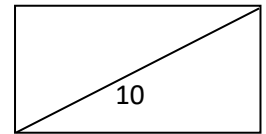
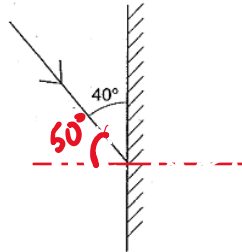


Reflection & Refraction of Light Diagnostic Quiz

Name : _____ () Date : _____



1. The diagram shows a ray of light being directed at a plane mirror. What are the angles of incidence and reflection?



	angle of incidence	angle of reflection
A	40°	40°
B	40°	50°
C	50°	40°
D	50°	50°



[]

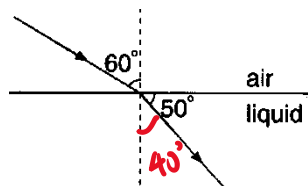
- 2.** What is the refractive index of a medium?

- A** the ratio of the speed of light in air to the speed of light in the medium
B the ratio of the speed of light in the medium to the speed of light in air
C the ratio of the speed of light in the medium to the speed of light in vacuum
D the ratio of the speed of light in vacuum to the speed of light in the medium [**D**]

3. A light ray does not undergo refraction at a boundary between two media of different optical densities if its angle of incidence is _____ .

- A** 0° **B** 45° [**A**]
C 90° **D** 180°

4. The diagram shows a ray of light incident on the surface of a liquid and its subsequent path.

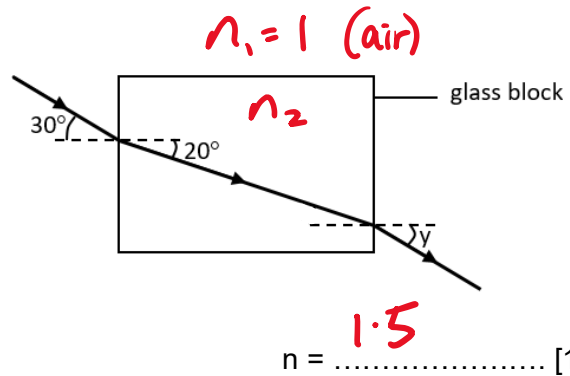


The refractive index of the liquid is given by

- A** $\frac{\sin 60^\circ}{\sin 50^\circ}$ **B** $\frac{\sin 30^\circ}{\sin 50^\circ}$ **C** $\frac{\sin 60^\circ}{\sin 40^\circ}$ **D** $\frac{\sin 40^\circ}{\sin 60^\circ}$ []

Reflection & Refraction of Light Diagnostic Quiz

5. The figure below shows the path of a light ray from air into a glass block.



- (a) Calculate the refractive index, n , of the glass.

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$1.0 \times \sin 30^\circ = n_2 \sin 20^\circ$$

$$n_2 = \frac{\sin 30^\circ}{\sin 20^\circ}$$

- (b) Given that the speed of light in air is 3.0×10^8 m/s, calculate the speed of light, v , in glass.

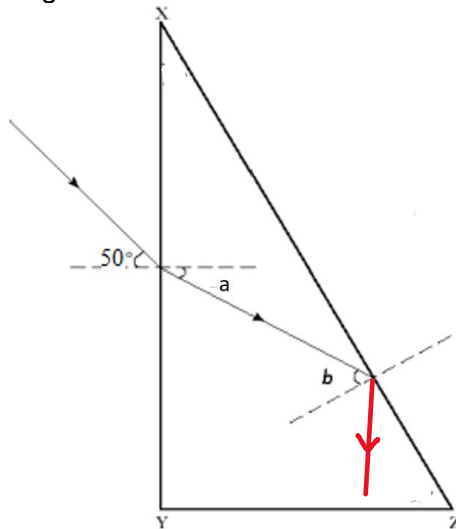
$$v = \frac{3.0 \times 10^8}{1.4619}$$

$$v = 2.1 \times 10^8 \text{ m s}^{-1}$$
 [1]

- (c) State the value of angle y .

$$y = 30^\circ$$
 [1]

6. The figure below shows a ray of light entering at the face **XY** of a glass prism. The refractive index of the glass for this light is 1.49.



- (a) Calculate angle a .

$$1.49 \sin a = 1.0 \sin 50^\circ, \quad a = \sin^{-1} \left(\frac{\sin 50^\circ}{1.49} \right), \quad a = 31^\circ$$
 [1]

- (b) Calculate the critical angle for the glass.

$$\theta_c = \sin^{-1} \left(\frac{1}{1.49} \right)$$

$$= 42^\circ$$

[1]

- (c) At face **XZ**, the angle of incidence b is 59° . Sketch what happens to the ray of light at face **XZ**.

[1]