

WA7MNALP1

Linear and non-linear patterns and relationships

Core + Challenge

Tables of Values and Graphs — Marking Key

I can complete tables of values from a rule, plot points in the first quadrant and use a graph to find unknown values.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

Section A Fluency: 16 Section B Core: 22 Section C Reasoning: 9 Section D Challenge: 9 **Total: 56**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A

Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	$y = 1$	substitute / check the pattern
2	$y = 7$	substitute / check the pattern
3	$y = 1$	substitute / check the pattern
4	$y = 10$	substitute / check the pattern
5	$y = 7.5$	substitute / check the pattern
6	$y = 36$	substitute / check the pattern
7	$y = 7$	substitute / check the pattern
8	$y = 6$	substitute / check the pattern
9	$y = 5$	substitute / check the pattern
10	$x = 6$	substitute / check the pattern
11	$x = 7$	substitute / check the pattern
12	yes	substitute / check the pattern
13	no	substitute / check the pattern
14	yes	substitute / check the pattern
15	no	substitute / check the pattern
16	$y = 3x + 4$	substitute / check the pattern

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B

Core answers, working and marks

/ 22 marks

Q	Answer	Working / sample response	Marks
1	1, 3, 5, 7, 9 – a straight line	Substitute each x 1 mark: table 1 mark: points plotted 1 mark: straight line	3
2	$y = 2x + 1$	$x: 0, 1, 2, 3 \rightarrow y: 1, 3, 5, 7$; +2 each step, starts at 1 1 mark: table 1 mark: rule	2
3	\$4, \$9, \$14, \$19	Substitute each k 2 marks: all four (1 mark for two)	2
4	5, 10, 15, 20 – a straight line through the origin	$A = 5w$ 1 mark: table 1 mark: description	2
5	3.7 cm	$5w = 18.5 \rightarrow w = 3.7$ 1 mark: equation 1 mark: 3.7	2
6	1, 4, 9, 16 – not linear	Differences 3, 5, 7 are not constant 1 mark: table 1 mark: not linear with reason	2
7	(a) 110 L (b) $13\frac{1}{3}$ min	$200 - 90 = 110$; $200 \div 15 = 13\frac{1}{3}$ 1 mark each	2
8	(a) A: 20, 32.50, 45, 57.50; B: 35, 40, 45, 50 (b) at 50 minutes (\$45)	Compare rows 1 mark each row 1 mark: 50 min	3
9	Yes	$3 \times 4 + 1 = 13$ 1 mark: substitution 1 mark: yes	2
10	12.5 km; (2.5, 12.5)	5×2.5 1 mark each	2

C

Reasoning sample answers and marking criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	Constant change in y	Equal steps in x give equal changes in y. 2 marks	2
2	y increases by the same amount (2) for each step in x	Each step right of 1 moves up exactly 2. 2 marks	2

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Q	Answer	Working / sample response	Marks
3	x first, then y	(2, 5) means 2 across (x) and 5 up (y). <i>2 marks</i>	2
4	From x = 3 onwards	$2x + 1$: 3, 5, 7, 9; x^2 : 1, 4, 9, 16 The square rule grows faster and overtakes the linear rule between $x = 2$ and $x = 3$. <i>1 mark: both tables</i> <i>1 mark: $x \geq 3$</i> <i>1 mark: observation</i>	3

D

Challenge solutions and marking criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	$y = 3x + 2$	y increases by 6 when x increases by 2 $\rightarrow$ 3 per step; $5 - 3 = 2$ <i>1 mark: 3</i> <i>1 mark: rule</i>	2
2	(5, 21)	Tables or $4x + 1 = 6x - 9 \rightarrow x = 5$ <i>1 mark: $x = 5$</i> <i>1 mark: (5, 21)</i>	2
3	(a) No (b) doubles each time (starts at 3) (c) 48	Differences 3, 6, 12 are not constant; each y is $2 \times$ the previous <i>1 mark each</i>	3
4	After 4 weeks (from week 5)	Equal at $w = 4$ (24 cm); B is taller after that <i>1 mark: equal at 4</i> <i>1 mark: conclusion</i>	2