Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- $\dfrac{17-5}{6-2} = \dfrac{12}{4}$

$= \mathbf{3}$

2.2

- $\dfrac{0-4}{5-(-3)} = \dfrac{-4}{8}$

$= -\mathbf{\frac{1}{2}}$

2.3

- the line is horizontal, so y never changes

$= \mathbf{0}$

2.4

- gradient $= \dfrac{\text{change in } y}{\text{change in } x} = \dfrac{7-(-5)}{1-(-2)} = \dfrac{12}{3}$

$= \mathbf{4}$

2.5

- gradient $= \dfrac{\text{rise}}{\text{run}} = \dfrac{1.2}{4.8} = \mathbf{0.25}$

3.1

(a)

- $\dfrac{-3-9}{2-(-4)} = \dfrac{-12}{6}$

$= \mathbf{-2}$

(b)

- from A to C the gradient is still -2: $\dfrac{5-9}{k-(-4)} = -2$
- $-4 = -2(k+4)$, so $-4 = -2k - 8$

$k = \mathbf{-2}$

3.2

- from $x = 2$ to $x = 5$ is 3 across, so y rises by $3 \times 3 = 9$

$1 + 9 = \mathbf{10}$

3.3

- gradient of $AB = \dfrac{7-1}{2-(-1)} = \dfrac{6}{3} = 2$
- gradient of $BC = \dfrac{11-7}{4-2} = \dfrac{4}{2} = 2$
- the gradients are equal and B is on both, so A, B, C **lie on one straight line**

3.4

- gradient $= \dfrac{8-2}{3-1} = 3$
- from $(3, 8)$ to $(6, k)$: $\dfrac{k-8}{6-3} = 3$, so $k - 8 = 9$

$k = \mathbf{17}$

3.5

- $\dfrac{2a-4}{5-a} = 3$
- $2a - 4 = 15 - 3a$, so $5a = 19$

$a = \mathbf{3.8}$