



11. Write the differences between umbra and penumbra.

Ans:

<i>Umbra</i>	<i>Penumbra</i>
(1) It is the darkest part of shadow.	(1) It is less dark part of shadow.
(2) No light reaches to this region.	(2) Light from some parts of the source reaches.
(3) It is central part of shadow.	(3) It is outerpart of a shadow.

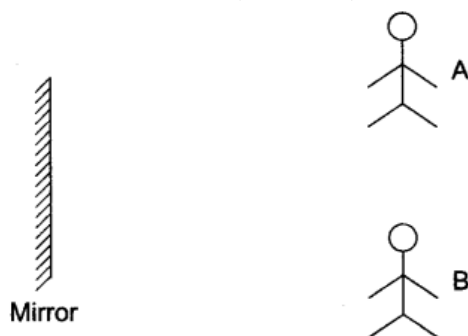
12. What do we need in order to see a shadow?

Ans: We need: (i) A source of light (ii) a screen (iii) an opaque object.

13. What do you mean by scattering of light?

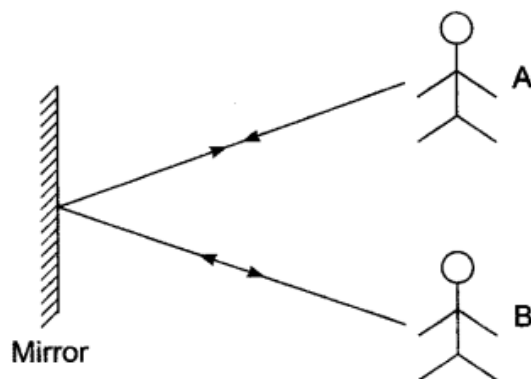
Ans: When a beam of light falls on a rough surface it is turned back in different directions. It is called scattering of light.

14. A and B are facing the mirror and standing in such a way that A can see B and B can see A. Explain this phenomenon.



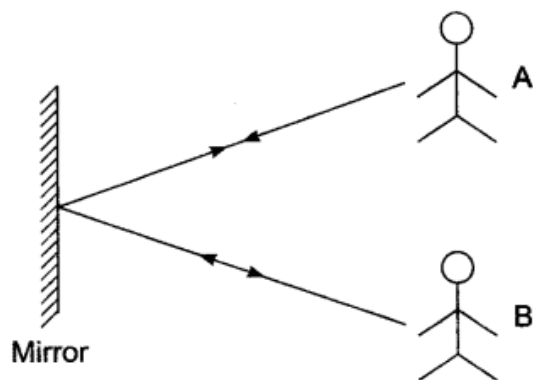
**Fig. 11.11**

Ans: The light rays from A falls on the mirror and gets reflected and reaches B, the light from B falls on the mirror and reflects to reach A. The path of light is just reversed as shown.



**Fig. 11.12**

15. 'X' is 20 cm away from the mirror. If he moves few steps closer to the mirror what will happen to the image.



**Fig. 11.12**

Ans: The size of the image will be same as the size of the object.

16. Write the mirror image of 'SMART'?

Ans: THAMS

17. Have you ever seen an ambulance? It is written in the form of mirror image on vehicles. Explain why it is done so and give the mirror image of AMBULANCE.

Ans: The mirror image of AMBULANCE is ENOCALBMA.

It is written so on the vehicles for the people to see in their rear view mirrors, read it correctly and immediately give way to the vehicle as it carries patients who need urgent medication.

18. You have to cast the shadow of your pencil on the wall with the help of candle in a dark room. How can you obtain the shadow of same size, small size and big size of the same pencil?

Ans:

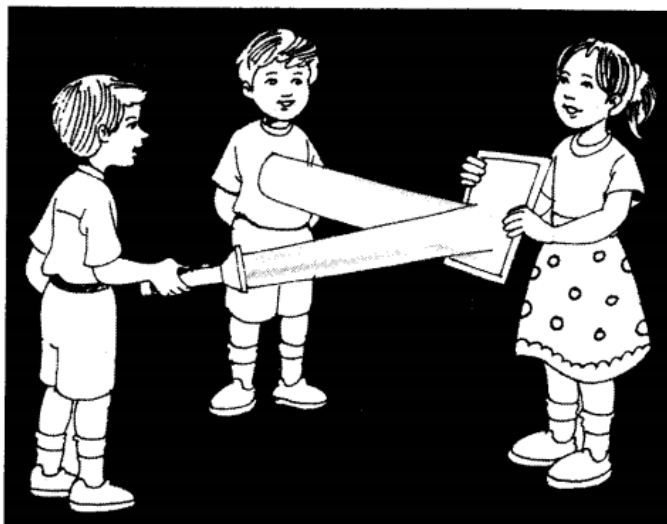
- (a) The shadow of the pencil will be small when the pencil is taken close to the wall and away from the candle.
- (b) The shadow will be big in size when the pencil is taken closer to the candle.
- (c) To get the same sized shadow as the pencil is, adjust the distance between the wall, pencil and candle at equal distances.

#### LONG ANSWER TYPE QUESTIONS

1. What is reflection of light? Explain reflection of light with the help of an activity.

Ans: When light rays fall on a highly polished (e.g. mirror) smooth surface and return to the same medium, it is called reflection of light.

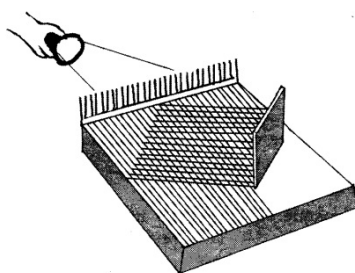
Activity to show reflection of light: This activity should be done at night or in a dark room. Ask your friend to hold a mirror in his hand at one corner of the room. Stand at another corner with a torch in your hand. Cover the glass of torch with your fingers and switch it on. There should be small gap between your fingers. Direct the beam of torch-light on to the mirror that your friend is holding. Adjust the direction of torch so that patch of light falls on your friend standing in the room. This activity shows the reflection of light also that light travels in straight line.



**Fig. 11.14** A mirror reflects a beam of light

2. Explain the manner in which light travels with the help of an activity.

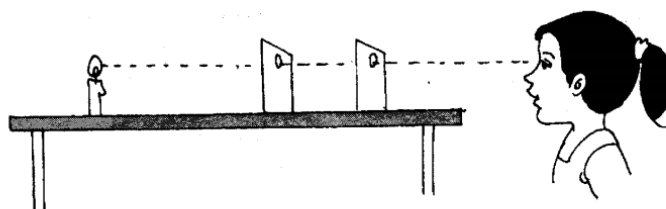
Ans: Take a comb and fix it on one side of a thermacol sheet. Fix a mirror on the other side as shown in figure. Spread a dark coloured sheet of paper between the mirror and the comb. Send a beam of light from a torch through the comb. You get a pattern of light similar to that shown in figure. This activity explains the manner in which light travels and gets reflected from a mirror.



**Fig. 11.15** Light travelling in a straight line and getting reflected from a mirror

3. Explain that light has the property of rectilinear propagation.

Ans: We take three pieces of cardboard. Place them one on the top of one another and make a hole in the middle of each cardboard by using a thick nail. Erect these cards up on the table at a short distance away from each other. Take a candle which is of the same height as the holes in the cards. Light the candle and place it in front of the cards. We see that the light of candle is visible only when the holes on cards lie in a straight line. If we disturb them the light of candle disappears. This experiment shows that light propagates in a straight line.



**Fig. 11.16**

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