9	**(a)**		**Summary method:**		
			$\overrightarrow{OM} = \frac{1}{2}(\mathbf{b} + \mathbf{c})$ or $\mathbf{b} + \frac{1}{2}(-\mathbf{b} + \mathbf{c})$ oe	**B1**	Can be implied
			$\overrightarrow{AM}$ or $\overrightarrow{MA}$ attempted in terms of **a**, **b** and **c**	**M1**	May be included in working, eg $\overrightarrow{AX} = \frac{2}{3}(\frac{1}{2}(\mathbf{b} + \mathbf{c}) - \mathbf{a})$
			$(= \pm(\frac{1}{2}(\mathbf{b} + \mathbf{c}) - \mathbf{a})$ oe)		Not necessarily correct
			$\overrightarrow{OX} = \mathbf{a} + \frac{2}{3}\overrightarrow{AM}$ or $\overrightarrow{OM} + \frac{1}{3}\overrightarrow{MA}$ oe		
			attempted in terms of **a**, **b** and **c**	**M1**	Not necessarily correct
			$\overrightarrow{OX} = \frac{1}{3}(\mathbf{a} + \mathbf{b} + \mathbf{c})$	**A1**	or equivalent simplified form

9	(a) ctd		**Examples of methods using the above**		**Other correct methods may be seen** Allow inadequate notation
			$\overrightarrow{OM} = \frac{1}{2}(\mathbf{b}+\mathbf{c})$	**B1**	
			$\overrightarrow{AX} = \frac{2}{3}\overrightarrow{AM} = \frac{2}{3}(\frac{1}{2}(\mathbf{b}+\mathbf{c})-\mathbf{a})$	**M1**	for $\overrightarrow{AM} = (\frac{1}{2}(\mathbf{b}+\mathbf{c})-\mathbf{a})$ implied
			$\overrightarrow{OX} = \mathbf{a} + \frac{2}{3}\overrightarrow{AM} = \mathbf{a} + \frac{2}{3}(\frac{1}{2}(\mathbf{b}+\mathbf{c})-\mathbf{a})$	**M1**	
			$= \frac{1}{3}(\mathbf{a}+\mathbf{b}+\mathbf{c})$	**A1**	
			$\overrightarrow{BM} = \frac{1}{2}(-\mathbf{b}+\mathbf{c})$		
			$\overrightarrow{AM} = \overrightarrow{AO} + \overrightarrow{OB} + \overrightarrow{BM}$		
			$= -\mathbf{a} + \frac{1}{2}\mathbf{b} + \frac{1}{2}\mathbf{c}$	**B1** **M1**	Implied
			$\overrightarrow{OX} = \mathbf{a} + \frac{2}{3}(-\mathbf{a} + \frac{1}{2}\mathbf{b} + \frac{1}{2}\mathbf{c})$	**M1**	
			$= \frac{1}{3}(\mathbf{a}+\mathbf{b}+\mathbf{c})$	**A1**	
			$\overrightarrow{OM} = \frac{1}{2}(\mathbf{b}+\mathbf{c})$	**B1**	
			$\overrightarrow{XM} = \frac{1}{3}\overrightarrow{AM}$		
			$= \frac{1}{3}(\frac{1}{2}(\mathbf{b}+\mathbf{c})-\mathbf{a})$	**M1**	for $\overrightarrow{AM} = (\frac{1}{2}(\mathbf{b}+\mathbf{c})-\mathbf{a})$ implied
			$\overrightarrow{OX} = \overrightarrow{OM} - \frac{1}{3}\overrightarrow{AM}$		equivalent to $\overrightarrow{OM} + \frac{1}{3}\overrightarrow{MA}$
			$= \frac{1}{2}(\mathbf{b}+\mathbf{c}) - \frac{1}{3}(\frac{1}{2}(\mathbf{b}+\mathbf{c})-\mathbf{a})$	**M1**	
			$= \frac{1}{3}(\mathbf{a}+\mathbf{b}+\mathbf{c})$	**A1**	

Question			Answer	Mark	Guidance
				[4]	
9	**(b)**		$\overrightarrow{OF}$ = **a** + **b** + **c** Hence *X* lies on *OF*, so *AM* and *OF* intersect	**B1*** **B1dep** **[2]**	Both statements needed. NB dep on B1