Sun

Light Sources

Hot metal glows

lasers

Light is E.M radiation (waves) at particular wavelengths.

$$\lambda = 400nm - 700nm$$

Visible light

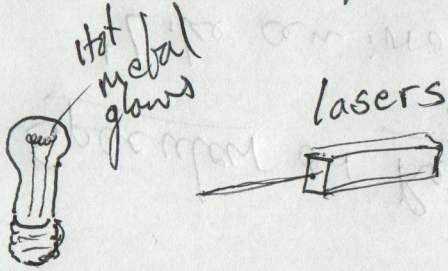λ: 400 nm - Violet - 4.00×10^{-7} m

λ: 700 nm - red - 7.00×10^{-7} m

Light: Electromagnetic waves
Amplitude is strength of E & B fields

Sound: Amplitude is dusity of air

E.M. Radiation

E - Electric fields
B - Magnetic fields

Microwaves

Radio waves

X - Rays

Gamma Rays

$C = V$ - in a vacuum

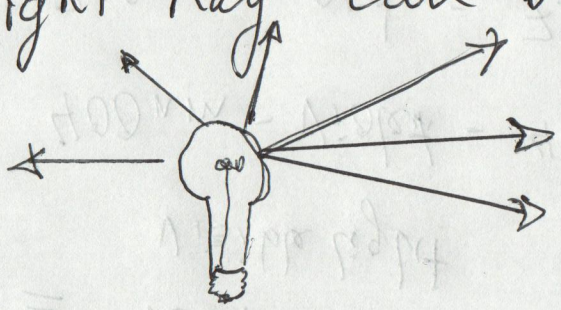$C = 299,792,458$ m/s

$C \approx 3.00 \times 10^{8}$ m/s

λ - wavelength
f - frequency

$C = \lambda f = v$

Light Ray is a model of light used to show the propagation of light through space.

Light Ray can be drawn as an arrow on the page.

Light bulb shines rays in all directions

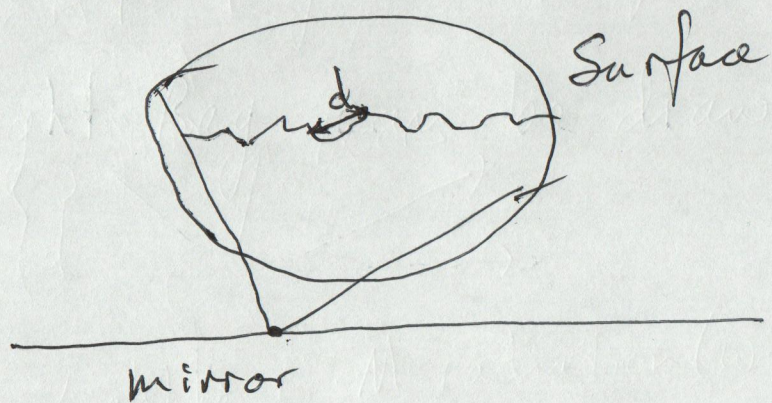Light rays can reflect.

Fig.1

Specular or Regular Reflection

'Like a mirror'

Can see an image.

Diffuse or irregular Reflections

Don't see an image.

Reflecting of paper

Specular Reflection

'Like a mirror'

Surface

mirror

Size of the irregularities
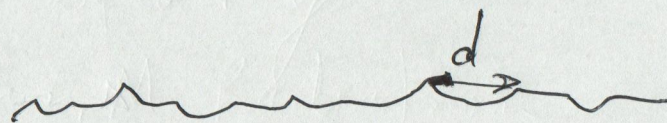of the surface is small
compared to the wavelength.

$$d << \lambda$$

$<<$ = 'much much less than'

$\underset{\sim}{} $ = 'Roughly equal to'

Diffuse Reflection

'Rough Surfaces'

d

Size of the irregularities
of the surface is ~~small~~
Large compared to the
wavelength

$$d >> \lambda$$

$>>$ = 'much much greater than'

$$d \simeq \lambda$$

In between.
Ex. Polished car