Question	Answer	Mark	Comments
	Alternative method 1: using the left hand values		
	$(a =) 6 \div 2$ or $(a =) 3$	M1	implied by $3n^2$...
	$3 \times$ their $3 + b = 7$ or $b = -2$	M1dep	oe $3n^2 - 2n$ ... implies M1M1
	$3 +$ their $-2 + c = 10$ or $c = 9$	M1dep	oe
	$3n^2 - 2n + 9$	A1	SC1 30 and 49 as the next two terms
1	**Alternative method 2: subtracting $3n^2$ to get a linear sequence**		
	$(a =) 6 \div 2$ or $(a =) 3$	M1	implied by $3n^2$...
	$10 -$ their 3×1^2 or 7 and $17 -$ their 3×2^2 or 5 or $b = -2$	M1dep	oe using any two terms $3n^2 - 2n$ ... implies M1M1
	(their $5 -$ their 7) $(\times 1) + c = 7$ or $-2 (\times 1) + c = 7$ or $c = 9$	M1dep	oe equation using any term
	$3n^2 - 2n + 9$	A1	SC1 30 and 49 as the next two terms

	Alternative method 3: simultaneous equations		
	Simultaneous equations leading to a fully correct method to work out a or b or $a = 3$ or $b = -2$	M1	eg $a + b + c = 10$ and $4a + 2b + c = 17$ and $9a + 3b + c = 30$ and $3a + b = 7$ and $5a + b = 13$ and $2a = 6$ and $(a =) 3$ implied by $3n^2$... or ... $-2n$ ...
	Substitutes for a or b in one or two of the simultaneous equations with fully correct method to work out the other value	M1dep	eg $3 \times$ their $3 + b = 7$ or $b = -2$ $3n^2 - 2n$ ... implies M1M1
1 cont	Substitutes for a & b to work out c or $c = 9$	M1dep	any term eg $3 - 2 + c = 10$
	$3n^2 - 2n + 9$	A1	SC1 30 and 49 as the next two terms
	Alternative method 4: Using the '0th' term to get c		
	$(a =) 6 \div 2$ or $(a =) 3$	M1	implied by $3n^2$...
	$0n^2 + 0n + c = 9$ or $c = 9$	M1	
	their $3 + b +$ their $9 = 10$ or $b = -2$	M1dep	oe dep on M2
	$3n^2 - 2n + 9$	A1	SC1 30 and 49 as the next two terms
	Additional Guidance		
	In all cases a, b and c refer to the general expression for the nth term of a quadratic sequence $an^2 + bn + c$		
	Condone $n = 3n^2 - 2n + 9$ and accept any letter for n		
	Note that $b = -2$ does not imply a specific number of marks		

Q	Answer	Mark	Comments
	Alternative method 1 nth term = $an^2 + bn + c$		
	(second differences =) 10 or $a = 5$ or $5n^2$	M1	second difference seen at least once and not contradicted by a different value unless recovered may be seen by the sequence
	$3 - 5 \times 1^2$ and $20 - 5 \times 2^2$ **or** -2 and 0 **or** $b = 2$ **or** $2n$	M1dep	oe subtraction of $5n^2$ from any two consecutive terms eg $47 - 5 \times 3^2$ and $84 - 5 \times 4^2$ **or** 2 and 4 implied by $5n^2 + 2n$ …
	$5 \times 1^2 + 2 \times 1 + c = 3$ or $5 + 2 + c = 3$ or $(2n + c$ and$)$ $2 \times 1 + c = -2$	M1dep	oe substitution of $a = 5$ and $b = 2$ eg $5 \times 2^2 + 2 \times 2 + c = 20$ or oe use of $2n + c$ and another term eg $(2n + c$ and$)$ $2 \times 2 + c = 0$
2	$5n^2 + 2n - 4$	A1	terms in any order SC2 $a = 5$ and $c = -4$ SC1 $c = -4$
	Alternative method 2 nth term = $an^2 + bn + c$		
	(second differences =) 10 or $a = 5$ or $5n^2$	M1	second difference seen at least once and not contradicted by a different value unless recovered may be seen by the sequence
	$3 \times 5 + b = 17$ or $b = 2$ or $2n$	M1dep	oe substitution of $a = 5$ eg $5 \times 5 + b = 27$ implied by $5n^2 + 2n$ …
	$5 \times 1^2 + 2 \times 1 + c = 3$ or $5 + 2 + c = 3$	M1dep	oe substitution of $a = 5$ and $b = 2$ eg $5 \times 2^2 + 2 \times 2 + c = 20$
	$5n^2 + 2n - 4$	A1	terms in any order SC2 $a = 5$ and $c = -4$ SC1 $c = -4$

	Alternative method 3 $\quad n$th term $= an^2 + bn + c$		
	Any 3 of $a + b + c = 3$ $4a + 2b + c = 20$ $9a + 3b + c = 47$ $16a + 4b + c = 84$	M1	oe 3 equations
	$3a + b = 17$ and $5a + b = 27$ **or** $a = 5$ and $b = 2$	M1dep	oe pair of equations in a and b eg $8a + 2b = 44$ and $15a + 3b = 81$ implied by $5n^2 + 2n$ ...
	$5 \times 1^2 + 2 \times 1 + c = 3$ or $5 + 2 + c = 3$	M1dep	oe substitution of $a = 5$ and $b = 2$ eg $5 \times 2^2 + 2 \times 2 + c = 20$
2 cont	$5n^2 + 2n - 4$	A1	terms in any order SC2 $a = 5$ and $c = -4$ SC1 $c = -4$

Additional Guidance		
Up to M3 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
Second differences = 10 scores M1 even if used incorrectly eg $10n$		
Condone $n = 5n^2 + 2n - 4$ or $5n^2 + 2n - 4 = 0$		M3A1
Condone working in a different variable eg $5x^2 + 2x - 4$		M3A1
The 3rd method mark cannot be implied ie $c = -4$ is only awarded M3 if the previous two method marks are seen		
Alt 1 2nd M1 cannot be awarded for subtracting in the wrong order unless recovered		
SC2 or SC1 can be awarded from work seen in the working lines		
SC2 or SC1 can be implied by a quadratic answer eg1 answer $5n^2 + 6n - 4$ eg2 answer $10n^2 + 3n - 4$		SC2 SC1