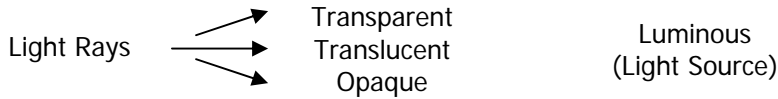


# Grade 8 - Unit 3 – Light and Optical Systems Concepts

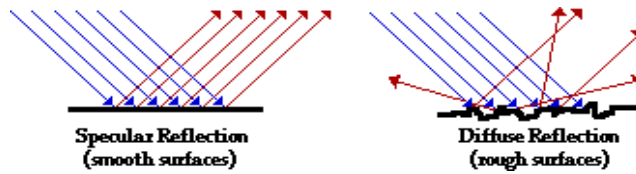
## The Theory of Light

**LIGHT TRAVELS IN STRAIGHT LINES**  
**LIGHT CAN BE REFLECTED**  
**LIGHT CAN BEND**  
**LIGHT IS A FORM OF ENERGY**



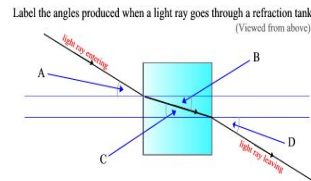
## REFLECTION

**LAW OF REFLECTION** – The *Angle of Incidence*, of the light hitting a plane mirror, equals the *Angle of Reflection*, of the light being reflected by the mirror.



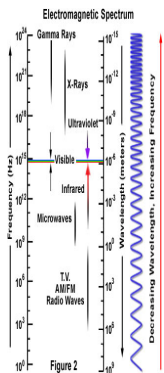
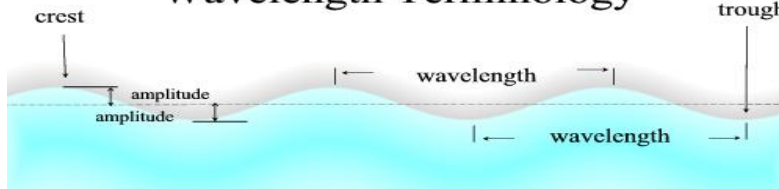
## REFRACTION

**LAW OF REFRACTION** – The *Angle of Incidence* of the light entering a medium of greater or less density will have an *Angle of Refraction* that will increase or decrease from the normal, because the light is bent (slows down or speeds up)



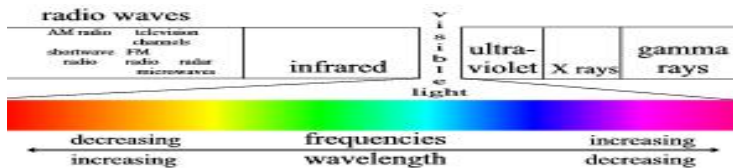
## Wave Model of Light

### Wavelength Terminology



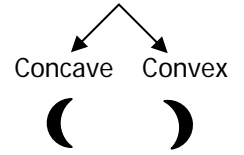
Light Sources  
 Natural ◀──▶ Artificial  
 Colours of Light  
**ROYGBIV**

### The Electromagnetic Spectrum

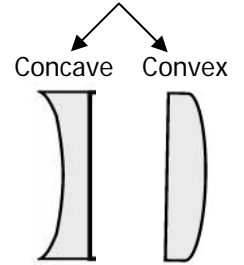


## Devices Using Light

### Mirrors



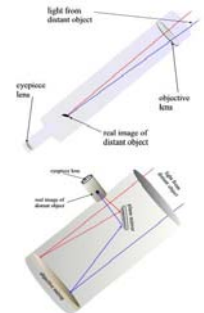
### Lenses



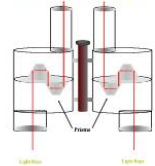
### Microscopes



### Telescopes



### Binoculars



Television  
 Computer  
 Laser

## Thoughts About Light

**Archimedes**  
 (Warships)

**Pythagoras**  
 (Eyes – Light Source)

**Euclid**  
 (Reflected)

**Al-Haytham**  
 (Optics)

**Sir Isaac Newton**  
 (Prism)

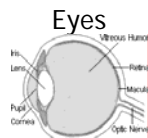
**Ole Romer**  
 (Speed of Light)

**Albert Michelson**  
 (Light Speed)

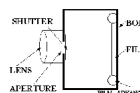
Analog Images

Digital Images (Pixels)

## Image Formation



### Camera



Stadium Image

Resolution

CCD