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

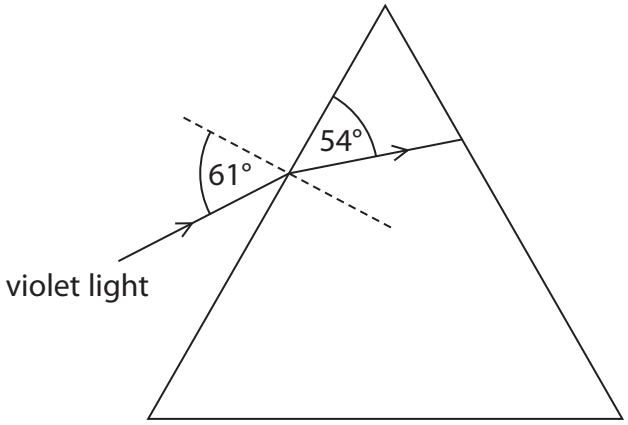


**Diagram 1**

(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.

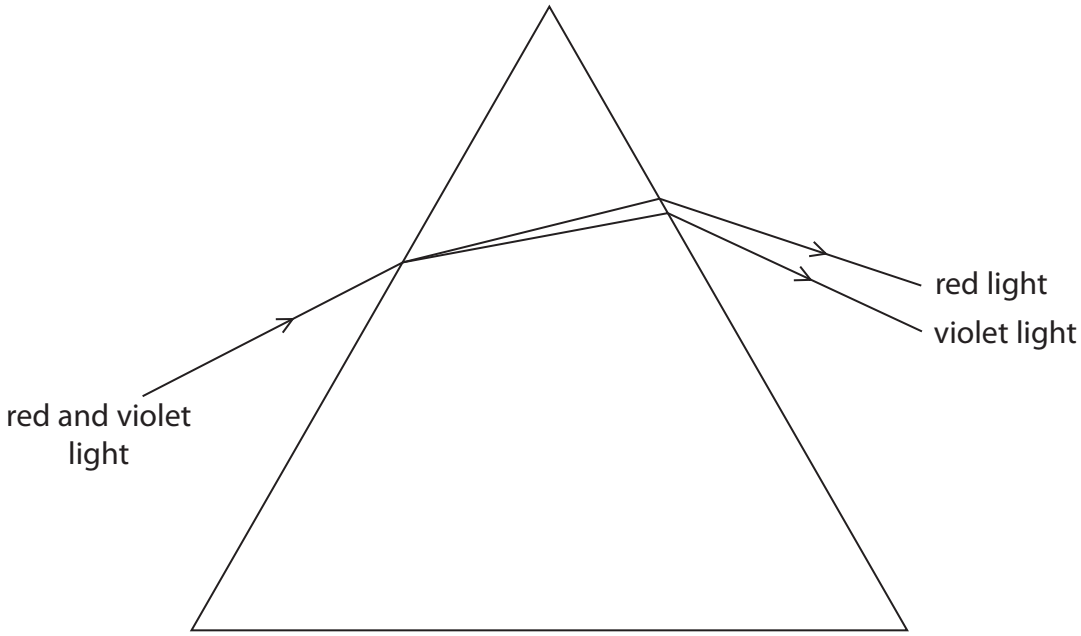


**Diagram 2**

(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)**