



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

OWS AKE OPAQ UEO BJEC TSM  
SHAD

Ans:

OPAQ UEO BJEC TSM AKE SHADOWS

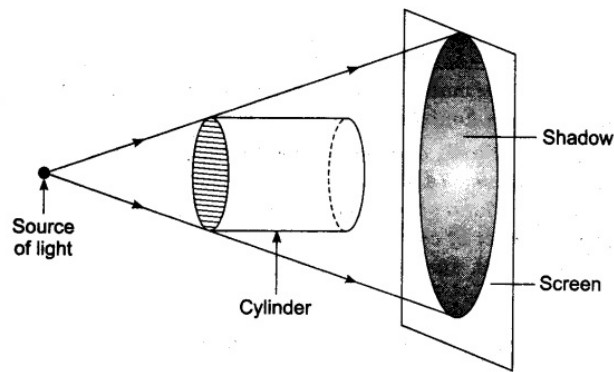
2. Classify the objects or materials given below as opaque, transparent or translucent and luminous or non-luminous:  
Air, water, a piece of rock, a sheet of aluminium, a mirror, a wooden board, a sheet of polythene, a CD, smoke, a sheet of plane glass, fog, a piece of red hot iron, an umbrella, a lighted 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	TRANSLUCENT	LUMINOUS	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 card board	✓	—	—	—	✓
A lighted torch	✓	—	—	✓	—
A sheet of cellophane	—	✓	—	—	✓
A wire mesh	—	—	—	—	✓
Kerosene stove	✓	—	—	✓	—
Sun	✓	—	—	✓	—
Fire fly	✓	—	—	✓	—
Moon	✓	—	—	—	✓

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, there are many things which give a circular shadow if held in one way and a rectangular shadow if held in another way. For example: a cylinder, a circular disc etc.



**Fig. 11.9 (a)** Getting circular shadow with a cylinder

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

Ans: No, in a completely dark room no image will be formed because there is no light in the room so no reflection of light takes place and no image will be formed.

#### VERY SHORT ANSWER TYPE QUESTIONS

1. Whether the moon is luminous or non-luminous body?

Ans: Moon is non-luminous body.

2. What is umbra?

Ans: Umbra is the dark region behind object facing light which does not receive light at all.

3. How does a light ray travel?

Ans: Light ray travels in a straight line.

4. Give one natural source of light.

Ans: Sun is a natural source of light.

5. What is shadow?

Ans: Shadow is the dark space behind an opaque object where light does not reach.

6. What is penumbra?

Ans: The less darker shadow formed penumbra on the periphery of dark shadow is called penumbra.

#### SHORT ANSWER TYPE QUESTIONS

1. State difference between a luminous and a non-luminous body.

Ans: The bodies which emit light are called luminous bodies.

Example: sun, stars, burning candle etc.

The bodies which do not emit light are called non-luminous bodies. Example: moon, earth, blackboard.

2. Why is the moon not considered as a luminous body?

Ans: Moon is non-luminous body because it shines by reflecting the sunlight falling on it.

3. What is an incandescent body? Give example.

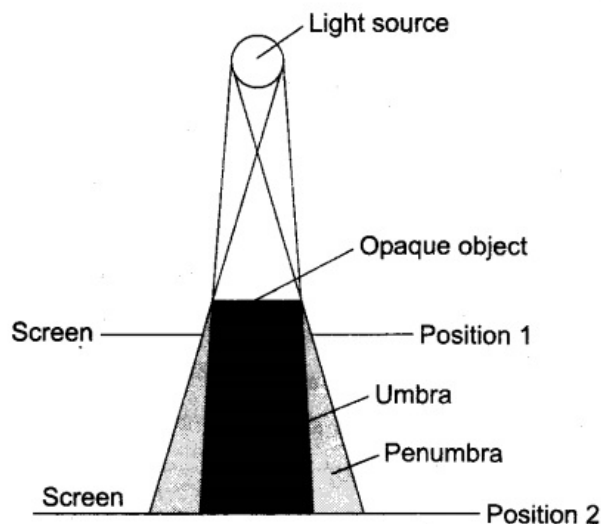
Ans: The bodies which emit light when heated to a very high temperature are called incandescent bodies. Example: electric bulb.

4. When does a shadow form?

Ans: Shadow is formed when light does not reach behind the opaque object kept in the path of light.

5. Draw a diagram to illustrate the formation of umbra and penumbra.

Ans:



**Fig. 11.10**

6. What are the essential conditions for the formation of shadow?

Ans: (1) There should be an opaque material.

(2) There should be a source of light and screen.

The object must be placed in the path of light. Then shadow is formed on the screen.

7. Define reflection of light.

Ans: When light rays after striking the smooth and shiny surface return to same medium, this phenomenon is called reflection of light.

8. Write difference between shadow and image.

Ans:

<i>Image</i>	<i>Shadow</i>
(1) It is formed by intersection of reflected rays.	(1) Shadow is formed when light does not reach behind the object.
(2) Image is seen when reflected rays approach to observer's eyes	(2) No light enters the observer's eyes.
(3) Image gives more information such as colour, structure etc.	(3) Shadow does not provide such information.
(4) Image can be straight or inverted.	(4) Shadow is never inverted.

9. How will you convert a glass sheet into a translucent sheet?

Ans: There are following two methods to convert glass sheet into a translucent sheet:

(i) By smearing a thin layer of oil on glass sheet.

(ii) By covering a side of sheet by butter paper.

10. What is shadow? How does the colour of an opaque object affects the colour of the shadow?

Ans: A dark outline or patch formed by an opaque object that blocks light coming from a source of light is called shadow. The colour of an opaque object does not affect the colour of the shadow.

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