10 Diagram 1 shows a ray of violet light entering a prism.

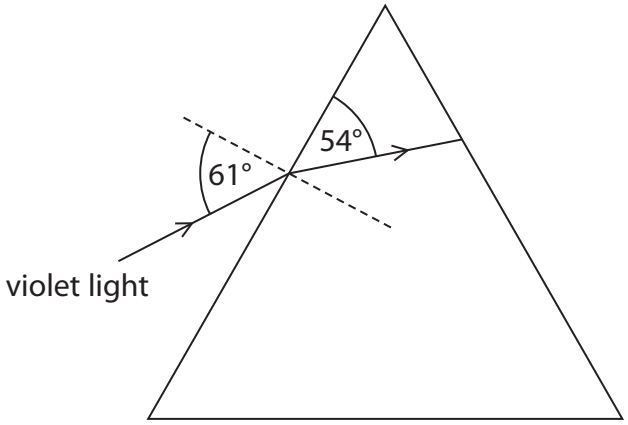

Diagram 1

(a) (i) Calculate the angle of refraction for the violet light.

(1)

angle of refraction = ... degrees

(ii) State the formula linking refractive index, angle of incidence and angle of refraction.

(1)

(iii) Calculate the refractive index of the prism for violet light.

Give your answer to 2 significant figures.

(3)

refractive index = ...

Diagram 2 shows rays of red light and violet light entering the same prism.

Red light has a longer wavelength than violet light.

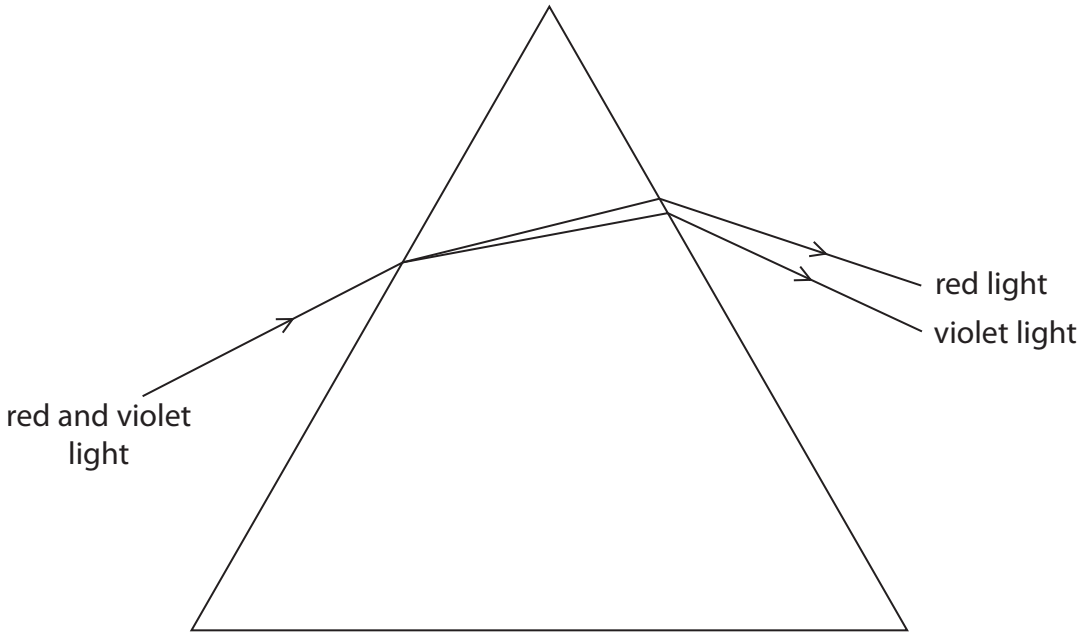

Diagram 2

(b) Deduce a possible relationship between the wavelength and the refractive index for colours of the visible spectrum.

(3)

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(Total for Question 10 = 8 marks)