Question number	Scheme	Marks
5 (a)	$1 + anx + \dfrac{n(n-1)}{2}a^2x^2 + \dfrac{n(n-1)(n-2)}{3!}a^3x^3$	M1 A1 (2)
(b)	$an = 15$	B1
	$\dfrac{n(n-1)}{2}a^2 = \dfrac{n(n-1)(n-2)}{6}a^3 \Rightarrow \left(3 = (n-2)a\right)$	M1A1
	Solving simultaneously leading to $a = \ldots$ or $n = \ldots$ $a = 6$ and $n = 2.5$	M1 A1 A1 (6)
(c)	$\dfrac{'2.5' \times 1.5 \times 0.5 \times '6'^3}{6} = 67.5$	M1 A1 (2)
		Total 10 marks

Part	Mark	Notes
(a)	M1	For an attempt to expand the given expression up to the term in x^3 The definition of an attempt is as follows: • The first two terms must be correct $[1 + anx]$ • The powers of x must be correct • The denominators must be correct • Simplification not required e.g accept $(ax)^2$ or $(ax)^3$ $(1+ax)^n = 1 + anx + \dfrac{n(n-1)}{2}a^2x^2 + \dfrac{n(n-1)(n-2)}{3!}a^3x^3$
	A1	For a fully correct expansion. Simplification not required.
(b)	B1	For setting $an = 15$
	M1	For setting their coefficient of x^2 equal to their coefficient of x^3 $\dfrac{n(n-1)}{2}a^2 = \dfrac{n(n-1)(n-2)}{6}a^3$ Do not condone the presence of either x^2 or x^3 for this mark unless there is later recovery.
	A1	For the fully correct equation simplified or unsimplified. $\dfrac{n(n-1)}{2}a^2 = \dfrac{n(n-1)(n-2)}{6}a^3 \Rightarrow \left(3 = (n-2)a\right)$
	M1	For simplifying the correct equation above to an equation where the powers of a and n are 1 and attempting to solve the two equations simultaneously leading to $a = \ldots$ or $n = \ldots$ Condone one arithmetical slip at any point.
	A1	For either $a = 6$ or $n = 2.5$
	A1	For both $a = 6$ and $n = 2.5$
(c)	M1	For substituting their values of a and n into their coefficient of x^3 $\dfrac{'2.5' \times 1.5 \times 0.5 \times '6'^3}{6} = 67.5$ where $a, n \neq 1$ or 0
	A1	For 67.5