

PHYSICS WORKSHEET

GRADE X

1. Draw a ray diagram in each of the following cases to show the formation of an image, when an object is placed
 - a) Between optical center and principal focus of a convex lens.
 - b) Between F and 2F of concave lens
 - c) At 2F of convex lens

Write the characteristic of image formed in each case.

2. A 1 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20cm. The distance of the object from the lens is 15cm. Find the nature, position, size and magnification of the image.
3. Find the size, nature and position of image formed when an object of size 1 cm is placed at a distance of 15 cm from concave mirror of focal length 10 cm.
4. Draw the ray diagram for the different positions of the images formed by concave mirror
5. A person needs a lens of power 4.5 D for correction of her vision.
 - (a) What kind of defect in vision is she suffering from?
 - (b) What is the focal length of the corrective lens?
 - (c) What is the nature of the corrective lens?
6. Ritu needs a lens of power -2D for correct of her vision.
 - a) What kind of defect in vision is she suffering from?
 - b) What are the possible cause of this defect?
 - c) What is the nature of corrective lens?
7. The image of a candle flame placed at a distance of 45 cm from a spherical lens is formed on a screen placed at a distance of 90 cm from the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 2 cm, find the height of its image.
8. The image of a candle flame placed at a distance of 30 cm from a spherical lens is formed on a screen placed at a distance of 60 cm from the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 2.4 cm, find the height of its image.
9. A spherical mirror produces an image of magnification -1 on a screen placed at a distance of 40 cm from the mirror:
 - (i) Write the type of mirror.
 - (ii) What is the nature of the image formed?

- (iii) How far is the object located from the mirror?
- (iv) Draw the ray diagram to show the image formation in this case
10. The refractive indices of glass and water with respect to air are $\frac{3}{2}$ and $\frac{4}{3}$ respectively. If speed of light in glass is 2×10^8 m/s, find the speed of light in water.
11. A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 24 cm. The distance of the object from the lens is 16 cm. Find the position, size and nature of the image formed, using the lens formula.
12. Mala can see the objects lying between 25 cm and 100 cm from her eye. Her vision can be corrected by using lens of power -0.1 D. Is the statement true or false?
13. Parthiv with normal near point (25 cm) reads a book with small print using a magnifying glass, a thin convex lens of focal length 5 cm. What are the closest and farthest distances at which he can read the book viewing through the magnifying glass?
14. Make a diagram to show how hypermetropia is corrected. The near point of a hypermetropic eye is 0.8 m. What is the power of the lens required to correct this defect? Assume that the near point of the normal eye is 25 cm.
15. The far point of a myopic person is 120 cm in front of the eye. What is the nature and power of the lens required to correct the problem?