

PARAGON CONVENT SCHOOL

SECTOR : 24 B, CHANDIGARH

LESSON - 12

LIGHT, SHADOWS AND REFLECTION

Summary:

- An object that produces light of its own is called a luminous object.
- A transparent object allows light to pass through it completely.
- A translucent object allows light to pass through it partially.
- An opaque object does not allow light to pass through it.
- A shadow is formed behind an object when it blocks the path of light.
- Length and size of the shadow changes with the distance of the source of light.
- Light travels in a straight line. A pinhole camera captures the image of an object.
- Reflection is the bouncing back of light when it hits a surface. We see things when light bounces off them and enters our eyes.

Multiple Choice Questions (Page No. 147)

1. (b) 2. (a) 3. (d) 4. (a) 5. (a)

Multiple Choice Questions (Page No. 150)

1. (b) 2. (d) 3. (c) 4. (a) 5. (a)

SECTION A

Oral questions

Q1.- Why are we unable to see anything in a dark room?

Ans.- We need light to see things, thus we are unable to see anything in a dark room.

Q2.- How do we see non luminous object?

Ans.- The non-luminous objects can be seen only when light coming from a luminous object falls on them and is reflected to our eyes.

Q3.- Why does our left side appears right side, when we see our image in a plane mirror?

Ans.- When we see our image in a plane mirror, our left side appears right because of lateral inversion.

Q4.- What conditions are necessary for the formation of a shadow?

Ans.- For the formation of a shadow, there must be :

- (i) a source of light,
- (ii) an opaque object to obstruct the path of light and
- (iii) an opaque screen behind the object.

Science Quiz

Q1.- Name the term used for an object that gives out its own light.

Ans.- Luminous object

Q2.- Name one material that allows only some of the light to pass through it.

Ans.- Translucent material

Q3.- What does a pin hole camera form - an image or a shadow?

Ans.- A pinhole camera makes images of different objects.

Q4.- What is the colour of a shadow?

Ans.- The colour of a shadow is always black.

WORKSHEET

Tick (✓) the correct options

1. (b) 2. (d) 3. (c) 4. (a) 5. (a)

Fill in the blanks

1. natural 2. energy 3. transparent
4. outline 5. shadow

Match the following

1. (d) 2. (b) 3. (a) 4. (c)

SECTION B

Multiple Choice Questions

1. (a) 2. (b) 3. (b)

Very Short Answer Questions

Q1.- Name three luminous objects.

Ans.- Sun, star and firefly/a burning candle/a lighted electric bulb.

Q2.- Name three opaque materials.

Ans.- Metal, wood and brick/clay/wall.

Q3.- What is the colour of the shadow formed if the colour of the object is blue?

Ans.- Black

Short Answer Questions

Q1.- What is meant by translucent material?

Ans.- The materials that allow only some of the light to pass through them are called translucent materials. Grounded glass, butter paper and tissue paper are examples of translucent materials.

Q2.- What is lateral inversion?

Ans.- The left-right reversal of an object and its mirror image is called lateral inversion.

Q3.- Mention the factors on which the size of a shadow depends.

Ans.- The size of a shadow depends on the distance between the source of light and the opaque object and the distance between the opaque object and the screen.

Q4.- How do we get moonlight when the moon is a non luminous object?

Ans.- Moon is a non-luminous object but we get moonlight because the moon reflects the sunlight that falls on it. This reflected light is called moonlight.

Q5.- What happens to the shadow formed on a screen when

- a) The distance between the source of light and the object increases and
- b) The distance between the object and the screen decreases?

Ans.- (a) The size of a shadow on the screen decreases when the distance between source of light and the object increases.

(b) The size of a shadow on the screen decreases when the distance between the object and the screen decreases.

Q6.- We can see through a glass.

- a) How can we see through a glass?
- b) In our daily activities, what value can we learn from this property of glass?

Ans.- (a) We see through a glass because it is a transparent material.

(b) We should also be transparent in all our dealings and actions in our daily life. We should never hide anything from the people around us.

Long Answer Questions

Q1.- a) How is shadow formed? b) What are the characteristics of a shadow?

Ans.- (a) When an object is placed in front of a source of light it stops the light from passing through it and it produces a shade behind it. The shade cast by an object is called its shadow. Shadows are formed when light is blocked by an opaque object.

(b) The characteristics of a shadow are -

(i) A shadow is always dark regardless of the colour of the object or the colour of the light used to make the shadow.

(ii) A shadow only shows the dark outline of an object and does not provide the details of the object.

(iii) A shadow is formed in the direction opposite to the source light.

(iv) The size of a shadow varies depending on the distance between the object and the screen and the distance between the object and the source of light.

(v) The shape and size of the shadow also varies with the position of the source of light.

Q2.- Differentiate between an image and a shadow.

Ans.-

<u>IMAGE</u>	<u>SHADOW</u>
1. The colour of the image is same as that of the colour as the object.	1. The shadow is always dark regardless of the colour of the object.
2. The image gives all the details of the object.	2. The shadow shows no details of the object. It tells only the shape of object.
3. The image undergoes lateral inversion.	3. The shadow does not undergo lateral inversion.
4. The image is formed when light from the object reaches our eyes.	4. The shadow is formed when the path of light is obstructed by an opaque object.
5. The size of image is same as the object	5. The size of shadow depends on the distance between the object and the source of light and distance between the object and screen.

Q3.- What is meant by reflection of light? What type of objects reflect more light??

Ans.- The process of sending back the light rays that fall on the surface of an object is called reflection of light. The reflection of light depends upon the nature of surface.

(a) Reflection of light on a rough or irregular surface - A rough or irregular surface reflects light in all the directions. This is called irregular reflection (or diffuse reflection). For example, a piece of white paper has a rough surface, so it reflects the light falling on it in all directions. It is due to the irregular reflection of light produced by the rough surface of a piece of white paper that we cannot see the image of our face on looking into the piece of paper.

(b) Reflection of light on a smooth and shiny surface - A mirror has smooth and shiny surface. A mirror reflects all the light falling on it in the same direction. In fact, a mirror reflects a ray of light at the same angle at which it strikes the mirror. This is called regular reflection. Regular reflection of light can form an image. In fact, all the smooth and shiny surfaces reflect light in a regular way forming images. Regular reflection occurs only at very smooth surfaces.