LIGHT – THE BASIC IDEA OF SHADOW
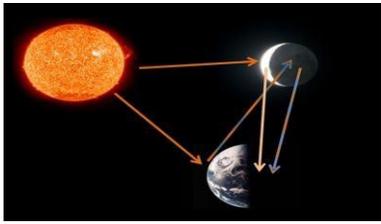
LIGHT :
- The external physical cause that affects our eye to produce the sensation of vision.
- Do not require a medium to travel
- Always travels in straight line

Sources of Light :

Natural Sources	Artificial sources
Sun	Candles
Stars	Lamps
Lightning	Bulbs
Moon (reflected sunlight)	Torch light
Bioluminescence – jugnu & firefly	

Bioluminescence – emission of light by a living organism as a result of some chemical energy getting converted to light energy .

Scattering of Light

Light scatters in all directions. Due to this scattering of light we are able to see all the objects around , even if not directly lighted.

Moon – non luminous body

Hot sources : emits light and heat – ex. glowing bulb

Cold sources: emits only light – ex. firefly, tubelight

Luminous Objects
– emit light from within

The sun

The stars

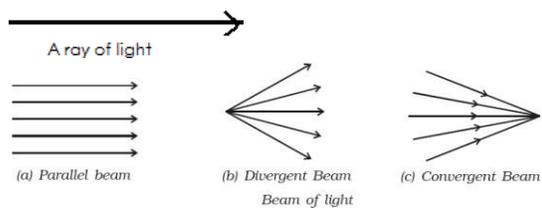non Luminous Objects
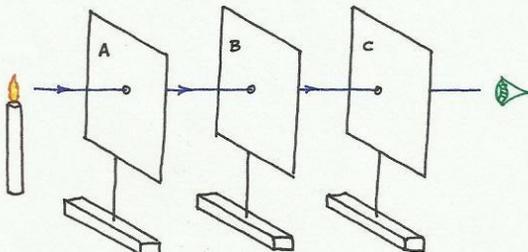– reflect externally supplied light

The moon

1. **Transparent Medium** – light can pass through completely. Example :

   Translucent Medium – light can pass partially Example :

   Net curtain   Tissue paper   Selotape

3. **Opaque Medium** – light cannot pass through Example :

   Brick wall   Black card   Door

Light travels in straight line :

A ray of light

(a) Parallel beam   (b) Divergent Beam   (c) Convergent Beam

Beam of light

Rectilinear Propagation of Light :

2.

A   B   C

Pinhole Camera :

camera obscura
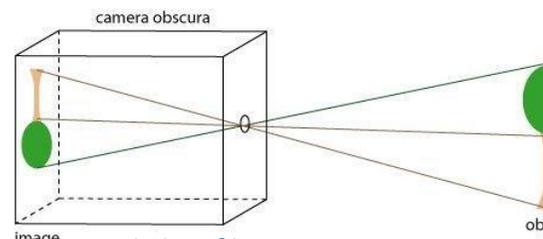
image   object

Characteristics of image :
- Real , inverted and smaller than size of object

Advantage :
- No focusing needed, - no lens needed

Disadvantage:
- Image gives no details of object
- Faint image
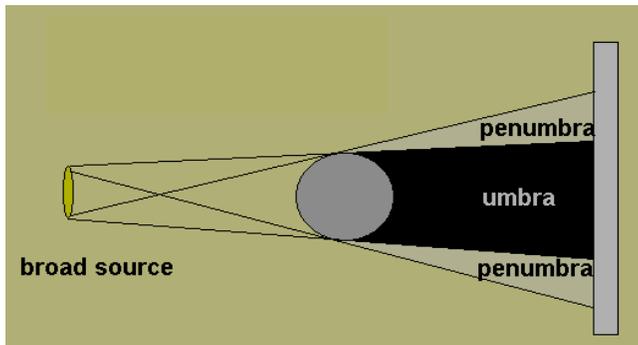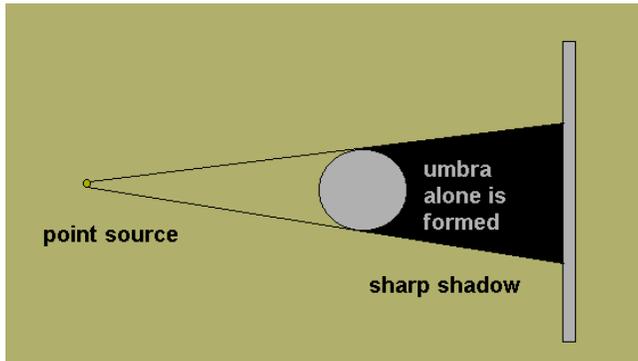- No permanent record of image
- Not be used for moving objects

Shadows :

When an opaque object is placed between a light source and a screen, it blocks the passage of light and produces a dark patch on the screen called the shadow of the object.

Conditions for shadow formation :

1. Source of light to be present
2. Opaque object to be present
3. Screen to be present
4. Opaque object placed between light source and screen

point source

umbra alone is formed

sharp shadow

broad source

penumbra

umbra

penumbra

Natural Shadows – Eclipse :

Solar Eclipse

PENUMBRA
UMBRA

EARTH'S ORBIT

MOON

SUN

TOTAL ECLIPSE
PARTIAL ECLIPSE

EARTH

MOON'S ORBIT

Lunar Eclipse

EARTH'S ORBIT

UMBRA

MOON

SUN

MOON'S ORBIT

EARTH

PENUMBRA