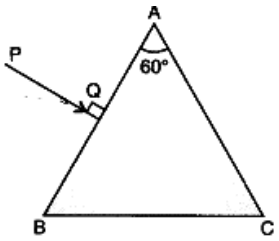
Board – ICSE	Class – 10th	Topic – Refraction of light at plane surface

1. A ray of light moves from water to glass
   (i) Does the speed of light change?
   (ii) Give reasons for your answer.
2. (i) In the diagram below, a ray of light PQ is incident normally on one face AB of an equilateral glass prism. What are the angles of incidence at the face AB & AC?



   (ii) Complete the ray diagram showing its emergence into air after passing through the prism.
3. (i) State two advantages of using a right angled prism as a reflector rather than a plane mirror.
   (ii) Draw a ray diagram to illustrate the bending of a stick in water.
4. What do you understand by the deviation produced by a prism? Define the angle of deviation.
5. State one factor on which critical angle for a given pair of media depends. The critical angle for glass-air interface is 45° for yellow light. Will it be equal to, less than or greater than 45° for (i) red light, (ii) blue light?
6. The refractive index of air with respect to glass is defined as:
   ${}_g\mu_a = \sin i/\sin r$
   (i) Write down a similar expression for ${}_a\mu_g$ in terms of angle i and r.
   (ii) If r = 90°, what is the corresponding angle i of incidence called?
7. Draw neat labelled diagrams when
   (i) A ray of light passes from air to glass
   (ii) Ray of light passes from glass to water
8. Show the path of a ray of light when it travels from air into water, the angle of incidence being 30°. Mark the angle of incidence and the corresponding angle of refraction.
9. Trace a ray of light incident at 30° on a surface if travelling (i) from air to glass (ii) from glass to air. What is the angle of refraction in each case? (R.I. for glass = 3/2).

10. Write the approximate values of speed of light in (i) air and (ii) glass. Use these values to calculate the refractive index of glass with respect of air.
11. A ray of light is incident on a glass surface at an angle of 50° with the corresponding angle of refraction 30°. Find the value of the R.I. of glass.
12. The base of a 15 cm tall container completely filled with water appears to be raised by 3.75cm. Calculate the RI of water.