

Chapter – 11

Light, Shadows and Reflections

TRANSPARENT, OPAQUE AND TRANSLUCENT OBJECTS

Luminous Objects: Objects that give out or emit light on their own are called luminous objects.

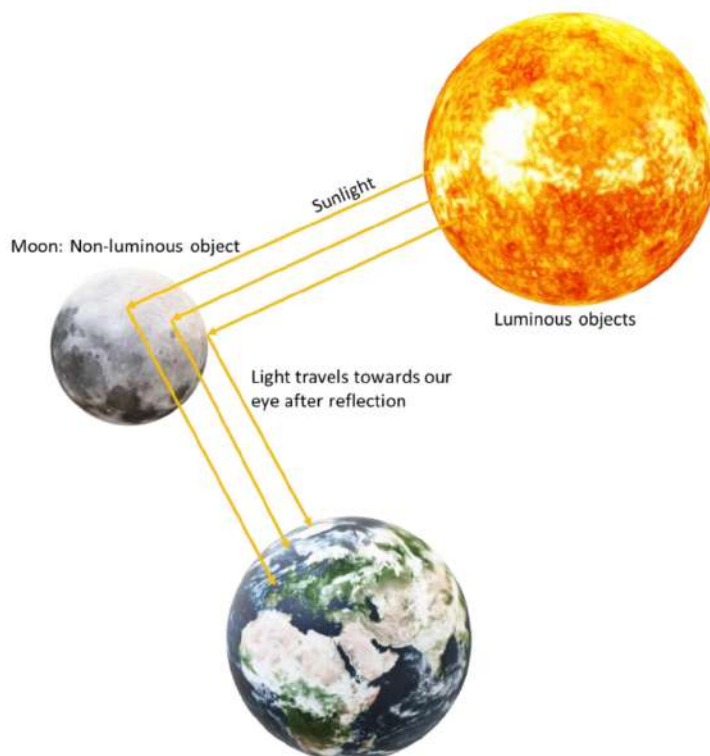
For example: Sun, torch, electric bulb etc.

Tip: Luminous objects are responsible for our vision.

Non-luminous Objects: Non-luminous are those objects that do not emit light of their own.

For example: Moon, man, chair etc.

Example: Although Moon is a non-luminous object, it is visible to us because the sunlight falls on it and the light is reflected, which travels towards our eyes.



Opaque objects: If we cannot see through an object, it is an opaque object. This is due to the fact that light can't pass through them. E.g. wood, gold, cement, metal, some types of coloured plastic, etc.

Translucent objects: The objects through which we can see, but not very clearly. Such objects are known as translucent objects.

For example: Translucent objects like Butter paper, tracing paper etc.



Tracing Paper

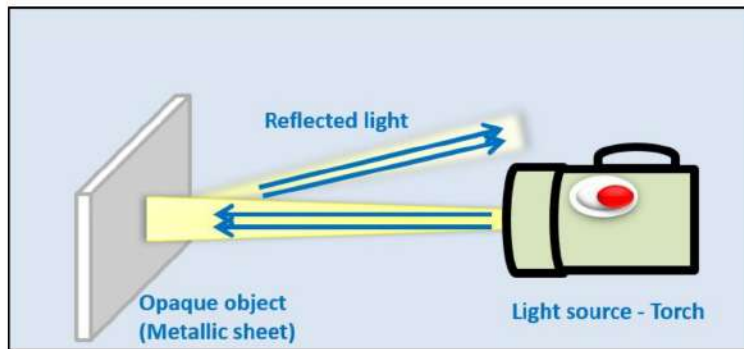
Transparent objects: If we are able to see clearly through an object, then the object is said to be transparent.

For example: Objects such as glass, glass jars, pure water, clear plastic bottles are some examples of transparent objects.



Example: Rohan tries to see through the metallic sheet but he cannot see through it. Why?

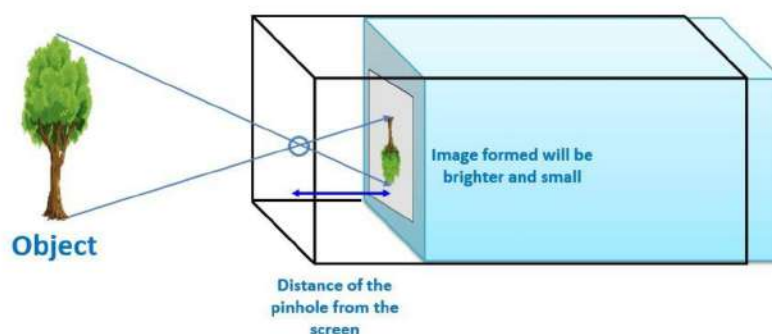
Solution: Because a metallic sheet is an opaque object, the light ray does not pass through it.



A Pinhole Camera

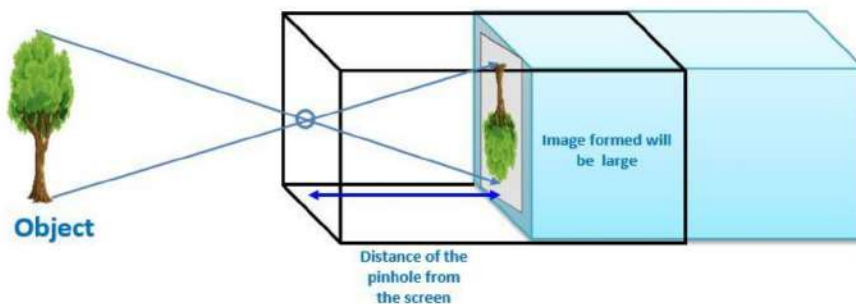
Pinhole Camera: The pinhole camera is a device used to capture pictures of still objects.

- The image formed in a pinhole camera is always inverted that means upside down.
- The size of the image, formed by a pinhole camera depends on:
 - i) The distance of the object from the 'pinhole' of the pinhole camera. If the distance between the pinhole and screen is decreased, the size of the image will decrease and the image will become bright because the light is spread over a small area.



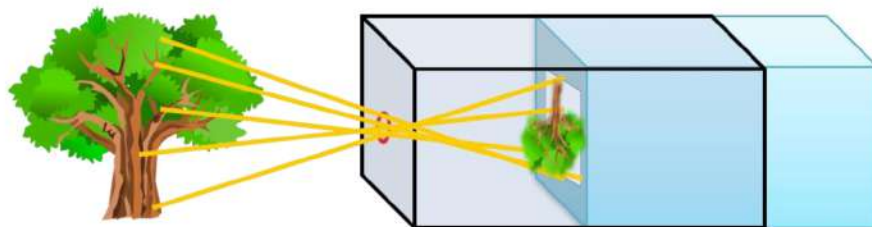
- ii) The distance between the pinhole and the screen of the pinhole camera. If the distance between the pinhole and screen is increased, the image size will

increase and the image, however, will get less bright since the light spreads over a large area.



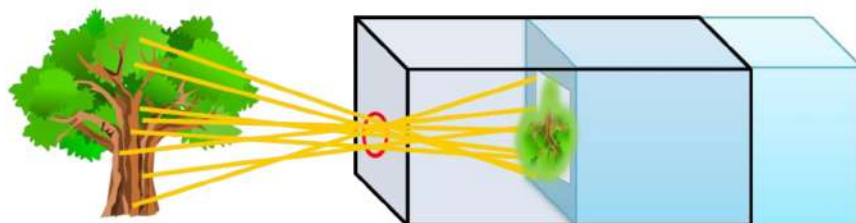
- The brightness of the image, formed by a pinhole camera depends on the size of the aperture.

When the size of the diameter (aperture) of the pinhole is decreased the image becomes dimmer. Because less light reaches the screen. Due to this the image become less blurry. In diagram (a) the size of the pinhole is 0.5 cm. The image form on a screen is dim and less blurry. Because less light reaches the screen from the hole.



(a) When pinhole size is 0.5 cm

Now, if the size of the pinhole is increased i.e. 1 cm. The image form on the screen is brighter but blurry. As the light enter in a pinhole increase.



(B) When pinhole size is 1 cm

Example: Take a straight pipe and look at the lighted candle first and then through a bent pipe. We can easily observe the lighted candle from the straight pipe but not from the bent pipe. From this, we can conclude that light travels in a straight line.



Tip: Remember Light always travelled in a straight line and many devices like pinhole cameras are based on that principle.