

Board – CBSE

Class – 6th

Topic – Light, Shadows and Reflections

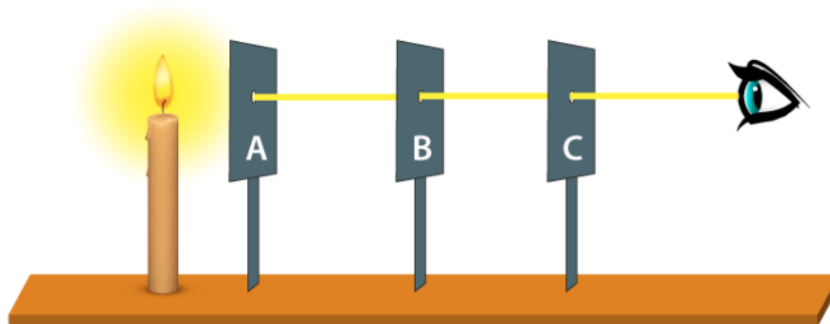
Light as a form of energy

- Light is the energy that enables us to see.
- Light is emitted from a source such as the Sun.

Is Light a Traveler?

Rectilinear propagation of light

Light takes the quickest path between any two points. Therefore light travels in a straight line. It is known as a rectilinear propagation of light.



Light Travels in straight line

Transparent, Opaque and Translucent Objects

Luminous & non-luminous objects

- Objects that emit light and heat are known as luminous objects. E.g., Sun and other stars
- Objects that do not produce their light but reflect the light emitted by luminous objects are known as non-luminous objects. E.g., Earth, trees

Transparent, opaque and translucent objects

Objects can be classified based on their interaction with light.

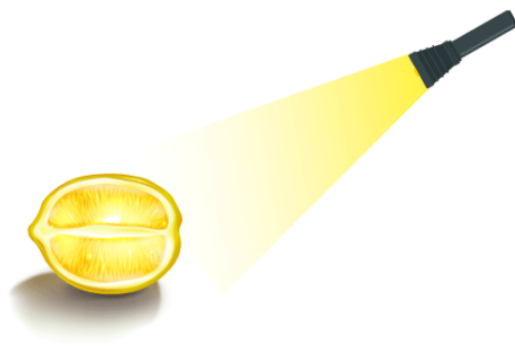
- Transparent objects allow light to pass through them without getting scattered. E.g., glass
- Translucent objects allow light to pass through them partially. E.g., Butter paper

- Opaque objects do not allow any light to pass through them. E.g., a table, a book, etc

What Are Shadows?

Shadow formation

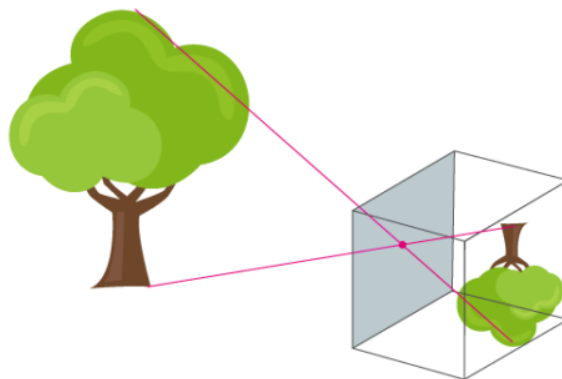
- A shadow is formed when an opaque object comes in the path of light.
- A shadow needs a screen where it is formed, for example, the ground, walls of a room or even the surfaces of buildings.
- Shadows give us an idea about the shapes of different objects. Or, it can even mislead us about the shape of different objects. E.g. the shadow of a cone appears to be a triangle on the screen.



The Pinhole Camera

Formation of the image by a pinhole camera

- A pinhole camera is a simple camera that consists of a light-proof box, a thin film for a screen and a small aperture or hole to allow the passage of light rays.
- The light from outside enters through the small hole and forms an inverted image on the screen.



Pinhole camera

Mirrors and Reflection

Mirrors

A mirror is a surface usually consisting of a glass reflecting light incident on it to form clear erect images.

Reflection

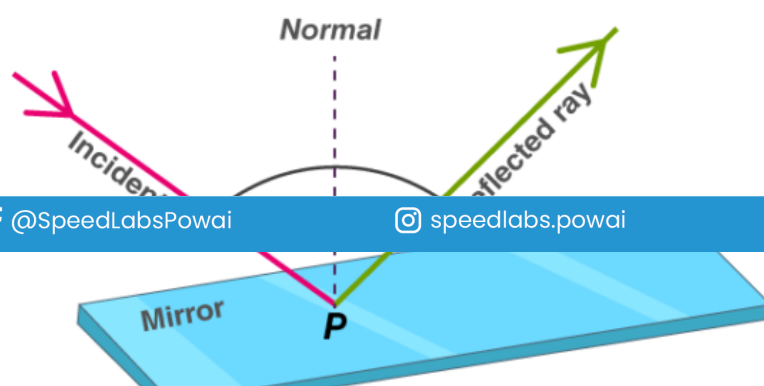
When light is incident on a surface, it gets reflected, or it bounces back. Any surface that is well polished or shiny acts like a mirror. The phenomenon of light bouncing off surfaces is called reflection.

Characteristics of images

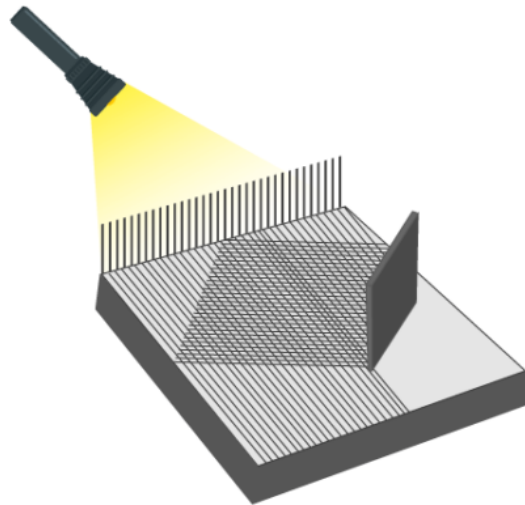
- Images have colour, unlike shadows. They are formed due to the converging rays of light that comes after reflecting from objects.
- A real image is formed by the actual convergence of light rays. Therefore, real images always form on a screen.
- A virtual image is the apparent convergence of diverging light rays. Virtual images cannot be obtained on a screen.

Plane mirrors and images formed by them

A plane mirror changes the direction of light that falls on it.



It enables us to see images. Take the example of a comb placed in front of a mirror over the dark coloured paper. Let a beam of light pass through the comb on the mirror using a torch. Then an image is observed similar to the one given :



We observe that the light gets reflected from this mirror, and it travels in straight lines.