22	eg $\overrightarrow{ON} = 8\mathbf{a} + \frac{1}{2}(6\mathbf{b} - 8\mathbf{a})(= 3\mathbf{b} + 4\mathbf{a})$ **or** $\overrightarrow{ON} = 6\mathbf{b} + \frac{1}{2}(-6\mathbf{b} + 8\mathbf{a})(= 3\mathbf{b} + 4\mathbf{a})$ **or** $\overrightarrow{NO} = \frac{1}{2}(8\mathbf{a} - 6\mathbf{b}) - 8\mathbf{a}(= -4\mathbf{a} - 3\mathbf{b})$ **or** $\overrightarrow{NO} = -6\mathbf{b} + \frac{1}{2}(6\mathbf{b} - 8\mathbf{a})(= -3\mathbf{b} - 4\mathbf{a})$ **or** $\overrightarrow{AM} = -8\mathbf{a} + \frac{1}{3}(6\mathbf{b})(= 2\mathbf{b} - 8\mathbf{a})$ **or** $\overrightarrow{AM} = -8\mathbf{a} + 6\mathbf{b} - \frac{2}{3}(6\mathbf{b})(= 2\mathbf{b} - 8\mathbf{a})$ **or** $\overrightarrow{MA} = 8\mathbf{a} - \frac{1}{3}(6\mathbf{b})(= 8\mathbf{a} - 2\mathbf{b})$ **or** $\overrightarrow{MA} = \frac{2}{3}(6\mathbf{b}) + 8\mathbf{a} - 6\mathbf{b}(= 8\mathbf{a} - 2\mathbf{b})$		5	M1	a correct expression for $\overrightarrow{ON}$ **or** $\overrightarrow{NO}$ **or** $\overrightarrow{AM}$ **or** $\overrightarrow{MA}$
	$\overrightarrow{OP} = \mu(3\mathbf{b} + 4\mathbf{a})$ and one of eg $\overrightarrow{OP} = 8\mathbf{a} + x(2\mathbf{b} - 8\mathbf{a})$ $(= (8 - 8x)\mathbf{a} + 2x\mathbf{b})$ or $\overrightarrow{OP} = 2\mathbf{b} + y(8\mathbf{a} - 2\mathbf{b})(= (2 - 2y)\mathbf{b} + 8y\mathbf{a})$			M2	oe (M1 for one correct expression for $\overrightarrow{OP}$) (where μ, x, y are scalars)
	eg $\frac{4}{3} = \frac{8y}{2 - 2y}$ **or** $\frac{4}{3} = \frac{8 - 8x}{2x}$ oe **or** $3\mu = 2x$ **and** $4\mu = 8 - 8x$ **or** $3\mu = 2 - 2y$ **and** $4\mu = 8y$			M1	A correct expression to find the position of P along ON **or** two correct simultaneous equations coming from the expressions for $\overrightarrow{OP}$
		$2\mathbf{a} + \frac{3}{2}\mathbf{b}$		A1	dep on M3, oe eg $2\mathbf{a} + 1.5\mathbf{b}$
					Total 5 marks

23	(i)		(−4, 7)	1	B1
	(ii)		(5, 10)	1	B1
					Total 2 marks