Solutions

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

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

2.1

- substitute $m = 4$ and $c = -3$

$$\mathbf{y = 4x - 3}$$

2.2

- divide the whole equation by 2: $y = 3x - 2.5$

$$m = \mathbf{3}, \quad c = \mathbf{-2.5}$$

2.3

- the point $(0, 5)$ IS the y-intercept, so $c = 5$

$$\mathbf{y = -2x + 5}$$

2.4

- at $x = 3$: $y = 3(3) - 2 = 7$, which matches, so **yes**

2.5

- make y the subject: $2y = -3x + 8$, so $y = -1.5x + 4$
- gradient $= \mathbf{-1.5}$

3.1

(a)

- $\dfrac{16 - 4}{5 - 1} = \dfrac{12}{4}$

$$= \mathbf{3}$$

(b)

- $y = 3x + c$, and substituting $A(1, 4)$ gives $4 = 3(1) + c$
- $c = 1$

$$\mathbf{y = 3x + 1}$$

- check with B: $3(5) + 1 = 16$, which matches

3.2

(a)

- the y-intercept is $c = -6$

$$(\mathbf{0},\ \mathbf{-6})$$

(b)

- set $y = 0$: $0 = 2x - 6$

$$x = 3, \text{ so } (\mathbf{3},\ \mathbf{0})$$

3.3

- gradient $m = \dfrac{-5 - 7}{4 - (-2)} = \dfrac{-12}{6} = -2$
- substitute $(-2, 7)$ into $y = -2x + c$: $7 = 4 + c$, so $c = 3$

$$\boldsymbol{y = -2x + 3}$$

3.4

- at the meeting point the y-values are equal: $2x - 1 = -x + 8$
- $3x = 9$, so $x = 3$
- $y = 2(3) - 1 = 5$: $(\mathbf{3},\ \mathbf{5})$

3.5

(a)

- $y = 0$: $3x = 24$, so P is $(\mathbf{8},\ \mathbf{0})$
- $x = 0$: $4y = 24$, so Q is $(\mathbf{0},\ \mathbf{6})$

(b)

- area $= \frac{1}{2} \times 8 \times 6 = \mathbf{24}$ square units

(c)

- $PQ = \sqrt{8^2 + 6^2} = \sqrt{100}$

$$= \mathbf{10}$$