Question Number	Scheme	Marks
1 (a)	$254 = 2 + 3(n-1) \Rightarrow n = ...$	M1
	85	A1
		(2)
(b)	$\frac{"85"}{2}(2\times 2 + ("85"-1)\times 3)$	M1
	10 880	A1
		(2)
		4 marks

(a)

M1: Attempts to find the number of terms.

Look for $254 = 2 + 3(n-1) \Rightarrow n = ...$, $3n - 1 = 254 \Rightarrow n = ...$ or $\left(\frac{254-2}{3}\right)+1$ o.e. condoning slips such as writing 254 as 245. The values of *a* and *d* must be correct.

Sight of either $\frac{254-2}{3}, \frac{252}{3}$ or 84 without any incorrect working can score this mark.

Note that $\frac{254}{3} = 84$ or similar calculations that give non-integer solutions (with no further working e.g. trial and error attempts) score M0 even if rounded

A1: 85.

An answer of 85 **with no incorrect working** or without any working scores both marks

…….

Alt (a) Trial and error attempts

You may see candidates using $2 + (n-1)\times 3$ with various values for *n*

M1: Attempts $2 + (n-1)\times 3$ with $n = 85$

A1: Achieves $2 + 84 \times 3 = 254$ **and** concludes 85 (terms)

……..

(b)

M1: Attempts the sum formula $\frac{n}{2}(2a + (n-1)d)$ or $\frac{n}{2}(a + l)$ following through on their value for *n*.

Look for $\frac{"85"}{2}(2\times 2 + ("85"-1)\times 3)$, $\frac{"85"}{2}(2\times 254 + ("85"-1)\times -3)$ or $\frac{"85"}{2}(2 + 254)$

The values of *a*, *d* and *l* if used must be correct (condoning a slip such as 245 for 254) but follow through on their value of *n* from part (a)

A1: 10 880.

This may be awarded even following an 85 in (a) that was found using an incorrect method

10 880 without working or following listing scores both marks.

Listing leading to an incorrect answer scores M0 A0

Question Number	Scheme	Marks
2 (a)	$(2-5x)^8 = 2^8 + {}^8C_1(2)^7(-5x)^1 + {}^8C_2(2)^6(-5x)^2 + {}^8C_3(2)^5(-5x)^3 + \ldots$	
	Constant term 2^8 OR 256	B1
	Correct form for terms 3 or 4: ${}^8C_2(2)^6(\pm 5x)^2$ or ${}^8C_3(2)^5(\pm 5x)^3$	M1
	Correct un-simplified expansion for 2 out of 3 terms from terms 2, 3 and 4: $\ldots + 8(2)^7(-5x)^1 + 28(2)^6(-5x)^2 + 56(2)^5(-5x)^3 + \ldots$	A1
	Correct simplified expansion $256 - 5120x + 44800x^2 - 224000x^3 + \ldots$	A1
		(4)
(b)	-0.01	B1
		(1)
		(5 marks)

(a)

B1: Correct constant term, 2^8 OR 256. It must be on its own and not as ${}^8C_8 2^8$ for example

M1: Correct form for term 3 or term 4. Allow with C notation (o.e).
Examples of correct forms include:
For term three ${}^8C_2(2)^6 \times (-5x)^2$ and $28 \times 64 \times \pm 25x^2$
For term four $\binom{8}{3} \times (2)^5 \times -125x^3$ and $\pm 224000x^3$
Condone a missing sign or bracket. So, allow terms such as ${}^8C_2(2)^6 \times 5x^2$ and $56 \times (2)^5 \times 125x^3$
Look for the correct binomial coefficient, the correct power of 2 and the correct power of x on $5x$

A1: Two out of three correct un-simplified (or simplified) terms from terms 2, 3 or 4
$\ldots + 8(2)^7(-5x)^1 + 28(2)^6(\pm 5x)^2 + 56(2)^5(-5x)^3 + \ldots$
The binomial coefficient must now be numerical.

A1: $256 - 5120x + 44800x^2 - 224000x^3 + \ldots$ which must be in simplest form.
Accept $256 + -5120x + 44800x^2 + -224000x^3 + \ldots$ or a list $256, -5120x, 44800x^2, -224000x^3$.
Withhold this mark if they decide to divide by 4 for example, but condone the sight of extra terms, for example in x^4 or higher.

(b)

B1: -0.01 o.e. such as $-\frac{1}{100}$. This must be clearly stated and not embedded in the $(2-5x)^8$
Ignore any attempts to calculate the result