

Class 6 Physics Light Shadow and Reflection

Light

Light

Light is a form of energy which is responsible for the sense of sight. It enables to see things around us.

- Light enables us to see every object around us like trees, vehicles, houses, people, etc.
- At night due to the absence of sunlight, it becomes dark, which reduces our visibility.
- Objects that emit light are called **Luminous Objects** like sun, bulb, tubelight.
- Any non-light emitting object is visible when light from a luminous source falls on that object and then reaches our eye. These objects are called **Non-Luminous Objects** like trees, animals, shoe, moon (it seems glowing because of sun's light falling on it) etc.



Luminous Objects



Non-Luminous Objects

Class 6 Physics Light Shadow and Reflection Transparent Opaque and Translucent Objects

Transparent, Opaque and Translucent Objects

Objects are classified based on amount of light that can pass through them.

Opaque

These objects do not allow light to pass through them.

We can't see through these objects.

Examples wall, door, trees etc.



A door is opaque as we can't see what is behind it.

Translucent

These objects allow light to pass through them partially.

We can see through these objects a little but not clearly.

Examples polythene, butter paper, thin plastic sheet etc.



Shoes seen through a translucent butter paper are partially visible.

Transparent

These objects allow light to pass through them completely.

We can see through these objects clearly.

Examples air, water, clear glass, etc.



Shoes lying inside a transparent basket are clearly visible.

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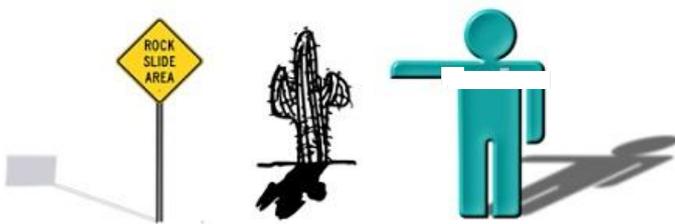
Shadows

Shadows

A **shadow** is a space where light from a light source is blocked by an opaque object.

- A shadow is formed when a part of light is blocked by the object. If all the light is blocked by an object, then there will not be any shadow.
- Shape of the shadow is always similar to that of the object but the size varies.
- Shadows of different types of objects may have similar shape as the amount of light they may be blocking is same.
- Shadows cannot occur in dark rooms (due to absence of light) and full lit rooms with no objects (due to absence of opaque object).
- A shadow is always obtained on a screen like walls, ground etc.

A shadow is always black or grey irrespective of the colour of the object



Shadow of different objects on ground



Shadow on a screen (Wall)

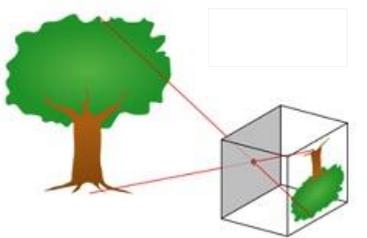
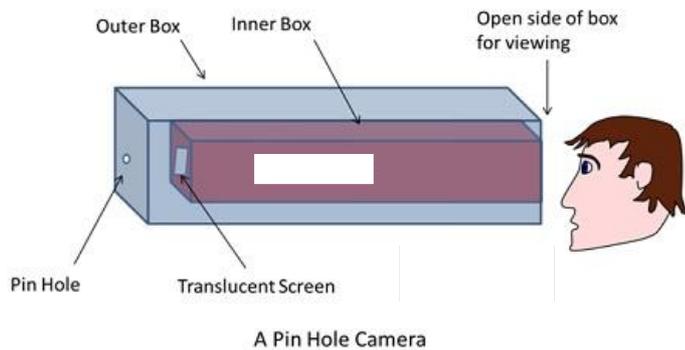
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Pinhole Camera

Pinhole Camera

A pinhole camera is a simple camera, without lens, in the shape of a box. One of the sides has a small hole and it produces an inverted image of the outside world at other side.

- The box should be painted black from outside and inside for better clarity.
- The object whose image is to be seen should be in bright light.
- Smaller the hole, sharper the image.
- Temporary Black and White images are formed on the screen if a tracing paper is used. Permanent colored and b & w images can be obtained using photographic films instead of tracing paper.
- In the below diagram, two boxes are placed one inside the other. The image of the outer object is created inverted on the inner box translucent screen.



Formation of image inside a Pinhole camera



Various images of sun (small bright spots) on the ground. Space between leaves of the trees behave as pinholes.

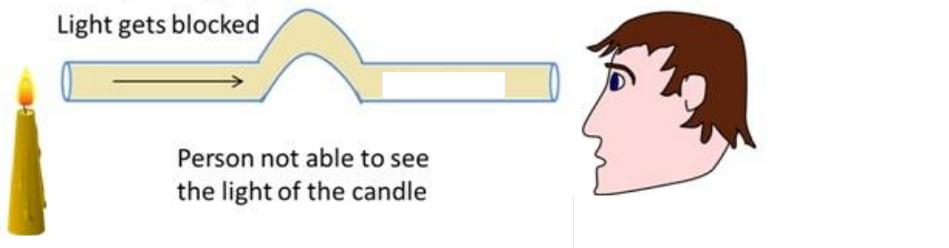
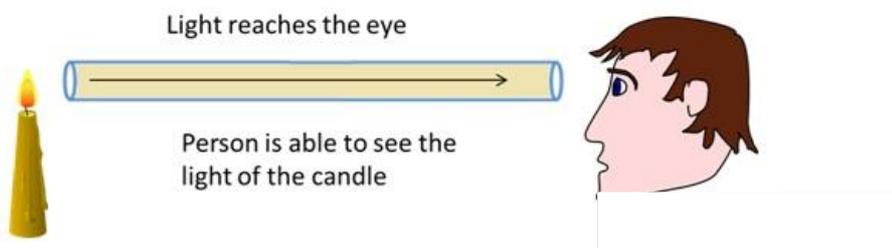
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Light travels in a straight line

Light travels in a straight line

- Light always travel in straight lines.

Blocking of such straight moving light rays by opaque objects results in shadows. Shadows can't be formed if the light rays do not travel in straight lines



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Mirror and Reflection

Mirror and Reflection

Light waves may change their direction upon striking a surface. This is called **reflection**. **Mirror** is an object which reflects light.

- Shiny and polished surfaces usually act as mirrors.
- Due to reflection, image of an object is seen in the mirror.
- Mirror changes the direction of light falling on it.

