Oxford Revise | AQA GCSE Maths Foundation| Answers

Chapter 13 Sequences

Question	Answer	Extra information	Marks
13.1 (a)	Add 6, 49, 61, Arithmetic	One mark for each correct answer	4
13.1 (b)	Multiply by 2, 16, 64, Geometric	One mark for each correct answer	4
13.1 (c)	Divide by 2, 1.25, 0.3125, Geometric	One mark for each correct answer	4
13.1 (d)	Subtract 3, 8, 2, Arithmetic	One mark for each correct answer	4
13.2 (a)	Nick is correct because all terms in the sequence end in either 2 or 7		1
13.2 (b)	The sequence continues as $32, 37, 42, 47, 52, 57, \ldots$ The 10th term is 57	Continue the sequence until at least the 10^{th} term. Correct answer	1 1
13.3 (a)	Each pattern has 2 more dots than the previous pattern. Pattern 5 will have $7 + 2 + 2 = 11$ dots		1
13.3 (b)	Add 2		1
13.3 (c)	No, all terms are odd.	Correct answer and explanation	1

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Question	Answer	Extra information	Marks
13.4	Arithmetic sequence means a constant difference between adjacent terms. Thus, the constant is $15 - 9 = 6$, and so $a = 3$ and $b = 21$	$a = 3$ $b = 21$	1 1
13.5 (a)	First four terms: $2, 5, 8, 11$ Term-to-term rule: Add 3 Seventh term: 20 Hundredth term: 299	One mark for each correct answer	4
13.5 (b)	First four terms: $7, 12, 17, 22$ Term-to-term rule: Add 5 Seventh term: 37 Hundredth term: 502	One mark for each correct answer	4
13.5 (c)	First four terms: $5, 4, 3, 2$ Term-to-term rule: Subtract 1 Seventh term: -1 Hundredth term: -94	One mark for each correct answer	4
13.5 (d)	First four terms: $7, 4, 1, -2$ Term-to-term rule: Subtract 3 Seventh term: -11 Hundredth term: -290	One mark for each correct answer	4

Question	Answer	Extra information	Marks
13.6 (a)	$6, 9, 14, 21$	Two terms correct All terms correct	1 1
13.6 (b)	$-1, 0, 3, 8$	Two terms correct All terms correct	1 1
13.6 (c)	$9, 6, 1, -6$	Two terms correct All terms correct	1 1
13.7 (a)	$8n + 3 = 51$ $8n = 48$ $n = 6$ The 6th term is 51	Equation set up correctly Correct answer	1 1
13.7 (b)	$8n + 3 = 64$ $8n = 61$ 61 is not evenly divisible by 8, so 64 is not in the sequence.	Equation set up correctly Correct explanation	1 1

Question	Answer	Extra information	Marks
13.7 (c)	$8n+3>100$ $8n>97$ $n>12.125$ n must be a whole number, so $n = 13$. 13th term = $8(13) + 3 = 107$ 107 is the first in the sequence to exceed 100.	Inequality set up 13^{th} term Correct answer	1 1 1
13.8 (a)	Term-to-term rule: Add 6 Position-to-term rule: $6n+11$ Tenth term: 71	One mark for each correct answer	3
13.8 (b)	Term-to-term rule: Add 3 Position-to-term rule: $3n-4$ Tenth term: 26	One mark for each correct answer	3
13.8 (c)	Term-to-term rule: Subtract 3 Position-to-term rule: $7-3n$ Tenth term: -23	One mark for each correct answer	3
13.8 (d)	Term-to-term rule: Subtract 5 Position-to-term rule: $25-5n$ Tenth term: -25	One mark for each correct answer	3

Question	Answer	Extra information	Marks
13.8 (e)	Term-to-term rule: Add 0.5 Position-to-term rule: $0.5n + 2.5$ Tenth term: 7.5	One mark for each correct answer	3
13.9 (a)	The sequence starts: $3, 7, 11$ The term-to-term rule is: Add 4 The nth term is $4n - 1$, because the terms of the sequence are each 1 less than the 4-times table.	Identifying the sequence Correct answer	1 1
13.9 (b)	$4 \times 40 - 1 = 159$ There will be 159 dots in Pattern 40.	Substituting 40 into the expression Correct answer	1 1
13.10	Emily has confused the term-to-term rule (add 5) with the nth term rule. Keisha is correct.	Correct explanation	1
13.11	The sequence is arithmetic. 5, __ , 11, …. There are two "jumps" from 5 to 11, so each jump must be 3, making the sequence: $5, 8, 11$ The nth term of the sequence is $3n + 2$	Sequence identified Correct answer	1 1
13.12 (a)	The square numbers		1
13.12 (b)	The Fibonacci sequence		1
13.12 (c)	The cube numbers		1

Question	Answer	Extra information	Marks
13.13 (a)	16		1
13.13 (b)	n^2		1
13.14 (a)	Each term is the sum of the previous two terms: 6th term = $10 + 16 = 26$ 7th term = $16 + 26 = 42$ 8th term = $26 + 42 = 68$ The 8th term is 68	Sequence continued for more than one extra term Correct answer	1 1
13.14 (b)(i)	The next two terms are $5x$ $(2x+3x)$ and $8x$ $(3x+5x)$	$5x$ $8x$	1 1
13.14 (b)(ii)	$8x = 32$ $x = 4$ The first term is 4.	Equation set up correctly Correct answer	1 1

Question	Answer	Extra information	Marks
13.15	$\left(\frac{1}{2}\right)^1 = \frac{1}{2}$ $\left(\frac{1}{2}\right)^2 = \frac{1}{4}$ $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$ The first three terms are: $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$	Attempt to use $\left(\frac{1}{2}\right)^n$ with $n = 1, 2, 3$ Correct sequence	1 1
13.16	$\frac{7}{8} + \frac{1}{4} = \frac{7}{8} + \frac{2}{8} = \frac{9}{8}$ $\frac{9}{8} \div 2 = \frac{9}{16}$ $\frac{9}{16}$ is halfway between $\frac{1}{4}$ and $\frac{7}{8}$	$\frac{7}{8} + \frac{1}{4}$ $\frac{9}{8} \div 2$ $\frac{9}{16}$	1 1 1
13.17	New price $= 53.76 \times 0.8$ $= 43.008$ This does not agree with the label.	Use 0.8 as a multiplier Either multiply 53.76 by 0.8 or divide 44.80 by 0.8 Correct conclusion with correct reason	1 1 1