding of Light (pages 482 – 483)

Jot down the year and the accomplishment of the following scientists:

Year	Scientist	Accomplishment
500 BC	Pythagoras	
	Aristotle	
	Hero of Alexandria	
1000 AD (typo in text)	Ali Al-hazen	
	Huygens	
	Newton	
	Young	
	Faraday	
-	Foucault	
	Maxwell	
	Einstein	

Types of waves: (p. 485)

1. _____ - briefly describe

2. _____ - briefly describe

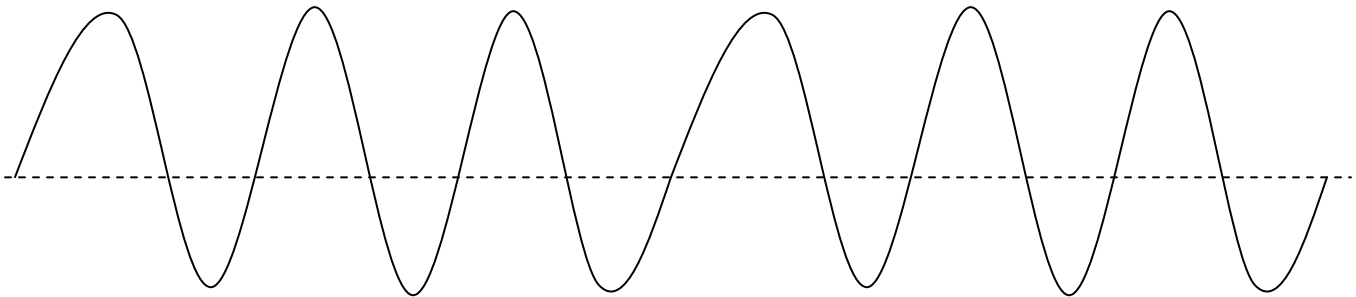
3. _____ - briefly describe

Types of Waves (p., 486)

1. Transverse - sketch a drawing and/or use words to describe. Give an example as well.

2. Longitudinal – sketch a drawing and/or use words to describe. Give an example as well.

Wave Terminology (p. 488)



Label the following on the diagram: amplitude, trough, equilibrium, λ (wavelength), direction of wave.

Is this a transverse or longitudinal wave? _____

How do you know? _____

Measuring waves (p. 488 – 489)

Waves also have 'wavelength' (λ) and a velocity (v) and a frequency (f)

Define:

Wavelength (λ) measured in _____) =

Velocity (v) measured in _____) =

Frequency (f) (measured in _____) =

Amplitude (A) (measured in _____) =

Period (T) (measured in _____) =

Formulas: Write the formulas for Period (T) and Frequency (f) in the 2 boxes.

Properties of EM Waves

1. Made of alternating, oscillating electric & magnetic fields. (self-propogating)
2. Fields are perpendicular to each other (x & y axes)
3. Waves path is perpendicular to oscillating electric & magnetic fields. (z axis)
4. Wave is sinusoidal in shape
5. Move at speed of light (3.0×10^8 m/s in a vacuum/air....slower in other mediums)

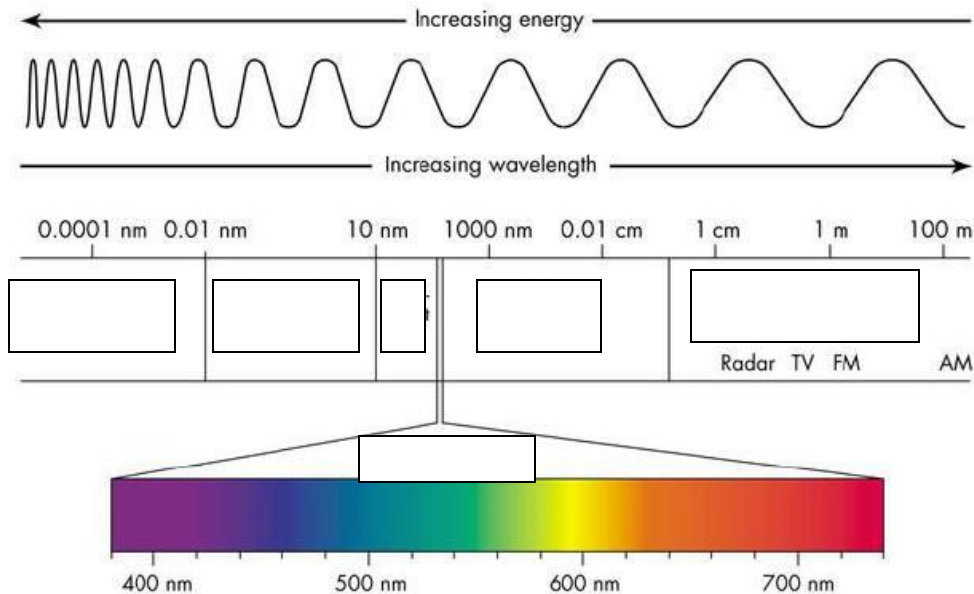
Try drawing and labelling a picture like Fig. 10.16 on page 494

Universal Wave Equation p. 495

Copy the universal wave equation into the box.

EMR spectrum: p. 495 EMR stands for _____

Label the spectrum. Note: this spectrum goes in opposite direction to that in your text. Be careful!



Highlight or otherwise note: the direction of increasing energy AND the direction of increasing wavelength. You should know what kind of wavelengths have higher energies? (long or short?)

Homework:

Frequency & Period → p 493 # 1,2,3

Universal wave equation and microwaves → p 500 # 1,2,3,4,5

hint: remember that waves travel through air at 3.0×10^8 m/s