Question number	Scheme	Marks
5 (a)	$1+anx+\frac{n(n-1)}{2}a^2x^2+\frac{n(n-1)(n-2)}{3!}a^3x^3$	M1 A1 [2]
(b)	$an=8 \qquad \frac{n(n-1)}{2}a^2=30$	
	$\frac{n(n-1)}{2}\left(\frac{8}{n}\right)^2=30$ or $\frac{\left(\frac{8}{a}\right)\left(\frac{8}{a}-1\right)}{2}a^2=30$	M1
	$32n-32=30n \rightarrow n=$ or $64-8a=60 \rightarrow a=$	dM1
	$n=16 \qquad a=\frac{1}{2}$	A1 A1 [4]
(c)	$\frac{"16"\times("16"-1)("16"-2)}{3!}\times\left("\frac{1}{2}"\right)^3=70$	M1 A1 [2]
		Total 8 marks

Part	Mark	Notes
(a)	**M1**	For an attempt to find the binomial expansion • The expansion must begin with 1 or 1^n • The denominators must be correct (ie. 2! And 3!) on the third and fourth terms. The power of x must be correct (ie. Must see x, x^2 and x^3, with the correct corresponding denominators). Simplification not necessary – may see $(ax)^2$ and $(ax)^3$
	A1	For a fully correct expression (Allow 1^n for 1) - must see a^2x^2 and a^3x^3, but 2! And 3! is acceptable
(b)	**M1**	For correct substitution of either $\frac{8}{n}$ or $\frac{8}{a}$ into their coefficient of x^2
	dM1	For rearranging and forming a linear equation, leading to $a=$ or $n=$
	A1	For $n=16$
	A1	For $a=\frac{1}{2}$
(c)	**M1**	For correct substitution seen of their n and a into their coefficient of x^3
	A1	For 70