Question Number	Scheme	Notes	Marks
1	$\sum_{r=1}^{n} r^2(r+2) = \sum_{r=1}^{n} r^3 + 2\sum_{r=1}^{n} r^2$ or $\sum_{r=1}^{n} r^3 + \sum_{r=1}^{n} 2r^2$	Correct split with 2 summations. Could be implied by correct work. Condone missing or incorrect summation limits.	B1
	$= \frac{1}{4}n^2(n+1)^2 + 2\times\frac{1}{6}n(n+1)(2n+1)$	Attempts to use both standard results and obtains an expression of the form $pn^2(n+1)^2 + qn(n+1)(2n+1)$ $p,\ q \neq 0$ Could be implied by immediate expansion	M1
	$= \frac{1}{12}n(n+1)\left[3n(n+1)+4(2n+1)\right]$ $= \frac{1}{12}n(n+1)(3n^2+11n+4)$	**d**M1: Attempts factorisation to obtain $\frac{1}{12}n(n+1)(an^2+bn+c)$ $a,b,c \neq 0$. Condone poor algebra. Could follow cubic or quartic. Allow a consistent a = ..., b = ..., c = ... if quadratic never seen simplified **Requires previous M mark.** A1: Correct expression or $a=3,\ b=11,\ c=4$ Allow e.g., $\frac{1}{12}n(n+1)$ written as $\frac{n}{12}(n+1)$	**d**M1 A1
	Note: $n(n+1)(3n^2+11n+4) = 3n^4+14n^3+15n^2+4n$		**Total 4**