Year 8 Sequences, Functions and Graphs – Developing

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Answers and worked solutions · 10 questions

A. Use functions and graphs

1. **y = 6x + 12**

The fixed amount is the y-intercept: c = 12

The rate is the gradient: m = 6

y = 6x + 12

2. **y = 4x + 24**

The fixed amount is the y-intercept: c = 24

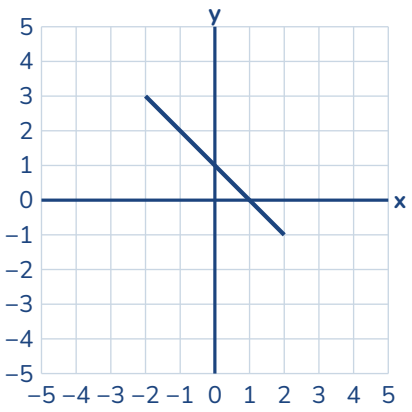
The rate is the gradient: m = 4

y = 4x + 24

3. **y = 3, 2, 1, 0, −1**

Substitute each x: x = −2 → y = 3, x = −1 → y = 2, x = 0 → y = 1, x = 1 → y = 0, x = 2 → y = −1

Plot the points and join them with a ruler: a straight line



4. **gradient 4; y = 4x − 6**

Gradient = change in y ÷ change in x = 16 ÷ 4 = 4

y = 4x + c; substitute (−2, −14): c = −6

y = 4x − 6

5. **gradient 3; y = 3x − 4**

Gradient = change in y ÷ change in x = 9 ÷ 3 = 3

y = 3x + c; substitute (−2, −10): c = −4

y = 3x − 4

6. **2n + 1; 25**

Adds 2 each time: 2n

Pattern 1: 2 × 1 + 1 = 3

Pattern 12: 2 × 12 + 1 = 25

7. **5n + 1; 81**

Adds 5 each time: 5n

Pattern 1: 5 × 1 + 1 = 6

Pattern 16: 5 × 16 + 1 = 81

8. **–1**

$8 \times 1/2 = 4$

$4 - 5 = -1$

9. **7n – 2**

Difference 7, so the rule starts 7n

When n = 1, 7n = 7 and the first term is 5: 7n – 2

10. **The time and place where the cyclists meet: the lines cross where both have the same distance at the same time.**

Think about what each axis measures

the time and place where the cyclists meet

the lines cross where both have the same distance at the same time