

Information to memorize

Characteristics of Light

Light is created when an electron vibrates. The moving electric field associated with the electron creates a magnetic field perpendicular to the electric field.

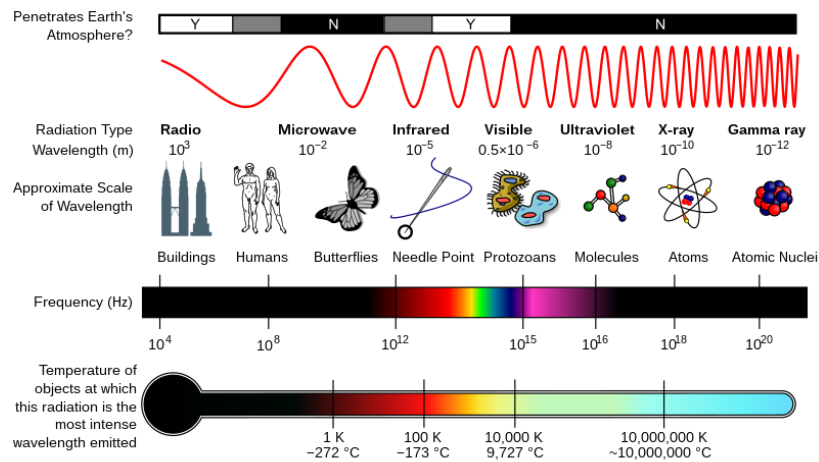
The speed of light is the fastest anything in the universe can travel (3×10^8 m/s). This is a constant number. The speed of light in air is close enough that we can still use 3×10^8 m/s.

The wave equation: $c = f\lambda$. Where ;
c is the speed of light (m/s)

f is the frequency (Hz or 1/s)

λ is the wavelength

Visible light is only part of a larger spectrum of light called the Electromagnetic Spectrum



**Do not memorize this entire chart*

Radio waves have the longest wavelength and are used for communication

Gamma waves are the highest frequency and are sometimes used to treat cancer (radiation therapy)

When visible light bounces off of objects, we can see the objects.

Information to memorize

Reflection

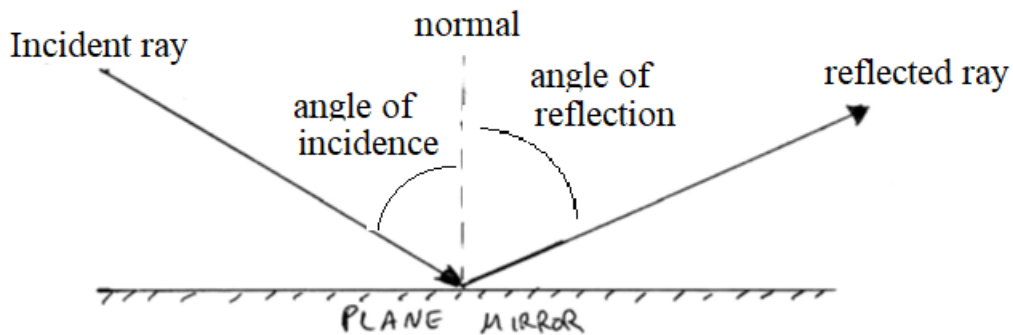
Light bouncing back from a new material is called reflection.

Refraction is when light bends its path because its speed changes.

Usually light is partly reflected and partly refracted when it enters a transparent material.

When light is incident on a rough surface, it is reflected in many directions, producing diffuse reflection.

Reflection:



Incident ray: the ray that shines on the mirror

Reflected ray: the ray that reflects from the mirror

Normal: an imaginary line perpendicular to the mirror's surface

Angle of incidence: the angle between the normal and the incident ray

Angle of reflection: the angle between the normal and the reflected ray

The angle of incidence and the angle of reflection are equal to each other.

Plane Mirrors

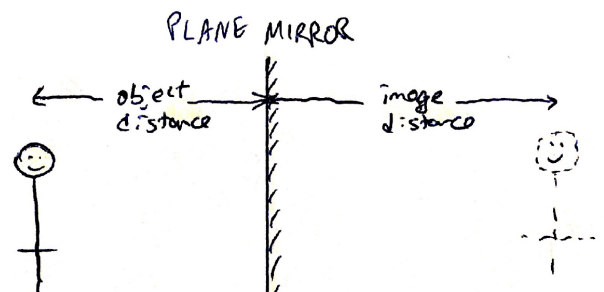
Plane mirrors are flat-shaped.

A virtual image is an image that appears to be in a location where light does not really reach.

Virtual images are right-side-up.

Plane mirrors produce only virtual images.

In a plane mirror, object size equals image size.



Information to memorize

In a plane mirror, object distance equals image distance.

Object distance: the distance between the mirror and the object.

Image distance: the distance between the mirror and the image.

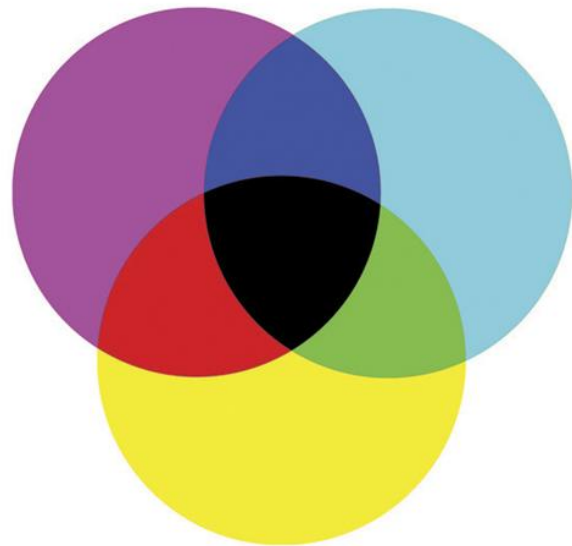
Colors

With light, colors are mixed by adding them while in art, colors are mixed by subtraction.

The 3 primary colors of light are RGB- when all three are present we get white light.



Additive color mixing



Subtractive color mixing