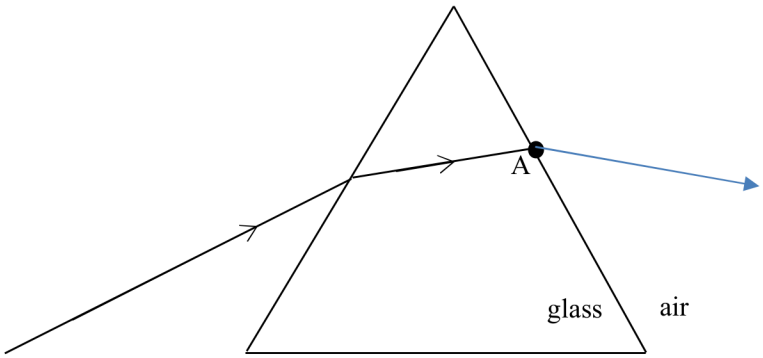
Question Number	Answer		Mark
12ai	Angle of incidence = 58° **and** angle of refraction = 40° Use of $n_1\sin\theta_1 = n_2\sin\theta_2$ Refractive index of glass = 1.3 (Allow MP2 if angles of 32° and 50° are used) <u>Example of calculation</u> $n_1\sin\theta_1 = n_2\sin\theta_2$ $1.00 \times \sin 58° = n_2 \times \sin 40°$ $n_2 = 1.32$	(1) (1) (1)	**3**
12aii	Ray drawn refracting away from the normal (Normal line does not need to be drawn on diagram)  	(1)	**1**
12b	Use of $n = c/v$ with $c = 3.00 \times 10^8$ ms^{-1} and $n = 1.63$ Speed of light in glass = 1.8×10^8 m s^{-1} <u>Example of calculation</u> $v = \frac{c}{n} = \frac{3.00 \times 10^8 \text{ m s}^{-1}}{1.63} = 1.84 \times 10^8 \text{ m s}^{-1}$	(1) (1)	**2**
	Total for question 12		**6**