Light Study Guide:

**Electromagnetic spectrum:**

EM waves are transverse waves.  
Radio waves, microwaves, infrared waves, visible light (ROYGBIV), Ultraviolet, x-ray, gamma  
Long wavelength Short wavelength  
Low frequency High frequency  
Low energy High energy

ROYGBIV—frequency and energy increase from red all the way to violet.  
 -- Wavelength decreases from red all the way to violet.   
 -- All color waves travel at the speed of light (3.0x108m/s)

Understand what each type of wave would be used for.  
Speed of electromagnetic waves – CONSTANT – all EM waves travel at 3.0x108m/s.   
Light emission- electron transfer

**Color**  
Primary colors of light- blue, green, red  
Primary pigments- magenta, yellow, cyan  
Additive and subtractive properties of light  
 Red + Blue = Magenta  
 Blue + Green = Cyan  
 Green + Red = Yellow

Red + Blue + Green = White  
 White – Red – Blue – Green = Black

Whatever an objects reflects is what you see. It absorbs all other colors. My green shirt reflects green and absorbs red and blue (magenta).

**Polarization**Use of filters to only allow waves in that travel in the same direction.   
Example: polarized sunglasses See notes on blog labeled polarization.

**Refraction and Snell’s Law  
n1sinθ1 = n2sinθ2**

As light travels from one medium into another, we can calculate the angle at which light bends (refracts).   
Each medium has an index of refraction (n).

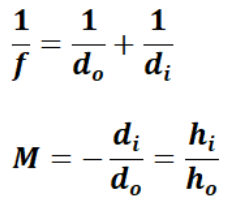
Light travels slower in mediums with larger index of refraction.

See notes on blog for practice examples using Snell’s Law.

**n=c/v**   
n is index of refraction  
c is speed of light in a vacuum  
v is velocity of light ray in said medium

Lenses:

Be able to use formulas for lenses:



Be able to identify images that come from convex and concave lenses based on where the object is placed.

