Radiant Energy

**Wave Length**

* Distance between a point on one wave and the same point of the next wave

**Amplitude**

* Amount of energy in the wave
* Height of the wave

**Frequency**

* Number of waves produced each second
* Related to wavelength – vff

**Radiant Energy**

* Travels in electromagnetic waves
* Travels in straight lines
* When it stops moving it changes to heat
* All forms travel at the same speed
* Travels at 300,000 km/s

**Ultraviolet**

* Higher frequencies and shorter wave length than visible violet light
* Causes sunburn, cancer
* Helps produce vitamin D

**Infrared**

* Frequencies lower than visible red light
* Emitted by most objects as heat
* EX: heat lamps, night vision

**Electromagnetic Spectrum**

* The range of frequencies and wavelengths that make up radiant energy
* These waves do not need matter to carry energy

**Reflect**

* Bounce back
* Light bounces off an object to the eye and we see it
* Best light and smooth

**Absorb**

* Trapped waves do not pass through
* Best dark and rough

**Transmit**

* Pass through

**Translucent**

* Matter that scatters light as it passes through
* Image is not clear

**Transparent**

* Matter through which light can pass through
* Clear image
* Clear window

**Opaque**

* Matter through which light cannot pass through
* The wall

**Plain Mirror**

* Reflects light
* Reverses image
* Makes a virtual image

**Angle of Incidence**

* The angle at which light strikes a surface

**Angle of Reflection**

* Angle at which light bounces off a surface

**Law of Reflection**

* The angle of incidence equals the angle of reflection

**Concave Mirror**

* Curves inward
* Image looks bigger or upside down
* Used for makeup or automobile headlights
* Focuses light straight ahead

**Convex Mirror**

* Curves outward
* Larger area reflected
* Objects seem smaller
* Used for security and on trucks

**Refract**

* Bending of light waves as it moves from one medium into another due to a change in speed

**Lens**

* + Transparent object
  + Refracts light

**Concave Lens**

* + Thicker at edges than in the center
  + Diverges light (spreads out)
  + Image is smaller
  + Glasses for nearsighted people

**Convex Lens**

* + Thicker in the center than at edges
  + Converges light (focus to a point)
  + Magnifies or can invert image
  + Camera, microscope, telescope, binoculars

**Prism**

* Triangular transparent object that refracts light
* Separates white light into the spectrum

**Spectrum**

* + The range of colors found in white light
  + Red, Orange, Yellow, Green, Blue, Violet
  + ROY G BV
  + Use a prism to see the spectrum

**Sunset**

* + When the sun is at an angle, light is refracted by the atmosphere
  + Red, orange, and sometimes yellow pass through—the other colors are refracted out into space

**Rainbow**

* + Sunlight is refracted by water drops of H2O in the air that act like small prisms
  + Top is red – bends less
  + Bottom is violet – bends more

**Color**

* + Objects have color because they are either producing, reflecting, or transmitting that color
  + If an object is white it is reflecting all frequencies of light
  + If an object is black it is absorbing all frequencies of light
  + If yellow, it reflects yellow and absorbs all others

**Laser**

* + Device that strengthens light
  + One wavelength
  + Cut/weld metal, surgery, CDs, communication