



# Physics

20  
25

Second secondary  
grade  
Weekly Assessment

Week  
8

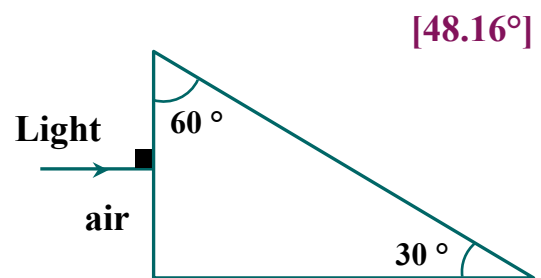
Prepare and review

Science Development Office

- 1) In the figure: An equilateral triangular prism made of glass with an absolute refractive index of 1.5. A light ray falls perpendicularly on one of the faces.
- (a) Complete the path of the ray until it emerges? Mention the reason
- (b) Find the value of the angle of emergence of the ray. (0°)
- (c) Find the value of the acute angle between the directions of the incident and outgoing rays.

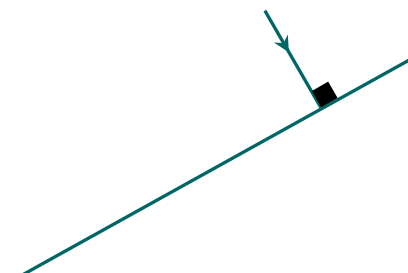


- 2) Trace the path of the light ray falling on the face of the glass prism (as shown in the figure) until it emerges, knowing that the critical angle of the prism is equal to  $42^\circ$ , then calculate the value of the emergence angle for this ray.



- 3) A light ray falls on one face of a triangular prism at an angle of  $45^\circ$  and emerges at an angle of  $52^\circ$  from the other face of the prism. If the refractive index of the prism material is 1.5, calculate the apex angle of the prism. (59.6°)

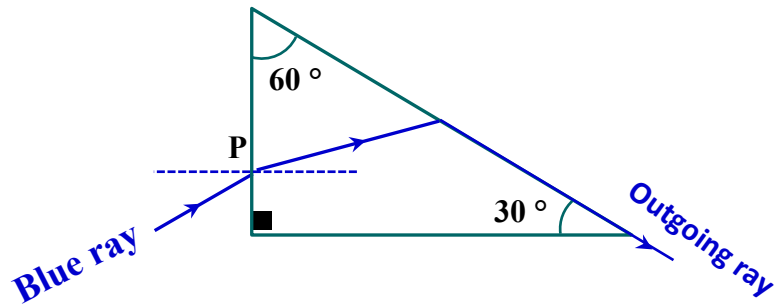
- 4) A perpendicular light beam falls on the face of a triangular prism. The refractive index of its material is 1.5 as shown in the figure. Trace the path of the light beam inside the prism in your answer booklet, then find the angle at which it emerges the prism



5) In the opposite figure: If the blue ray falls on one face of the prism at point P and the angle of refraction is  $23^\circ$ , then falls on the other face at point Q and the ray emerges tangent to the surface QR, find:

(a) the critical angle for blue light. [37°]

(b) the refractive index of the prism material for blue light. [1.66]



6) A triangular prism with a apex angle of  $45^\circ$ . A ray of light falls perpendicular to one of its faces and emerges tangent to the other face. Calculate the refractive index of its material. [1.414]

7) A light ray fell on one of the faces of an equilateral triangular prism and its angle of refraction was  $19^\circ$ . It came out tangent to the other face. Find the refractive index of its material. [1.52]

8) A light ray fell in the air on one of the faces of a triangular glass prism with a apex angle of  $72^\circ$ . The ray refracted at an angle of  $30^\circ$  and emerged tangent to the other face. Find:

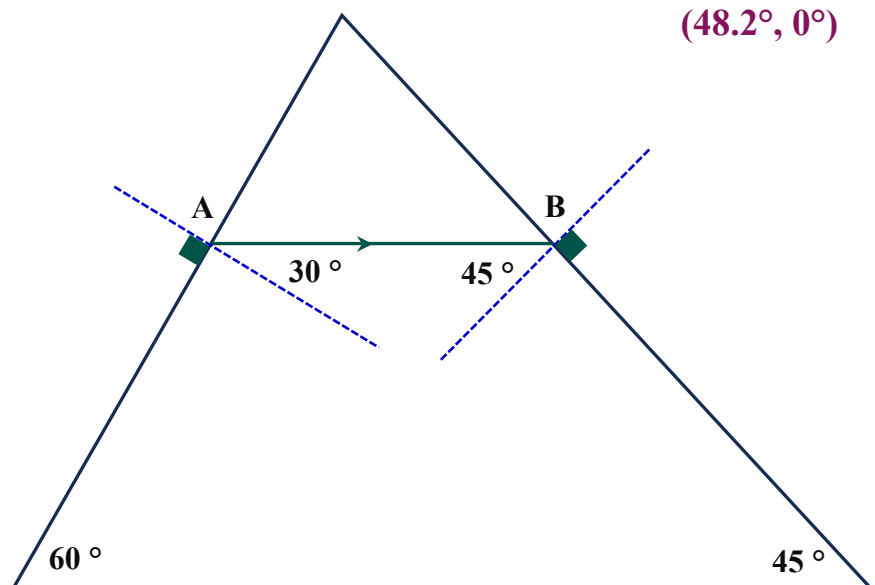
(a) The critical angle between the glass and the air. [42°]

(b) The refractive index of the prism material. [1.49]

(c) The sine of the first angle of incidence. [0.745]

9) A triangular prism with a apex angle of  $70^\circ$ , calculate the minimum angle of incidence of the light ray falling on the prism if you know that this ray emerges tangent to the other face of the prism ( $n = 1.58$ ). [53.8°]

- 10) A light ray falls on one face of a triangular prism with an apex angle of  $30^\circ$  and emerges perpendicularly from the other face. Calculate the angle of incidence of the light ray if the refractive index of the prism material is  $\sqrt{3}$ . [60°]
- 11) A ray falls on a glass triangular prism at an angle of  $60^\circ$  and emerges at an angle of  $30^\circ$ . If you know that the refractive index of the prism material is 1.6, Find the apex angle of the prism. [51°]
- 12) A triangular prism with an apex angle of  $30^\circ$ . A ray falls perpendicularly on one of its sides and deviates by  $20^\circ$ . Calculate the refractive index of the prism material. [1.532]
- 13) A light ray falls at an angle of  $60^\circ$  on one of its faces. An equilateral triangular prism with a refractive index of  $\sqrt{3}$ . Find the angle of emergence and the angle of deviation of the ray. [60°, 60°]
- 14) In the opposite figure:  
If the critical angle of the prism material is  $42^\circ$ , draw the rays and calculate the value of both the angle of incidence at A and the angle of emergence from the prism (48.2°, 0°)



15) In the opposite figure: An equilateral triangular prism made of glass with an absolute refractive index of 1.5. A light ray falls perpendicular to the face.

Complete the path of the ray until it emerges, giving reasons. Find:

(a) The angle of emergence of the ray. [0 °]

(b) The acute angle between the directions of the incident and emergence rays.

[60 °]

