



মহাশিক্ষা বিভাগ (মাণিক্য)

DEPARTMENT OF EDUCATION (S)

Government of Manipur

Chapter: 11

Light Shadows and Reflections

SOLUTIONS:

EXERCISES:

1. Rearrange the boxes given below to make a sentence that helps us understand opaque objects.

OWS AKE OPAQ UE O BJEC T SM

Ans: OPAQ UE O BJEC TSM AKE SHADOWS

2. Classify the objects or materials given as opaque, transparent or translucent and luminous or non-luminous.

Air, water, a piece of rock, a sheet of aluminium, a mirror, a wooden board, a sheet of polythene, a CD, smoke, a sheet of plane glass, fog, a piece of red hot iron, an umbrella, a lighted fluorescent tube, a wall, a sheet of carbon paper, the flame of a gas burner, a sheet of cardboard, a lighted torch, a sheet of cellophane, a wire mesh, kerosene stove, sun, firefly, moon.

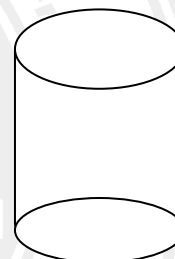
Ans:

Object	Opaque/transparent Or translucent	Luminous or Non luminous
Air	Transparent	Non-Luminous
Water	Transparent	Non-Luminous
A piece of rock	Opaque	Non-Luminous
A sheet of aluminium	Opaque	Non-Luminous
A mirror	Opaque	Non-Luminous
A wooden board	Opaque	Non-Luminous
A sheet of polythene	Transparent	Non-Luminous
A CD	Opaque	Non-Luminous
Smoke	Transparent	Non-Luminous
A sheet of plane glass	Transparent	Non-Luminous
Fog	Transparent	Non-Luminous
A piece of red hot iron	Opaque	Luminous
An umbrella	Opaque	Non-Luminous

A light fluorescent tube	Opaque	Luminous
A wall	Opaque	Non-Luminous
A sheet of carbon paper	Opaque	Non-Luminous
A flame of gas burner	Opaque	Luminous
A sheet of cardboard	Opaque	Non-Luminous
A lighted torch	Opaque	Luminous
A sheet of cellophane	Transparent	Non-Luminous
A wire mesh	Opaque	Non-Luminous
Kerosene	Opaque	Luminous
Sun	Opaque	Luminous
Firefly	Opaque	Luminous
Moon	Opaque	Non-Luminous

3. Can you think of creating a shape that would give a circular shadow if held in one way and a rectangular shadow if held in another way?

Ans: Yes, the shape can be a cylinder. A circular shadow or rectangular shadow is formed depending on the angle at which the light falls on the cylinder (object).



4. In a complete dark room, if you hold up a mirror in front of you, will you see a reflection of yourself in the mirror?

Ans: No, I will not see a reflection of myself in the room because there is no light in the room and as such no reflection will take place. And no image will be formed.



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EXTRA QUESTIONS AND ANSWERS

1. Name some natural sources of light.

Ans: Sun, stars, firefly etc.

2. Name some man-made sources of light.

Ans: Electric bulb, tube light, candle, torch etc.

3. Differentiate luminous and non-luminous objects.

Ans:

Luminous object	Non-luminous object
An object which gives out its own light is called luminous object. Example: Sun, star, electric bulb etc.	An object which does not give out its own light is called non-luminous objects. Example: Table, chairs, pen, pencil etc.

4. Define the following terms:

(a) Transparent object

(b) Opaque object

(c) Translucent object

Ans: (a) Those materials which allow light to pass through them is called transparent object.

Example: glass.

(b) Those materials which do not allow light to pass through them is called opaque object.

Example: stone.

(c) Those materials which allow some of the light to pass through them are called translucent object.

Example: butter paper

5. Define shadow. What are the conditions required to see a shadow?

Ans: Shadow is the black patch formed when an opaque body block the source of light.

The conditions required to see a shadow are (i) a source of light (ii) an opaque object and (iii) a screen.

6. Why cannot we see an object placed in a dark room?

Ans: Because there is no light.

7. Write the characteristics of a shadow.

Ans: The characteristics of a shadow are

(i) The shadow is erect.

(ii) The shadow is always black irrespective of the colour of the objects.

- (iii) The size of the shadow depends on the distance of source of light.
- (iv) The shadow can be seen only on a screen.
- (v) The shape of the shadow changes depending upon the angle at which the light falls on the object.

8. Difference between pinhole image and a shadow.

Ans:

Pinhole image	Shadow
<ul style="list-style-type: none"> The image is upside down (inverted). 	<ul style="list-style-type: none"> The shadow of a object is erect.
<ul style="list-style-type: none"> The image is of the same colour as the object. 	<ul style="list-style-type: none"> The shadow is always black.

9. What is the principle of a pinhole camera?

Ans: The principle of a pinhole camera is that 'light always travels in a straight line'.

10. Write some uses of pinhole camera.

Ans: Some uses of pinhole camera are:

- (a) Movement of sun (even solar eclipses) can be observed.
- (b) Images of various trees and buildings etc can be viewed with the help of this device.

11. What is mirror?

Ans: Mirror is a smooth surface that can make image.

12. Define reflection.

Ans: The phenomenon of bouncing back of light from a smooth surface is called reflection.



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