

## Reflection of Light

DPP - 1

1. What do you understand by the following terms ?      (i) Light      (ii) Diffused light
2. By giving one example and one use explain or define      (i) Regular reflection      (ii) Irregular reflection.
3. By drawing a neat diagram define the following:
 

(i) Mirror	(iv) Angle of incidence
(ii) Incident ray	(v) Angle of reflection
(iii) Reflected ray	(vi) Normal.
4. State the laws of reflection.
5. A ray of light strikes a plane mirror, such that angle with the mirror is  $20^\circ$ . What is value of angle of reflection? What is the angle between the incident ray and the reflected ray?
6. Prove experimentally that images are formed as far behind in a plane mirror as the object is in front of it.
7. Prove geometrically that when plane mirror turns through a certain angle, the reflected ray turns through twice the angle.
8. What do you understand by the term lateral inversion?
9. A printed card has letters **PHYSICS**. By drawing the diagram show the appearance of the letters. (No ray diagram is required). .
10. State the mirror formula for the formation of total number of images formed in two plane mirrors, held at an angle.
11. Calculate the number of images formed in two plane mirrors, when they are held at the angle of
 

(i) $72^\circ$	(ii) $36^\circ$ .
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12. Draw a neat two ray diagram for the formation of images in two plane mirrors, when mirrors are
 

(i) at right angles to each other	(ii) when mirrors are facing each other.
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13. Why are infinite images as seen when two plane mirrors are facing each other?
14. State four characteristics of the image formed in a plane mirror
15. State three ways in which the image formed in a plane mirror differs from the image formed by pin hole camera

## Reflection of Light

## DPP - 2

1. What should be the minimum size of a plane mirror, so that a person 182 cm high can see himself completely
2. A boy stands 4 m away from plane mirror. If the boy moves  $\frac{1}{2}$  towards mirror, what is now the distance between the boy and his image? Give a reason for your answer
3. State four uses of a plane mirror
4. Draw a neat diagram of reflecting periscope
5. State two advantages and two disadvantages of the reflecting periscope
6. What must be the minimum length of a plane mirror in which a person can see himself completely? Draw a diagram to justify your answer. Does the distance of person from the mirror affect the above answer?
7. An insect is sitting in front of a plane mirror at a distance of one metre from it.
  - (i) Where is the image of insect formed?
  - (ii) What is the distance between insect and its image?
8. Draw a diagram to show reflection of a ray of light using plane mirror. In the diagram label the incident ray, the reflected ray, the normal, the angle of incidence and angle of reflection
9. State the laws of reflection
10. How many images will be formed when an object is placed between two parallel plane mirrors with their reflecting surfaces facing each other? Why do more distant images appear fainter?
11. Write down the letters of the word 'POLEX' as seen in a plane mirror, held parallel to the plane of this paper.
12. Name a mirror which always produces an erect and virtual image.
13. Distinguish between real and virtual image.
14. An object is placed 2 cm from a plane mirror. If the object is moved by 1 cm towards the mirror, what will be the distance between the object and its new image?

Select the correct option.

- A concave mirror is made by cutting a portion of a hollow glass sphere of radius 30 cm. The focal length of the concave mirror is:
  - 24 cm
  - 12 cm
  - 15 cm
  - 60 cm
- A mirror forms a virtual image (diminished) of an object, whatever be the position of object:
  - it must be concave mirror
  - it must be convex mirror
  - it must be plane mirror
  - it may be (b) or (c) or both
- A ray of light is incident on a concave mirror. If it is parallel to principal axis, the reflected ray will:
  - pass through its principal focus
  - pass through its centre of curvature
  - pass through its pole
  - retraces its path.
- If an incident ray passes through the centre of curvature of a spherical mirror, the reflected ray will :
  - pass through its pole
  - retraces its path
  - pass through its focus
  - be parallel to principal axis
- In case of concave mirror, the minimum distance between an object and its real image is :
  - f
  - 2f
  - 4f
  - zero
- Looking into a mirror one finds her image diminished, the mirror is:
  - concave
  - convex
  - cylindrical
  - parabolic
- Which mirror is used in periscope?
  - Convex mirror
  - Concave mirror
  - Plane mirror
  - Parabolic mirror

1. Define the following terms:

- (a) spherical mirror
- (b) convex mirror
- (c) concave mirror

2. Define the following

- (a) Pole
- (b) Centre of curvature
- (c) Principal axis
- (d) Principal focus
- (e) Focal length
- (f) Radius of curvature
- (g) Aperture

3. Define the term principal focus in case of convex mirror. Draw a convex mirror and show its principal focus and focal length clearly.

4. What is the relation between focal length and radius of curvature of a concave mirror?

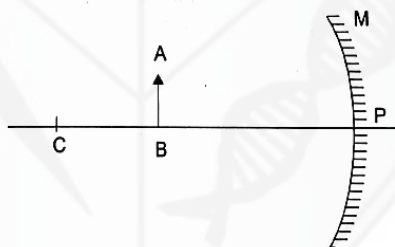
5. (a) What do you understand by the term real image?

(b) What type of mirror is used to obtain a real image?

(c) Does the mirror named by you form real image for all locations? Give reason for your answer.

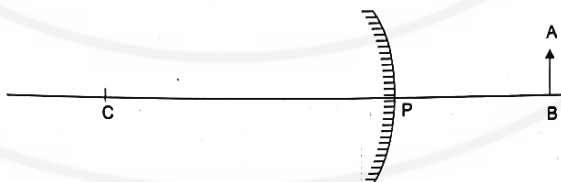
(d) Is real image always inverted?

6. Copy the Fig By taking two rays from point A, show the formation of image. State four characteristic of the image.



7. Draw a neat two ray diagram to illustrate how a concave mirror is used as a shaving mirror.

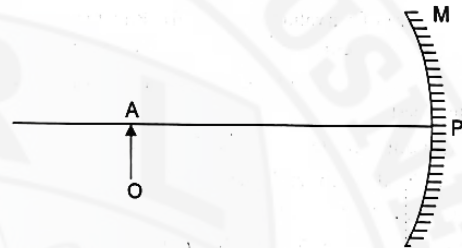
8. Copy the Fig. fly taking two rays from point A, show the formation of image. State four characteristics of the image.



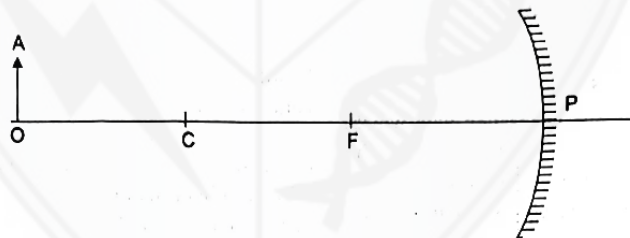
9. Why do automobile drivers prefer convex mirror as a rear view mirror? illustrate your answer,

10. Give two uses of (i) convex mirror (ii) concave mirror.

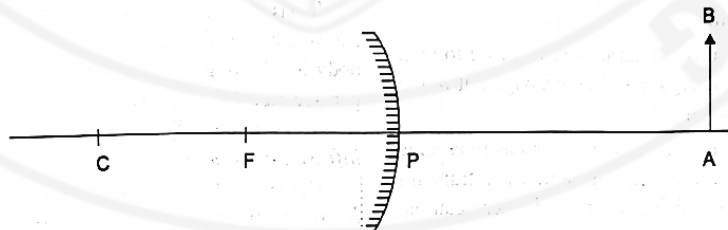
11. You are provided a convex mirror, a concave mirror and a plane mirror. How will you distinguish between them, without touching or using any other apparatus?
12. Compare the characteristics of an image formed by a convex mirror and a concave mirror, when object is beyond centre of curvature, but not at infinity.
13. Why does a driver use a convex mirror as a rear view mirror? Illustrate your answer with the help of ray diagram.
14. What type of mirror is used to obtain a real image of an object? Does the mirror named by you above give real images for all locations of object?
15. In the Fig. is shown a concave mirror. A is a point on the principal axis. If an object O is kept at A, image is formed on A itself.



- a) Copy the diagram. Draw the image in the diagram. Is the image real or virtual?
  - b) Measure the distance PA and write it in the diagram. What is the distance PA called?
  - c) Mark a point B on the principal axis, at which, if a point source of light is kept, the rays travel parallel to principal axis after reflection from M. What is point B called?
16. An object OA is placed on the principal axis of a concave mirror as shown in Fig. Copy and complete the diagram to show the formation of image.



17. Copy the Fig. and complete it, by drawing two rays to show the formation of the image of the object AB. State the size, position and nature of image formed.





## Reflection of Light

## DPP - 5

1. An object is placed at a distance of 12 cm from a concave mirror of radius of curvature 16 cm.  
Find the position of the image.
2. An object of height 2 cm is placed at a distance of 15 cm from a concave mirror of focal length 10 cm. Find the length of the image formed.
3. The image of an object placed 16 cm from a concave mirror is formed at a distance of 24 cm from the mirror. Calculate the possible focal lengths of the concave mirror from this information.
4. An object is placed 20 cm from a convex mirror. Its image is formed 12 cm from the mirror. Find the focal length of the mirror.
5. Find the position, size and nature of the image formed by a spherical mirror from the following data.  $f = -12$  cm,  $u = -36$  cm,  $h_0 = 2$  cm
6. An object is placed at a distance of 12 cm from a concave mirror. The image formed is real and four times larger than the object. Calculate the distance of the image from the mirror.
7. An object is placed 24 cm from a concave mirror. Its image is inverted and doubles the size of the object. Find the focal length of the mirror and the position where the image is formed.
8. Where should an object be placed before a concave mirror of focal length 20 cm so that a real image is formed at a distance of 60 cm from it?
9. An object is placed at a distance of 12 cm from a convex mirror of radius of curvature 12 cm.  
Find the position of the image.
10. If the height of the object in the previous problem is 1.2 cm, what will be the height of the image?
11. When a concave mirror is placed facing the sun, the sun's rays converge to a point 10 cm from the mirror. Now, an erect, 2-cm-long pin is placed 15 cm away on the principal axis of the mirror.  
If you want to get the image of the pin on a card, where would you place the card? What would be the nature and height of the image?