11(a)	Carry out a correct method for finding a vector equation for m
	Obtain $\mathbf{r} = \begin{pmatrix}1\\5\\3\end{pmatrix} + \lambda\begin{pmatrix}1\\1\\2\end{pmatrix}$
11(b)	Express general point of the second line in component form, i.e. $(1 + 2\mu, -3 - 2\mu, 1 + 3\mu)$
	Equate at least two pairs of corresponding components and solve for λ or for μ
	Obtain $\lambda = -4$ or $\mu = -2$
	Obtain position vector of point of intersection is $\begin{pmatrix}-3\\1\\-5\end{pmatrix}$

11(c)	Find $\overrightarrow{CP}$ for a general point P on m, e.g. $\begin{pmatrix}0\\8\\2\end{pmatrix} + \lambda\begin{pmatrix}1\\1\\2\end{pmatrix}$
	Calculate scalar product of $\overrightarrow{CP}$ and a direction vector for m and equate the result to zero
	Obtain $\lambda = -2$
	Obtain answer $\begin{pmatrix}-1\\3\\-1\end{pmatrix}$

8(a)	Use a correct method to form an equation for l_1
	Obtain $\mathbf{r} = (2\mathbf{i} + 4\mathbf{k}) + \lambda(3\mathbf{i} + \mathbf{j} + 2\mathbf{k})$
8(b)	Express general point of a line in component form
	Equate two pairs of components of l_2 and *their* l_1, and solve for λ or μ
	Obtain e.g. $\lambda = -\frac{1}{5}$, $\mu = -\frac{3}{5}$
	Show that this does not fit the third component and hence the lines do not intersect.
8(c)	Carry out the correct process for evaluating the scalar product of the direction vector of l_1 and l_2
	Using the correct process for the moduli, divide their scalar product by the product of the moduli of their vectors and evaluate the inverse cosine of the result
	Obtain AWRT $38.2°$ or 0.667 radians

9(a)	Carry out a correct method for finding a vector equation for the line through A and B
	Obtain $\mathbf{r} = \begin{pmatrix} 1 \\ -4 \\ 2 \end{pmatrix} + \lambda \begin{pmatrix} -3 \\ 5 \\ 1 \end{pmatrix}$
9(b)	Obtain a direction vector for $\overrightarrow{AC} = \begin{pmatrix} 1 \\ 7 \\ 3 \end{pmatrix}$
	Carry out correct process for evaluating the scalar product of $\overrightarrow{AB}$ and $\overrightarrow{AC}$ or $\overrightarrow{BA}$ and $\overrightarrow{CA}$
	Using the correct process for the moduli, divide their scalar product by the product of the moduli
	Obtain $(\cos BAC =) \sqrt{\frac{35}{59}}$ or exact simplified equivalent

9(c)	Use area $= \frac{1}{2}\left\lvert\overrightarrow{AB}\right\rvert\left\lvert\overrightarrow{AC}\right\rvert \sin BAC$ with *their* $\left\lvert\overrightarrow{AB}\right\rvert\left\lvert\overrightarrow{AC}\right\rvert$
	Use $\sin x = \sqrt{1-\cos^2 x}$ or an equivalent exact method with *their* $\cos x$ (< 1) to obtain an exact value for $\sin x$ $\frac{1}{2}\sqrt{35}\sqrt{59}\sqrt{1-\frac{35^2}{35\times 59}} = \frac{1}{2}\sqrt{35}\sqrt{59}\frac{\sqrt{840}}{\sqrt{35}\sqrt{59}}$
	Obtain answer $\sqrt{210}$ from correct working