22	$(\text{gradient } AB =)\ \dfrac{10--5}{p--1}\left(=\dfrac{10+5}{p+1}=\dfrac{15}{p+1}\right)$ oe or $(\text{gradient } BC =)\ \dfrac{q--5}{8--1}\left(=\dfrac{q+5}{8+1}=\dfrac{q+5}{9}\right)$ oe or $(\text{gradient } AC =)\ \dfrac{10-q}{p-8}$ oe **or** $\sqrt{(p--1)^2+(10--5)^2}$ or $(p--1)^2+(10--5)^2$ or $\sqrt{(8--1)^2+(q--5)^2}$ or $(8--1)^2+(q--5)^2$ or $\sqrt{(8-p)^2+(q-10)^2}$ or $(8-p)^2+(q-10)^2$ oe		5	M1 for finding the gradient of *AB* or *BC* or *AC* This may be seen embedded in $m_1 \times m_2 = -1$ **or** for finding the length of *AB* or *BC* or *AC* (or AB^2 etc)
	• $'\dfrac{15}{p+1}'\times'\dfrac{q+5}{9}'=-1$ or $'\dfrac{15}{p+1}'=-'\dfrac{9}{q+5}'$ or $9p+15q=-84$ oe • $'\dfrac{10-q}{p-8}'=-\dfrac{6}{7}$ or $6p-7q=-22$ oe • $(p--1)^2+(10--5)^2+(8--1)^2+(q--5)^2=(8-p)^2+(q-10)^2$ or $18p+30q=-168$ **Alternative for the second point** • $\dfrac{6}{7}p+10=-8\times-\dfrac{6}{7}+q$ oe			M2 for two out of the three of: • using $m_1 \times m_2 = -1$ • using the gradient of *AC* to form an equation. • using Pythagoras theorem If not M2, then M1 for one of the equations. **Alternative for the second point** obtaining this equation by using $y = mx + c$ with coordinates of *A* and *C* separately, and then eliminating c)

	Elimination E.g. $54p + 90q = -504$ $54p - 63q = -198$ With subtraction **or** $153q = -306$ **or** $63p + 105q = -588$ $90p - 105q = -330$ With the operation of addition **or** $153p = -918$	Substitution E.g. $6\left(\frac{-84-15q}{9}\right) = -22$ or $6p - 7\left(\frac{-84-9p}{15}\right) = -22$ or $9\left(\frac{-22+7q}{6}\right) + 15q = -84$ or $9p + 15\left(\frac{6p+22}{7}\right) = -84$			M1 (dep M3) for correct method to eliminate one variable – multiplying one or both equations so the coefficient of x or y is the same in both, with the correct operation to eliminate one variable (condone one arithmetic error) **or** isolating p or q in one equation and substituting into the other (condone one arithmetic error).
			$p = -6$ and $q = -2$		A1 for $p = -6$ and $q = -2$ Must be clearly identified
					Total 5 marks