

Question	Scheme	Marks	AOs
1(a)	$16 + (21-1) \times d = 24 \Rightarrow d = \dots$	M1	1.1b
	$d = 0.4$	A1	1.1b
	Answer only scores both marks.		
		(2)	
(b)	$S_n = \frac{1}{2}n\{2a + (n-1)d\} \Rightarrow S_{500} = \frac{1}{2} \times 500\{2 \times 16 + 499 \times "0.4"\}$	M1	1.1b
	$= 57900$	A1	1.1b
	Answer only scores both marks		
		(2)	
	(b) Alternative using $S_n = \frac{1}{2}n\{a + l\}$		
	$l = 16 + (500-1) \times "0.4" = 215.6 \Rightarrow S_{500} = \frac{1}{2} \times 500\{16 + "215.6"\}$	M1	1.1b
	$= 57900$	A1	1.1b

(4 marks)

Notes

(a)

M1: Correct strategy to find the common difference – must be a correct method using $a = 16$, and $n = 21$ and the 24. The method may be implied by their working.

If the AP term formula is quoted it must be correct, so use of e.g. $u_n = a + nd$ scores M0

A1: Correct value. Accept equivalents e.g. $\frac{8}{20}, \frac{4}{10}, \frac{2}{5}$ etc.

(b)

M1: Attempts to use a correct sum formula with $a = 16$, $n = 500$ and their numerical d from part (a)

If a formula is quoted it must be correct (it is in the formula book)

A1: Correct value

Alternative:

M1: Correct method for the 500th term and then uses $S_n = \frac{1}{2}n\{a + l\}$ with their l

A1: Correct value

Note that some candidates are showing implied use of $u_n = a + nd$ by showing the following:

$$(a) d = \frac{24-16}{21} = \frac{8}{21} \quad (b) S_{500} = \frac{1}{2} \times 500 \left\{ 2 \times 16 + 499 \times \frac{8}{21} \right\} = 55523.80952\dots$$

This scores (a) M0A0 (b) M1A0