

Q	Marking instructions	AO	Marks	Typical solution
9(a)	Forms an appropriate equation in $x$ only by either using the differences of at least one pair of terms or Using the mean of the first and third term = the second term Condone missing brackets or Forms two simultaneous equations in $x$ and $d$ or Substitutes $x = 5$ and demonstrates that the three terms obtained, 15, 26 and 37 have a common difference of 11 or Shows that the sum formula for an arithmetic series works when $x = 5$ The approaches that substitute $x = 5$ score a maximum of M1 A0 R0	3.1a	M1	$5x + 1 - (2x + 5) = 6x + 7 - (5x + 1)$ $3x - 4 = x + 6$ $x = 5$ <p>Therefore <math>x = 5</math> is the only solution</p>
	Obtains a correct equation or Obtains two correct simultaneous equations in $x$ and $d$ Need not be simplified	1.1b	A1	
	Solves to conclude that $x = 5$ is the only solution Must include the word 'only' OE	2.1	R1	
	<b>Subtotal</b>		<b>3</b>	

Q	Marking instructions	AO	Marks	Typical solution
9(b)(i)	Obtains 15	1.1b	B1	$a = 15$
	<b>Subtotal</b>		<b>1</b>	

Q	Marking instructions	AO	Marks	Typical solution
9(b)(ii)	Obtains 11	1.1b	B1	$d = 11$
	<b>Subtotal</b>		<b>1</b>	

Q	Marking instructions	AO	Marks	Typical solution
9(c)	Forms an expression for the sum to $N$ or $N + 1$ terms using their $a$ and $d$ values Need not be simplified Condone missing brackets or use of $n$ or Uses a trial and improvement method obtaining sums for two different values of $n$	3.1a	M1	$S_N = \frac{N}{2}(2 \times 15 + 11(N - 1))$ $\frac{N}{2}(2 \times 15 + 11(N - 1)) = 100000$ $N = 133.9\dots$ $N = 133$
	Forms an equation or inequality using their expression and $100000 \pm k$ where $0 \leq k \leq 11$ or Uses trial and improvement to obtain one sum below 100000 and one sum above 100000 for consecutive integers	1.1a	M1	
	Obtains either 133.9.. or 132.9.. or $N > 132$ or $N < 134$ or Obtains the sum of 98553 when $n = 133$ and obtains the sum of 100031 when $n = 134$	1.1b	A1	
	Obtains 133 having solved a correct quadratic  This mark can be recovered if $N = 133$ and $N = 134$ are correctly checked	3.2a	A1	
	<b>Subtotal</b>		<b>4</b>	

	<b>Question 9 Total</b>		<b>9</b>	
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