Question	Scheme	Marks
3	$S_n < -450 \Rightarrow \frac{n}{2}\left(2\times 16+\left[n-1\right]\left(-5\right)\right) < -450$ $\Rightarrow 37n-5n^2 < -900 \Rightarrow 5n^2-37n-900>0$ $n=\frac{-\left(-37\right)\pm\sqrt{\left(-37\right)^2-4\times 5\times\left(-900\right)}}{2\times 5} \Rightarrow n=17.617..$ so $n=18$	M1A1 M1A1 [4]
		Total 4 marks

Question	Notes	Marks
3	Uses the correct summation formula and sets <, > or = to –450 $S_n < -450 \Rightarrow \frac{n}{2}\left(2\times 16+\left[n-1\right]\left(-5\right)\right) < -450$	M1
	Forms a correct 3TQ with their expression $37n-5n^2 < -900 \Rightarrow 5n^2-37n-900>0$ Accept <, > or = 0 and accept terms in any order.	A1
	Attempts to solve their 3TQ using a valid method. [See General Guidance} $n=\frac{-\left(-37\right)\pm\sqrt{\left(-37\right)^2-4\times 5\times\left(-900\right)}}{2\times 5} \Rightarrow n=...$	M1
	$n=17.617...$ so $n=18$ [Other root is – 10.217….]	A1
		Total 4 marks