1(a)	–5 –13	B2	condone –13 –5 B1 –5 as first term or ft their first term – 8

2	**Alternative method 1**		
	21 – 17 or 17 – 21 or 17 + 4 or 21 – 4 or (difference is) 4 or (7th term =) 21 + 4 or 25 or (4th term =) 17 – 4 or 13	M1	may be seen as 17 21 4 allow (difference is) –4
	17 + (100 – 5) × 4 or 17 + 95 × 4 or 17 + 380 or 21 + (100 – 6) × 4 or 21 + 94 × 4 or 21 + 376 or 17 – 4 × 4 + 99 × 4 or 1 + 99 × 4 or 1 + 396 or 17 – 5 × 4 + 100 × 4 or –3 + 100 × 4 or –3 + 400	M1dep	must be using 4 oe calculation that would evaluate to 397 5th term + 95 × 4 6th term + 94 × 4 1st term + 99 × 4 0th term + 100 × 4
	397	A1	
	Alternative method 2		
	$4n$	M1	oe eg $n \times 4$
	$4n - 3$	A1	oe
	397	A1	

	Additional Guidance	
2 cont	Term to term rule described eg Add on 4 each time	M1
	$a + 5d = 21$, $a + 4d = 17$ only	M0
	Difference shown as 4 then eg $n + 4$	M1
	Only eg $n + 4$ or $3n + 4$	M0
	$4n - 3$ seen even if not subsequently used	M1A1
	$4n$ seen eg $4n + 13$ even if not subsequently used	M1
	Correct list going up in 4s stopping at 397	M1M1A1
	List going up in 4s with an error or not reaching 397	M1M0A0
	No subtraction seen and incorrect difference eg 17 21 (+3)	M0
	Alt 2 allow $n4$	M1
	$4n - 3 = 100$	M1A1A0
	Allow M1 even if not subsequently used	

Q	Answer	Mark	Comments
3	$\frac{2n}{3n+1}$	B3	oe eg $\frac{2n}{2n+(n+1)}$ B2 any two correct nth terms from $2n$ or $n + 1$ or $3n + 1$ B1 any one correct nth term from $2n$ or $n + 1$ or $3n + 1$
	Additional Guidance		
	May be seen in a fraction or added eg $2n + (n + 1)$		B2
	Do not accept $2n$ embedded in an incorrect expression eg $2n - 2$		B0

Q	Answer	Mark	Comment
4(a)	x^2y^3	B1	

Q	Answer	Mark	Comment
4(b)	Could be either in top row	B1	
	Must be negative in bottom row	B1	

5	(8th term =) 2^8 or 256	M1	oe may be implied
	Common difference of A indicated as 3	M1	may be implied eg $3n$ … or … + $3(n-1)$
	$3n + 10$ = their 256 or (their 256 – 10) ÷ 3 or (their 256 – 13) ÷ 3 or 81	M1dep	oe equation eg $13 + 3(n-1) = 2^8$ dep on 2nd M1 their 256 may be any number and may be in index form
	82	A1	
	Additional Guidance		
	n + 3 implies 2nd M1		
	Do not award M1 for 256 if it is in a list of powers of 2 unless it is indicated or it is the highest power evaluated		
	Common difference of 3 may be shown on the progression for the 2nd M1		
	10, (13, 16, 19, 22), 25 without common difference of 3 shown does not imply 2nd M1		
	82 from trial and improvement		M3A1
	Embedded answer $3 \times 82 + 10 = 256$		M3A0
	$3n + 10 = 256$ or $3n + 10 = 2^8$ or $3n = 246$		M1M1M1
	$3n - 10 = 256$		M1M1M0
	$3n + 10 = 16$ (2^8 not seen)		M0M1M1
	$3n + 6 = 2^8$		M1M1M0
	256 – 22 = 234, 234 ÷ 3 (indicating common difference of 3)		M1M1M0
	$3n - 8 = 128$ (2^8 not seen)		M0M1M0

Q	Answer	Mark	Comments
6	28	B1	
	Additional Guidance		

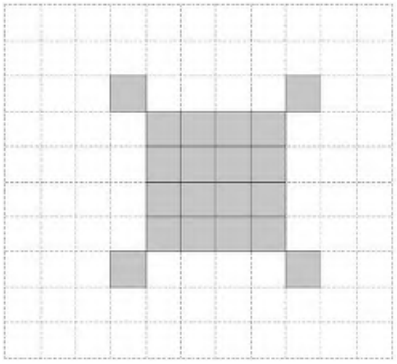
Q	Answer	Mark	Comment
7	1225	B1	

Q	Answer	Mark	Comment
8	**Alternative method 1** Works out nth term of new sequence		
	Common difference of 5 identified	M1	implied by $5n$ …
	$5n + 3$	A1	oe eg $8 + 5(n - 1)$
	their $(5n + 3) - (n + 1)$	M1	oe their $(5n + 3)$ must be a linear expression condone missing brackets
	$4n + 2$	A1ft	oe eg $6 + 4(n - 1)$ ft their $5n + 3$ which must be a linear expression missing brackets must be recovered
	Alternative method 2 Works out terms of sequence A and sequence B		
	2, 3, 4	M1	sequence A
	6, 10, 14	A1	sequence B
	Common difference of 4 identified	M1	ft their 6, 10, 14 which must be a linear sequence for B
	$4n + 2$	A1ft	oe eg $6 + 4(n - 1)$ ft their 6, 10, 14 which must be a linear sequence for B
	Additional Guidance		
	Choose the scheme that favours the student		

Q	Answer	Mark	Comments
9(a)	**Alternative method 1**		
	20	B3	B2 53 or $33+20$ or $73-20$ or $\frac{73-33}{2}$ or $\frac{40}{2}$ B1 $73-33$ or 40
	Alternative method 2		
	$33+x$ or $73-x$	M1	oe
	$x+33+x=73$ or $2x+33=73$ or $\frac{73-33}{2}$ or $\frac{40}{2}$	M1dep	oe eg $33+x=73-x$
	20	A1	
	Additional Guidance		
	$33+x=73$		M1

Q	Answer	Mark	Comments
9(b)	No and gives valid reason	B1	eg No and the first term is zero or No and $1-1^2=0$ or No and all the terms are negative except the first

Additional Guidance	
Ignore incorrect or irrelevant statements alongside correct statements	
Ignore all other statements and evaluations if $1-1^2=0$ seen	
Ticks Yes	B0
No and 0, –2, –6, …	B1
No and $1-1^2=0$ with $2-1^2=1$	B1
No and $1=1^2$	B1
No and $1-1=0$ (0 is positive) (condone)	B1
No and n^2 can be equal to n and $1^2=1$	B1
No and n^2 can be equal to n	B0
No and n could equal 1 which cannot become bigger when squared	B1
No and if you put $n=1$ it's not negative	B1
No and $n=1$ and $n^2=1$	B1
No, all the terms are negative except when $n=1$	B1
No and if $n=1$ it creates 0	B1
No, not when $n=1$	B0
No, it doesn't work for the first term	B0
No and $0.5-0.5^2=0.25$	B0
No and when $n=0$ it won't be negative	B0

Q	Answer	Mark	Comments
10(a)		B1	
	Additional Guidance		
	Mark intention, condone missing interior lines		
	Shading not required		

Q	Answer	Mark	Comments
10(b)	23	B1	