INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VII	**DEPARTMENT: SCIENCE 2025-2026**	**DATE: 01/12/2025**
TEXTBOOK- Q & A	**CHAPTER: LIGHT: SHADOWS & REFLECTIONS**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

1. Which of the following are luminous objects?
   Mars, Moon, Pole Star, Sun, Venus, Mirror
   [Hint:
   The Sun and the Pole Star are luminous objects because they produce their own light.
   Venus, Mars, Moon & mirror- All are non-luminous objects as they do not emit their own light.]

2. Match the items in Column A with those in Column B.

Column A	Column B
(i) Pinhole	(a) Blocks light completely
(ii) Opaque object	(b) The dark region formed behind the object
(iii) Transparent object	(c) Forms an inverted image
(iv) Shadow	(d) Light passes almost completely through it

Ans:

Column A	Column B
(i) Pinhole	(c) Forms an inverted image
(ii) Opaque object	(a) Blocks light completely
(iii) Transparent object	(d) Light passes almost completely through it
(iv) Shadow	(b) The dark region formed behind the object

3. Sahil, Rekha, Patrick, and Qasima are trying to observe the candle flame through the pipe as shown in Fig. 11.16. Who can see the flame?

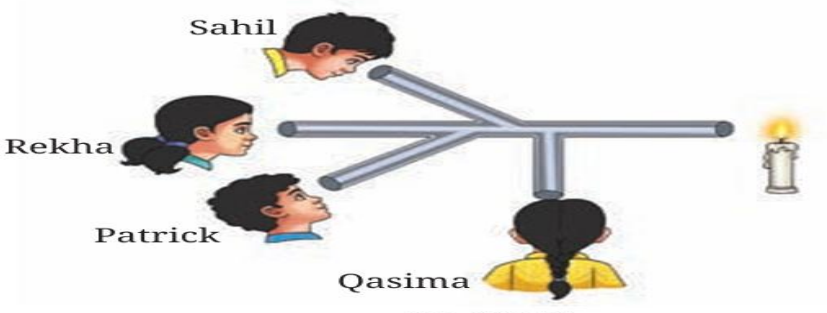
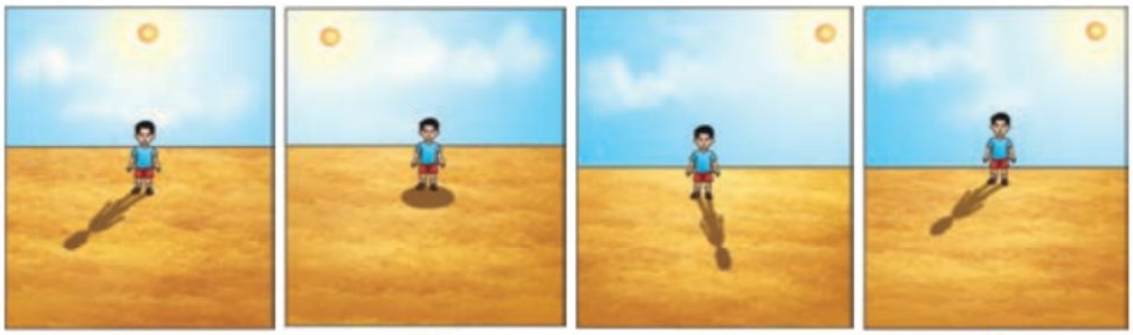


Fig. 11.16

[Hint: Only Rekha can see the flame of the candle because light travels in a straight line, and Rekha's line of sight is aligned with the flame. Others cannot see the flame because they are not in the path of the pipe where the flame is visible.]

4. Look at the images shown in Fig. 11.17 and select the correct image showing the shadow formation of the boy.



[Hint: The boy's shadow is formed based on the light source. If the light is coming from above, the shadow will fall below. If the light comes from the side, the shadow will be cast in the opposite direction. Thus, option (d) is the correct image showing the shadow formation of the boy.]

5. The shadow of a ball is formed on a wall by placing the ball in front of a fixed torch as shown in Fig. 11.18. In scenario (i), the ball is closer to the torch, while in scenario (ii), the ball is closer to the wall. Choose the most accurate representation of the shadows formed in both scenarios from the options provided (a and b).

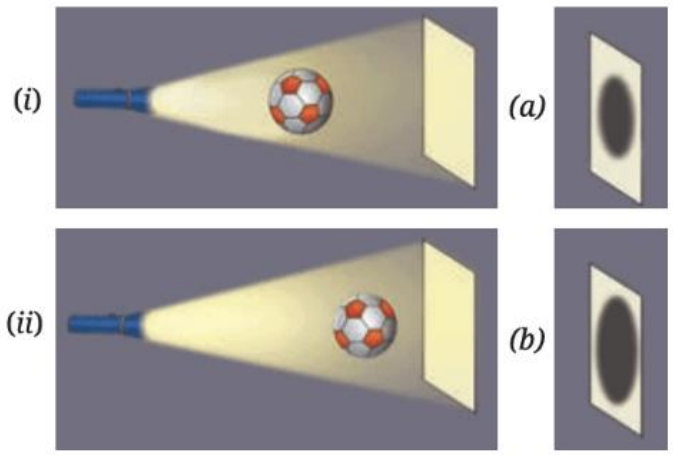


Fig. 11.18

[Hint: In scenario (i), the ball is closer to the torch and away from the wall, so the shadow would be large and blurry on the wall. So, the correct representation of scenario (i) will be (b).
In scenario (ii), the ball is closer to the wall and away from the torch, so the shadow would be sharp and small. So, the correct representation of scenario (ii) will be (a).]

6. Based on Fig. 11.18, match the position of the torch in Column A with the characteristics of the ball's shadow in Column B.

Column A	Column B
(i) If the torch is close to the ball	(a) The shadow would be smaller
(ii) If the torch is far away	(b) The shadow would be larger
(iii) If the ball is removed from the set-up	(c) Two shadows would appear on the screen
(iv) If two torches are present in the setup on the left side of the ball	(d) A bright spot would appear on the screen

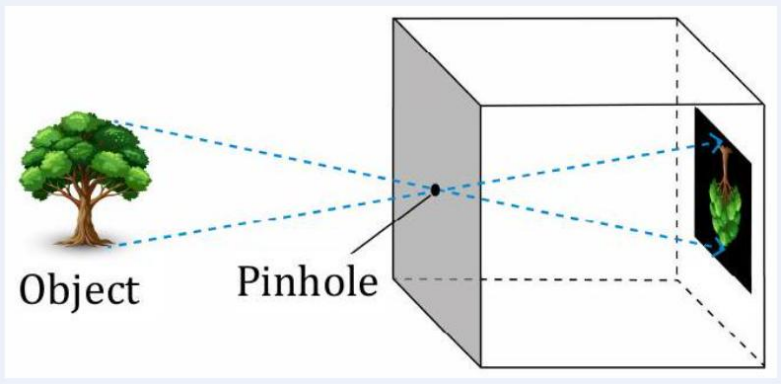
Ans:

Column A	Column B
(i) If the torch is close to the ball	(b) The shadow would be larger
(ii) If the torch is far away	(a) The shadow would be smaller
(iii) If the ball is removed from the set-up	(d) A bright spot would appear on the screen
(iv) If two torches are present in the setup on the left side of the ball	(c) Two shadows would appear on the screen

7. Suppose you view the tree shown in Fig. 11.19 through a pinhole camera. Sketch the outline of the image of the tree formed in the pinhole camera.

Fig. 11.19

[Hint: Ans: In a pinhole camera, the image is upside down and inverted because light travels in straight lines.
The formation of the image of the tree formed in the pinhole camera is shown below.]



8. Write your name on a piece of paper and hold it in front of a plane mirror such that the paper is parallel to the mirror. Sketch the image. What difference do you notice? Explain the reason for the difference.
   [Hint: The image of the name will be reversed, as mirrors cause lateral inversion. The left side of the name will appear as the right side in the mirror and vice versa.]

9. Measure the length of your shadow at 9 AM, 12 PM, and 4 PM with the help of your friend. Write down your observations:
   (i) At which of the given times is your shadow the shortest?
   [Hint: The shadow is the shortest at 12 PM when the Sun is directly overhead.]

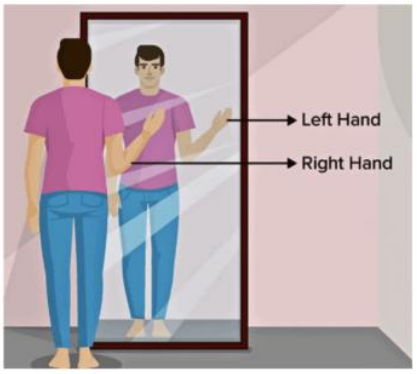
   (ii) Why do you think this happens?
   [Hint: This is because:
   - At this time, the Sun is at its highest point in the sky, meaning it is directly above you.
   - The Sun's rays are shining down almost vertically, so the shadow is at its shortest.]

10. On the basis of the following statements, choose the correct option.
    Statement A: Image formed by a plane mirror is laterally inverted.
    Statement B: Images of alphabets T and O appear identical to themselves in a plane mirror.
    (i) Both statements are true
    (ii) Both statements are false
    (iii) Statement A is true, but statement B is false

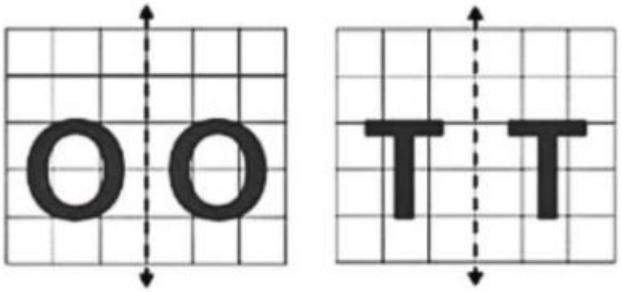
(iv) Statement A is false, but statement B is true

[Ans: (i) Both statements are true.

Statement A is true as plane mirrors create laterally inverted images.



Statement B is true because some letters (like T and O) look the same in a mirror.



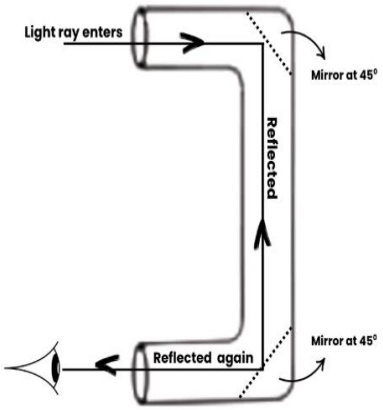
11. Suppose you are given a tube of the shape shown in Fig. 11.20 and two plane mirrors smaller than the diameter of the tube. Can this tube be used to make a periscope? If yes, mark where you will fix the plane mirrors.

Fig. 11.20

[Hint: Yes, the tube can be used to make a periscope.

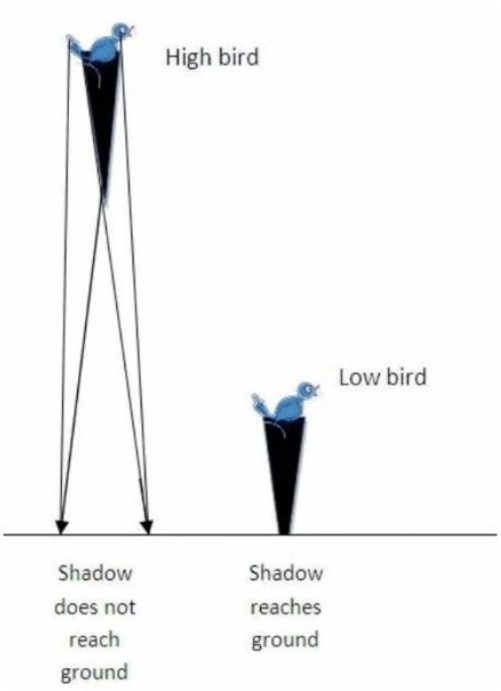
Positioning the mirrors: To construct the periscope, you would place the two plane mirrors at 45-degree angles inside the tube.

- **First mirror:** Place the first mirror at the top of the tube, facing down at a 45-degree angle.
- **Second mirror:** Place the second mirror at the bottom of the tube, facing up at a 45-degree angle to reflect light from the outside to the viewer's eyes.



12. We do not see the shadow on the ground of a bird flying high in the sky. However, the shadow is seen on the ground when the bird swoops near the ground. Think and explain why it is so.

    [Hint: The bird flying high in the sky is too far from the ground for its shadow to be visible. When the bird swoops closer to the ground, its shadow becomes more visible because the light from the Sun is blocked closer to the surface.]



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