

Choithram School
Manik Bagh, Indore
Practice sheet
Topic - Refraction
Class - X
Subject - Physics

S. No.	Question	Answers
1.	A ray of light enters a diamond from air if the refractive index of diamond is 2.42; by what per cent does the speed of light reduce on entering the diamond?	the speed of light in diamond is therefore 41% of its speed in air.
2.	An object is placed 30 cm from a convex lens. A real image is formed 20 cm from the lens. Find the focal length of the lens.	12 cm
3.	A 2.0cm long pin is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the pin from the lens is 15 cm. Find the size of the image.	60 cm, -8.0 cm Inverted image
4.	Find the refractive index of glass with respect to water. The refractive indices of these with respect to air are $\frac{3}{2}$ and $\frac{4}{3}$ respectively.	$\frac{9}{8}$
5.	A point object is placed at distance of 12 cm from convex lens on its principal axis. Its image is formed on the other side of the lens at a distance of 18 cm from the lens. Find the focal length of the lens.	$\frac{36}{5}$ cm
6.	The image of an object formed by convex lens is of the same size as the object. If the image is formed at a distance of 40 cm, find the focal length of the lens. Also find the power of the lens. At what distance from the lens is the object placed?	5D and 40 cm form the lens
7.	An object is placed on the principal axis of a concave lens at a distance of 20 cm from it. If the focal length of the lens is also 20 cm, find the location of the image.	- 10 cm, the image must be on the left of the lens.
8.	A 4.0cm high object is placed at a distance of 60 cm from a concave lens of focal length 20 cm. Find the size of the image.	- 15 cm and image height 1.0 cm, erect
9.	An object is placed before a concave lens of focal length 12 cm. The size of the image formed by the lens is half the size of the object. Calculate the distance of the object from the lens.	12 cm
10.	A student has to project a three times magnified image of a candle flame on a wall. Name the type of the lens required for the purpose. If the candle flame is at a distance of 6 cm from the wall, find the focal length of the lens.	Convex, $v=4.5$ cm and $f=1.125$ cm

11.	<p>A concave lens made of a material of refractive index n_1 is kept in a medium of refractive index n_2. A parallel beam of light is incident on the lens. Complete the path of rays of light emerging from the concave lens if</p> <p>a) $n_1 > n_2$</p> <p>b) $n_1 = n_2$</p> <p>c) $n_1 < n_2$</p>	<p>a) Light goes from rarer to denser; therefore, it diverges after passing through lens.</p> <p>b) No change in medium, no refraction.</p> <p>c) Light goes from denser to rarer; therefore it converges after passing through lens.</p>
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