Question Number	Scheme	Marks
8		
(a)	(i) $\overrightarrow{AB} = \overrightarrow{OB} - \overrightarrow{OA} = \mathbf{b} - \mathbf{a}$	M1A1
	(ii) $\overrightarrow{OM} = \overrightarrow{OA} + \frac{1}{2}\overrightarrow{AB} = \frac{1}{2}(\mathbf{a} + \mathbf{b})$	M1A1
	(iii) $\overrightarrow{PM} = \overrightarrow{PA} + \overrightarrow{AM} = \frac{2}{5}\mathbf{a} + \frac{1}{2}(\mathbf{b} - \mathbf{a}) = \frac{1}{2}\mathbf{b} - \frac{1}{10}\mathbf{a}$	M1A1 (6)
(b)	$\overrightarrow{OP} + \lambda\overrightarrow{PM} = \overrightarrow{OX}$	M1
	$\frac{3}{5}\mathbf{a} + \lambda\left(\frac{1}{2}\mathbf{b} - \frac{1}{10}\mathbf{a}\right) = \mu\mathbf{b}$	A1
	$\frac{3}{5} = \frac{\lambda}{10} \quad \lambda = 6$	
	$\mu = \frac{1}{2}\lambda = 3$	M1
	$\therefore \overrightarrow{OX} = 3\mathbf{b}$	A1 (4)
(c)	$\text{area } \Delta OAM = \frac{1}{2}\text{area } \Delta OAB$	
	$\text{area } \Delta OAB = \frac{1}{3}\text{area } \Delta OAX$	M1
	$\therefore \text{area } \Delta OAM = \frac{1}{2} \times \frac{1}{3}\text{area } \Delta OAX = \frac{1}{6}\text{area } \Delta OAX$	M1
	$\text{ratio} = 1:6$	A1 (3) [13]