4 A student is investigating refraction of light.

(a) What is **refraction**?

(1)

.....

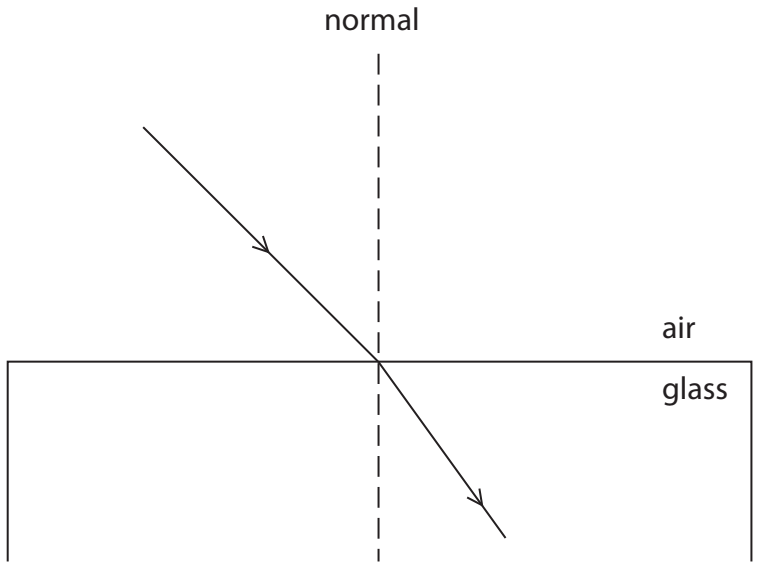
.....

.....

(b) The diagram shows a ray of light travelling from air to glass.

Add labels to show the angle of incidence, *i*, and the angle of refraction, *r*.

(2)

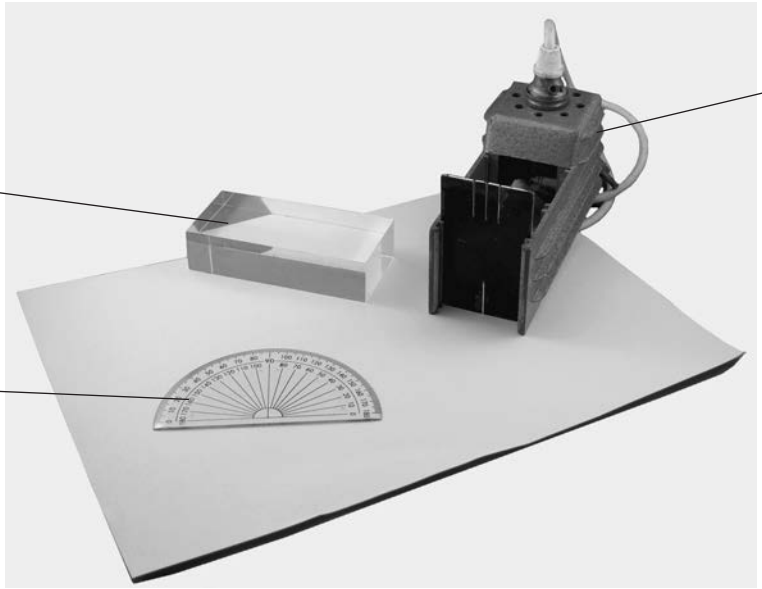


(c) The student wants to find the refractive index of the glass.

(i) State the equation linking refractive index, angle of incidence and angle of refraction.

(1)

(ii) The photograph shows the apparatus the student has available.



Describe how the student should carry out the experiment.

You should include:

- what the student should measure
- how the measurements should be made
- how the student should use a graph to find the refractive index.

(6)

(Total for Question 4 = 10 marks)