INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VIII	**DEPARTMENT OF SCIENCE 2024-2025**	**DATE : 06/11/2024**
TEXTBOOK - Q & A	**CHAPTER: LIGHT**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

1. Suppose you are in a dark room. Can you see objects in the room? Can you see objects outside the room? Explain.

   Ans: When we are in a dark room, we cannot see objects. We can see the objects outside the room because out of the room the light is available and the rays of light can enter our eyes after reflection from the objects.

2. Differentiate between regular and diffused reflection. Does diffuse reflection mean the failure of the laws of reflection?

   Ans:

REGULAR REFLECTION	DIFFUSED REFLECTION
(i) All the reflected rays are parallel.	(i) The reflected rays are not parallel.
(ii) It occurs on a smooth and polished surface.	(ii) It occurs on a rough surface.
(iii) Reflected rays are in one direction.	(iii) Reflected rays are scattered in different directions.

   No, diffuse reflection doesn't mean the failure of laws of reflection.

3. Mention against each of the following whether regular or diffused reflection will take place when a beam of light strikes. Justify your answer in each case.

   Ans: 1. Polished wooden table- Regular reflection will take place because the surface is plane and polished.

   2. Chalk powder- Diffused reflection will take place because the surface is rough.

   3. Cardboard surface- Diffused reflection will take place because the surface is rough.

   4. Marble floor with water spread over it- Regular reflection will take place because the surface is smooth and plane.

   5. Mirror- Regular reflection will take place because the surface is plane and polished.

   6. Piece of paper- Diffused reflection will take place because the surface is rough.

4. State the laws of reflection.

Ans: The laws of reflection are:

a) The incident ray, the normal, and the reflected ray, all lie in the same plane.

b) The angle of incidence is equal to the angle of reflection.

5. Describe an activity to show that the incident ray, the reflected ray, and the normal at the point of incidence lie in the same plane.

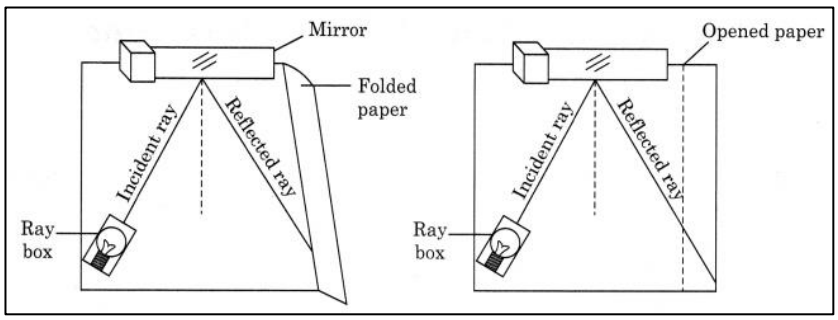
Ans:

Activity: To show that the incident ray, reflected ray, and the normal at the point of incidence lie in the same plane.

Materials Required: Plane mirror, holder, ray box, etc.

Procedure: Fix a sheet of white paper, a little beyond the edge of the board. Place a plane mirror strip vertically on the paper using a stand. Throw light from a ray box on the mirror. Look at the reflected ray. Mark the incident ray, normal ray, and reflected ray. Fold the paper which is beyond the edge of the board. You will observe that the reflected ray is not seen in the folded portion of the chart paper. Now bring the folded portion back to its original position. The reflected ray of light is again seen on the page.

Conclusion: The sheet on the board can be considered a plane. The incident ray, the reflected ray, and the normal at the point of incidence lie in the same plane.



6. Fill in the blanks in the following:

(a) A person 1 m in front of a plane mirror seems to be _____ m away from his image.

(b) If you touch your _____ ear with a right hand in front of a plane mirror it will be seen in the mirror that your right ear is touched with _____

(c) The size of the pupil becomes _____ when you see in dim light.

(d) Night birds have _____ cones than rods in their eyes.

Ans:

(a) 2 (b) left, left hand (c) larger (d) lesser

7. The angle of incidence is equal to the angle of reflection

   (a) Always (b) Sometimes (c) Under special conditions (d) Never

   Ans: (a) Always

8. The image formed by a plane mirror is:

   (a) virtual, behind the mirror, and enlarged.

   (b) virtual, behind the mirror, and of the same size as the object.

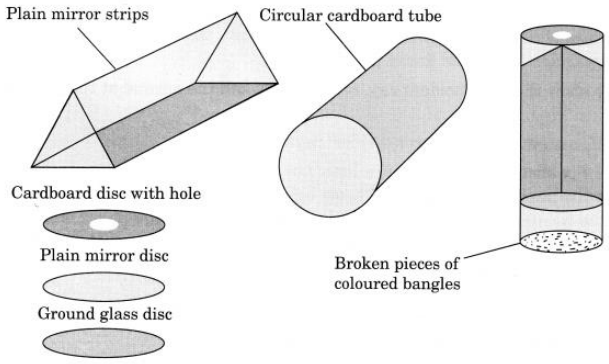
   (c) real at the surface of the mirror and enlarged.

   (d) real, behind the mirror, and of the same size as the object.

   Ans.: (b) virtual, behind the mirror and of the same size as the object.

9. Describe the construction of a kaleidoscope.

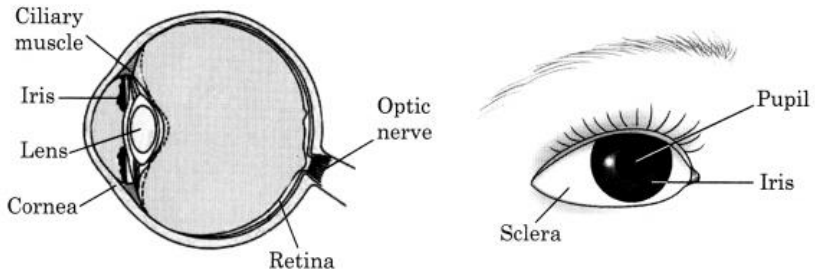
   Ans: A kaleidoscope is a device based on the principle of multiple reflections. It consists of three long and narrow strips of plane mirrors inclined at an angle of 60° to one another forming a prism. This is fitted in a tube. One end of this tube is closed by a cardboard disc having a hole at its centre. To the other end touching the mirror's plane, a glass plate is fixed on which broken pieces of coloured bangles are placed. This end of the tube is closed by a ground glass plate. The kaleidoscope is ready. When you peep through the hole and rotate the tube, you will be able to see various patterns in the tube.



Construction of Kaleidoscope

10. Draw a labelled sketch of the human eye.

    Ans:



Human eye

11. Gurmit wanted to perform Activity 16.8 using a laser torch. Her teacher advised her not to do so. Can you explain the basis of the teacher's advice?

Ans: The teacher has advised Gurmit not to do so because laser light is very harmful to her eyes and can cause a permanent defect in the eye. A person can even lose his or her eyesight if a laser torch is directed over the eyes.

12. Explain how you can take care of your eyes.

Ans: Eyes are very precious. We must take proper care of them. We must

- **always sit straight while reading or writing.**
- **if advised, use suitable spectacles.**
- **wash our eyes with clean water frequently.**
- **not look at the sun directly.**
- **always read or write in a proper light.**

13. What is the angle of incidence of a ray if the reflected ray is at an angle of 90° to the incident ray?

Ans: According to the laws of reflection, the angle of incidence is equal to the angle of reflection. Here, the angle between the incident ray and the reflected ray is 90°.

i.e., $\angle i + \angle r = 90°$

Since, $\angle i = \angle r$

We can write, $\angle i + \angle i = 90°$

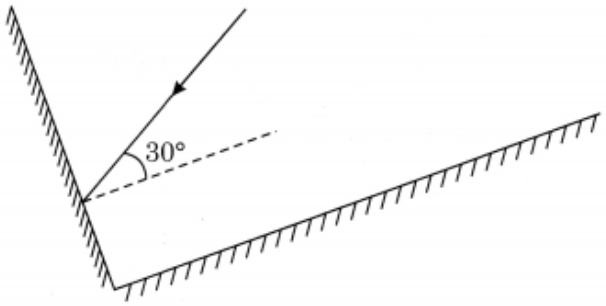
$\Rightarrow 2\angle i = 90°$

$\Rightarrow \angle i = 45°$ Thus, angle of incidence is 45°.

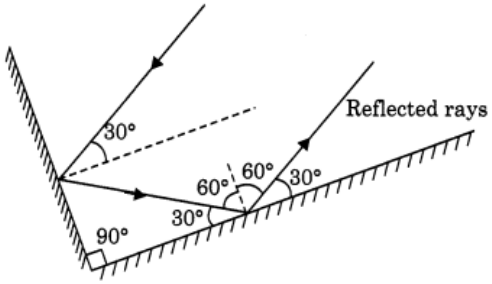
14. How many images of a candle will be formed if it is placed between two parallel plane mirrors separated by 40 cm?

Ans: Here, mirrors are placed parallel to each other 40 cm apart. Therefore, an infinite number of images will be formed.

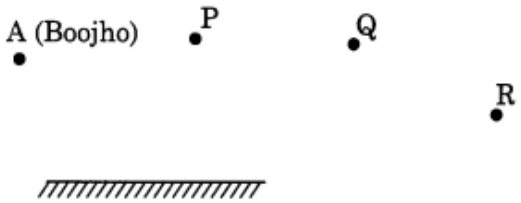
15. Two mirrors meet at right angles. A ray of light is incident on one at an angle of 30° as shown in Fig. 16.19. Draw the reflected ray from the second mirror.



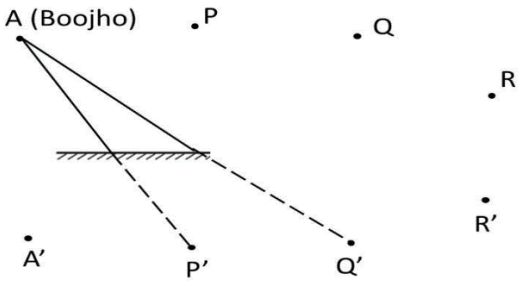
Ans:



16. Boojho stands at A just on the side of a plane mirror as shown in Fig. 16.21. Can he see himself in the mirror? Also, can he see the image of objects situated at P, Q, and R?



Ans: No, Boojho can't see himself in the mirror. He can see the image of the object at P and Q but not of R.

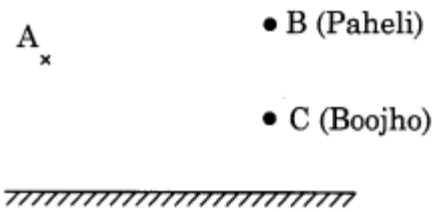


17. (a) Find out the position of the image of an object situated at A in the plane mirror Fig.16.23.

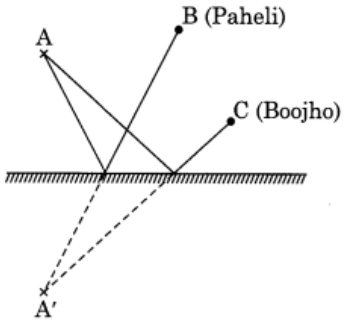
(b) Can Paheli at B see this image?

(c) Can Boojho at C see this image?

(d) When Paheli moves from B to C, where does the image of A move?



Ans: (a) It is shown in the following figure.



(b) Yes, Paheli can see the image of A.

(c) Yes, Boojho can see the image of A.

(d) The image of the object at A will not move as an object is not moving.

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