

Question			Answer	Mark	AO	Guidance
5	(a)		${}^9C_7 \times 2^7 \times 3^2$ or $36 \times 128 \times 9$ oe $= 41472$	M1 A1 [2]	1.1 1.1	May be implied by answer, allow use of 9C_2 Condone $41472x^7$ but not $41472x^2$
5	(b)	(i)	x^{10} and x^{11} or 10 and 11	B1 [1]	3.1a	Allow ${}^{21}C_{10}x^{10}$ and ${}^{21}C_{11}x^{11}$ oe
5	(b)	(ii)	$21 - r = r + 5$ or $r + r + 5 = 21$ or $r = \frac{21}{2} - 2\frac{1}{2}$ $r = 8$	M1 A1	2.1 1.1	May be implied by answer
			Alternative method 1 $\frac{21}{2} = 10.5$, hence terms are symmetrical about 10.5 [11 – 10 = 1, 12 – 9 = 3] 13 – 8 = 5, hence $r = 8$	M1 A1		oe soi
			Alternative method 2 ${}^{21}C_r = {}^{21}C_{r+5} = \frac{21!}{r!(21-r)!} = \frac{21!}{(r+5)!(21-(r+5))!}$ $(r+5)(r+4)(r+3)(r+2)(r+1)$ $= (21-r)(20-r)(19-r)(18-r)(17-r)$ e.g. $21 - r = r + 5$ or $17 - r = r + 1$ $r = 8$	M1 A1		No mark for this line unless correct answer is seen. May be implied by the correct answer.
			Alternative method 3 ${}^{21}C_8 = {}^{21}C_{13} = 203490$ $r = 8$	M1 A1		Both seen (trial and improvement). May be implied by A1.
				[2]		