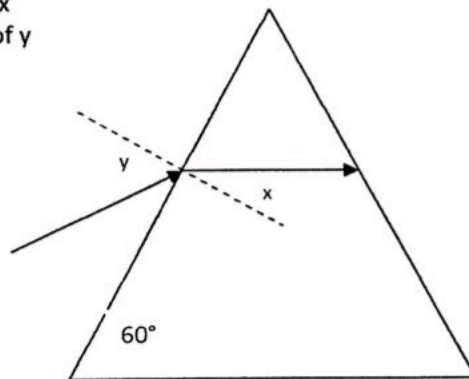


Refractive index worksheet

1. A ray of light travelling from air into glass has an angle of incidence of 37° and an angle of refraction of 24° . What value does this give for the refractive index of glass?
2. A ray of light travelling from air into a liquid of refractive index 1.4 has a angle of incidence of 30° . Find the angle of refraction.
3. A ray of light strikes a block of quartz at an angle of incidence of 30° . The angle of refraction is 20° . What is the refractive index of quartz?
4. A ray of light enters water from air at an angle of incidence whose sine is 0.36. ${}_a n_w = 1.3$
 - a) What is the sine of the angle of refraction?
 - b) What is the angle of refraction?
5. Light travels from air into water. If the angle of refraction is 30° , what is the angle of incidence? ${}_a n_w = 1.3$
6. Calculate the refractive index for a clear plastic material, if the velocity of light in the plastic is 2.5×10^8 m/s. velocity of light in air = 3×10^8 m/s
7. A ray of light in air is incident at an angle of 40.8° on the surface of the same plastic material used in question 6. Determine the angle of refraction in the plastic.
8. A ray of light passes from kerosene to glass. The angle of incidence of the light is 45.2° and the refractive index from kerosene to glass is 1.08. Calculate the angle of refraction in the glass.
9. Light travels through a glass prism parallel to base, $n = 1.5$
 - a) Deduce the value of x
 - b) Work out the value of y



10. The figure shows a slab of glass of uniform thickness, lying horizontally. Above is a layer of water. A ray of light PQ is incident on the lower surface of the glass and is refracted successively at B and C, the points where it crosses the interfaces. Calculate

- (i) Angle x
- (ii) Angle y
- (iii) the refractive index for light passing from water to glass

