

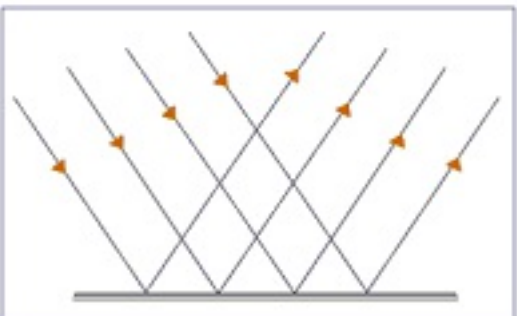
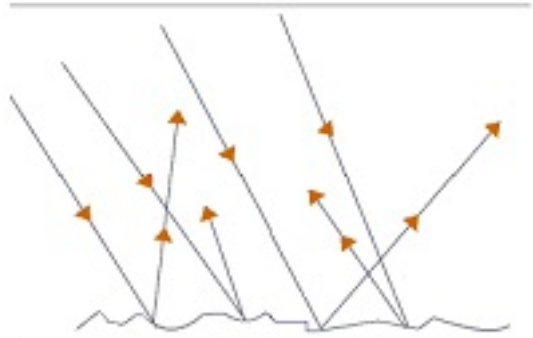
CBSE Class–VIII Science
NCERT SOLUTION
Chapter-16
Light

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

Ans. We can see an object from which reflected rays enter our eyes. The light may be emitted by the object or may have been reflected by the object. Thus we cannot see an object which is placed in a dark room if it does not emit light of its own. Whereas an object outside the dark room can be seen if there is either light outside the dark room or the object emits its own light.

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

Ans.

Regular Reflection	Diffused Reflection
i. It occurs when parallel beam of incident rays remain parallel after reflection.	i. It occurs when parallel beam of incident rays doesn't remain parallel after reflection.
ii. Occurs from smooth surfaces like mirror, silver spoon etc.	ii. Occurs from rough surfaces like wood, table, door, book etc,
iii. 	iii. 

No, diffused reflection is not the failure of the 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.

(a) Polished wooden table

(b) Chalk powder

(c) Cardboard surface

(d) Marble floor with water spread over it.

(e) Mirror

(f) Piece of paper.

Ans. (a) Regular reflection will take place because polished wooden table will have a smooth surface.

(b) Diffused reflection will take place because it is rough (not smooth) surface.

(c) Diffused reflection will take place because it is rough surface.

(d) Regular reflection as it will act like a plane mirror.

(e) Regular reflection will take place because plane mirror is a polished surface.

(f) Diffused reflection because surface of paper is rough.

4. State the law of reflection.

Ans. The laws of reflection are

(a) The angle of incidence is always equal to angle of reflection.

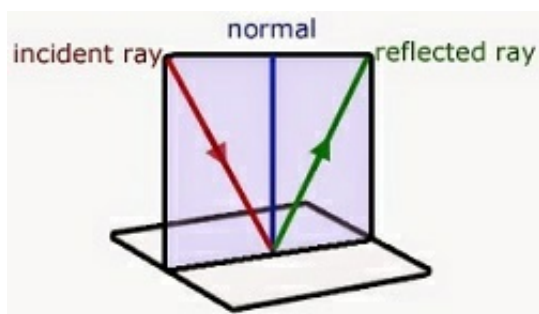
(b) The incidence ray, the reflected ray and the normal all lie in the same plane.

5. Describe an activity to show that the incident ray, the reflected ray and the normal all

the point of incidence lie in the same plane.

Ans. Place a plane mirror on the table. Take a paper sheet and make a small hole in its centre. Make sure that the light in the room is not bright. Hold the sheet normal to the table. Take another sheet and place it on the table in contact with the vertical mirror. Draw a normal line on the second sheet from the mirror. Now, light a torch on the mirror through the small

hole such that the ray of light falls on the normal at the bottom of the mirror. When the ray from this hole is incident on the mirror, it gets reflected in a certain direction. You can easily observe the incident ray, reflected ray and the normal to the mirror at the point of incidence on the sheet placed on the table. This shows that the incident ray, the reflected ray, and the normal to the surface at the point of incidence all 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 this image.
- (b) If you touch your _____ ear with 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. Fill in the blanks.

- (a) A person 1 m in front of a plane mirror seems to be **2m** away from this image.
- (b) If you touch your **left** ear with right hand in front of a plane mirror it will be seen in the mirror that your right ear is touched with **left hand**.

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

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

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

(a) Always

(b) Sometimes

(c) Under special conditions

(d) Never

Ans. (a) always.

8. 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

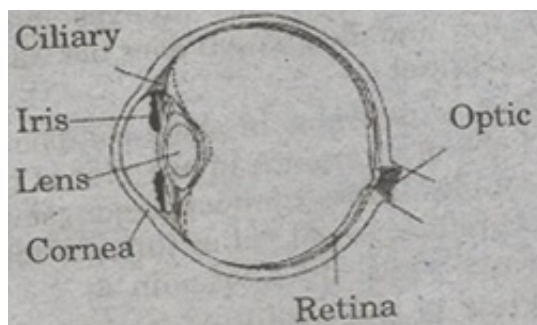
Ans. (b) Virtual, behind the mirror and of the same size as the object.

9. Describe the construction of a kaleidoscope.

Ans. Kaleidoscope is an optical instrument used to see a number of beautiful patterns. It is made up of a circular cardboard tube or tube of a thick chart paper in which rectangular mirror strips are joined together to form a prism. At one end of tube, touching these mirrors, a circular glass plate is fixed. Several small pieces of coloured glass are placed upon it. This end is closed by ground glass plate and beautiful patterns are seen through the other end of the kaleidoscope.

10. Draw a labelled sketch of the human eye.

Ans.



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. Laser rays can cause permanent damage in the eyes. Thus, Gurmit will lose her eye sight if laser torch is directed over her eyes.

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

Ans. The following care should be taken to keep our eyes healthy:

- (a) We should not look at the sun or a powerful light source directly.
 - (b) Too dim or more bright light is bad for the eyes.
 - (c) If advised, suitable spectacles should be used.
 - (d) We should always read from a normal distance for distinct vision.
 - (e) We should never rub our eyes if any small particle or dust goes into the eyes.
 - (f) Food containing Vitamin A should be used.
-

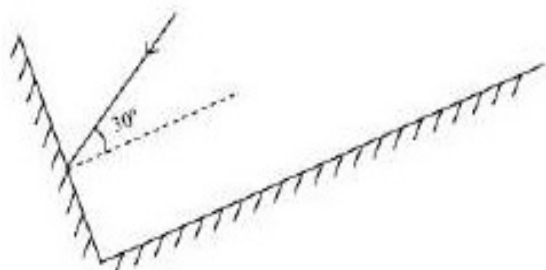
13. What is the angle of incidence of a ray if the reflected ray is at an angle of 90° to the incident ray?

Ans. The angle of incidence is 45°

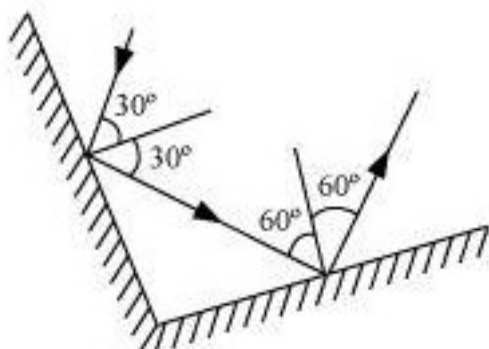
14. How many images of a candle will be formed if it is placed between two parallel plane mirrors separated by 40 cm?

Ans. 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 degree 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 shown in fig. 16.20. can he see himself in the mirror? Also can he see the image of objects situated at P,Q and R?

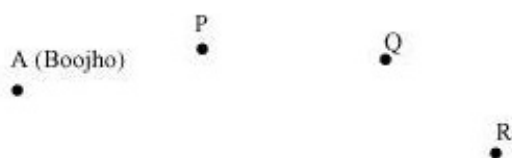
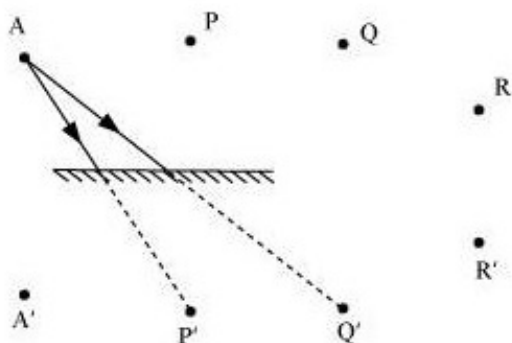


Fig. 16.20

Ans. Boojho will not be able see himself in the mirror. But he can see image of objects situated at P and Q.

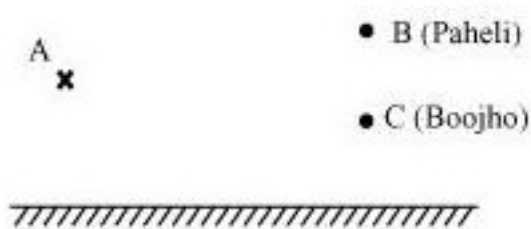


17. (a) Find out the position of the image of an object situated at A in the mirror.

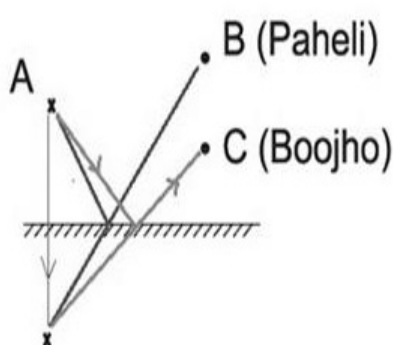
(b) Can paheli at B see this image?

(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) A image will be formed at the same distance behind the mirror.



(b) Yes.

(c) Yes.

(d) The image remains at the same place. The image moves only if the object or the mirror is moved.