INDIAN SCHOOL NIZWA

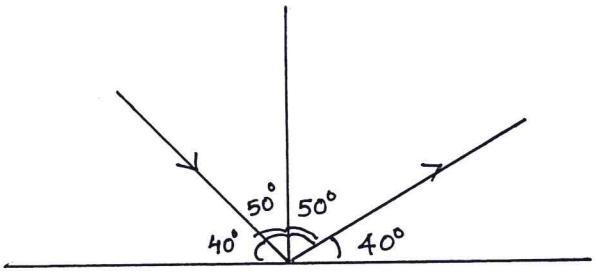
PHYSICS WORKSHEET

CHAPTER – LIGHT REFLECTION AND REFRACTION

DATE : NAME : CLASS X

---

1. Relate the focal length f and radius of curvature R.
   Ans. Focal length = radius of curvature / 2
   Or f = R/2
2. What is a real image?
   Ans. If the rays of light after reflection or refraction actually meet at a point , the image is known as real image
3. What is a virtual image?
   Ans. If the rays do not actually meet but appear to meet when produced backwards , the image is known as virtual image.
4. What should be the position of the object when a concave mirror is used
   (i) As a shaving mirror
   (ii) As a doctors mirror?
   Ans. (i) between pole and focus (ii) at the focus
5. If the magnification of a body of size 1m is 2. What is the size of the image?
   Ans. Magnification ,$m = h_i / h_o = h_i / 1 = 2$
   Or $h_i = 2 \times 1 = 2m$.
6. The angle between an incident ray and mirror is 40^0.
   (i) What is the angle of incidence?
   (ii) What is the angle of reflection?
   (iii) What is the total angle turned by the ray of light?
   Ans.



7. In which direction a ray of light bend if it goes from water to glass?
   Ans. Glass is more denser than water, ray off light will bend toward the normal when it goes from water to glass.
8. A ray of light strikes the glass slab at an angle of 55^0. What is the angle of incidence?
9. Define power of a lens. Give its SI unit.
   Ans. Power of a lens is defined as the degree of convergence or divergence of alens. Power is mathematically defined as the reciprocal of focal length.
   Power , P = 1/f (m).
   The SI unit of power is dioptre (D).
   The power of convex lens is positive and concave lens is negative.
10. Define dioptre.
    One dioptre is the power of a lens whose focal length is 1m.
11. What is power of combination of lenses?

Ans. If a number of lenses are placed in close contact , then the power ofthe combination of lenses is the algebraic sum of the powers of the individual lenses. $P = P_1 + P_2$.

12. What will happen to a ray of light when it falls normally on the surface?
Ans. When a ray of light falls normally on the surface of a medium , then no bending of light ray occurs. It means the light ray goes straight from one medium to another.
13. A pencil when dipped in water in a glass tumbler appears to be bent at the interface of air and water. Will the pencil appear to be bent to the same extent, if instead of water we use liquids like kerosene or turpentine. Support your answer with reason.
Ans. No. Bending will be different in different liquids since velocity of light at the interface separating two media depends on the relative refractive index of the medium. A substance having higher refractive index is optically denser than another having lower refractive index. Thus higher the refractive index of a substance , more it will change the direction of a beam of light passing through it.
14. Write the sign conventions for concave and convex mirror.
Ans. **Concave mirror for real image:**

focal length ,	f = -ve
Object distance ,	u = - ve
Image distance ,	V = - ve
Height of the object	h_0 = +ve
Height of the image	h_i = - ve

For virtual image:

V = +ve
H_i = +ve

Convex mirror : focal length , f = +ve
U = -ve
V = +ve
H_o = +ve
H_i = +ve

15. Write the sign convention for convex and concave lenses.
Ans . **convex lens for real image**

Focal length ,	f = +ve
Object distance	u = -ve
Image distance ,	v = +ve
Object height ,	h_o = +ve
Image height ,	h_i = -ve

For virtual image:
Image distance , v = -ve
Image height h_i = +ve
Concave lens

Focal length	f = -ve
Object distance	u = -ve
Image distance	v = -ve
Object height ,	h_o = +ve
Image height	h_i = +ve