Question Number	Scheme	Notes	Marks
4(a)	$(2r-1)^2 = 4r^2 - 4r + 1$	Correct expansion	B1
	$\sum_{r=1}^{n}(4r^2-4r+1) = 4\times\frac{1}{6}n(n+1)(2n+1) - 4\times\frac{1}{2}n(n+1) + n$ M1: Attempt to use at least one of the standard results correctly A1: Correct expression		M1A1
	$= \frac{1}{3}n\left[2(n+1)(2n+1) - 6(n+1) + 3\right]$	Attempt to factorise $\frac{1}{3}n(\ldots)$ Condone one slip but there must have been + n, not +1 in their expression for the sum	M1
	$= \frac{1}{3}n\left[4n^2 - 1\right]$*	Correct proof with no errors. There should be an intermediate step showing the expansion of $(n+1)(2n+1)$, or equivalent	A1*
	Condone poor or incorrect use of notation, e.g. Σ used at every step of the proof		
			(5)
(b)	$2r - 1 = 499 \Rightarrow r = 250$	Identifies the correct upper limit (may be implied)	B1
	$2r - 1 = 201 \Rightarrow r = 101$	Identifies the correct lower limit (may be implied)	B1
	$\sum_{r=101}^{250}(2r-1)^2 = \frac{1}{3}\times 250\left(4\times 250^2 - 1\right) - \frac{1}{3}\times 100\left(4\times 100^2 - 1\right)$ Uses the result from part (a) together with their upper limit and their lower limit – 1. A common mistake is to assume 500 and 200 are the limits, and in this case the mark is scored if 199 is used		M1
	= 19 499 950	Cao	A1
			(4)
			Total 9