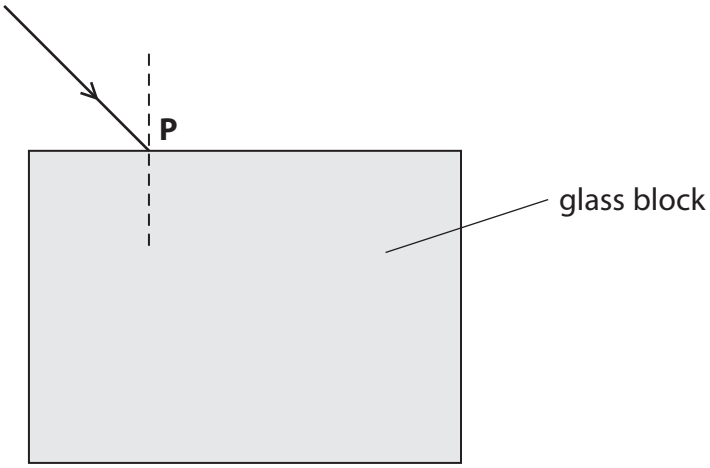
5 A student uses a rectangular glass block to determine the refractive index of glass.

The diagram shows a ray of red light in air as it enters the glass block at **P**.

The normal at **P** is shown as a dotted line.



(a) Complete the diagram by

- drawing the ray that continues inside the block
- labelling the angle of incidence (*i*) and the angle of refraction (*r*)
- drawing the ray that leaves the block.

(4)

(b) The student measures values for the angle of incidence (*i*) and the angle of refraction (*r*).

i	60°
r	34°
sin *i*	
sin *r*	

(i) Complete the table by inserting values for sin *i* and sin *r*.

(1)

(ii) State the equation that links refractive index, angle of incidence (*i*) and angle of refraction (*r*).

(1)

(iii) Calculate the refractive index of the glass.

(2)

Refractive index = ...

(c) How should the student continue the investigation to obtain a more accurate value for the refractive index of glass?

(3)

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(Total for Question 5 = 11 marks)