Solutions

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

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

2.1

- gradient **4**; y-intercept $\mathbf{-3}$

2.2

$$m = \frac{10-1}{5-2} = \frac{9}{3} = \mathbf{3}$$

2.3

- parallel lines have the same gradient: **2**

3.1

- $y = 2x + c$
- substitute $(3, 1)$: $1 = 2(3) + c$ so $c = -5$
- $\mathbf{y = 2x - 5}$

3.2

- $2y = -3x + 12$ so $y = -\frac{3}{2}x + 6$
- gradient $\mathbf{-\frac{3}{2}}$

3.3

- flip and change sign: $\mathbf{-2}$

3.4

(a)

$$m = \frac{-5-7}{4-(-2)} = \frac{-12}{6} = \mathbf{-2}$$

- using A: $7 = -2(-2) + c$ so $c = 3$
- $\mathbf{y = -2x + 3}$

(b)

- y-axis: $x = 0$ gives $\mathbf{(0, 3)}$
- x-axis: $0 = -2x + 3$ so $x = 1.5$, giving $\mathbf{(1.5, 0)}$

(c)

- perpendicular gradient $= \frac{1}{2}$

- through $B(4, -5)$: $-5 = \frac{1}{2}(4) + c$ so $c = -7$
- $\mathbf{y = \frac{1}{2}x - 7}$

(d)

$$\left(\frac{-2+4}{2}, \frac{7+(-5)}{2}\right) = (\mathbf{1}, \mathbf{1})$$

- the perpendicular bisector passes through $(1, 1)$ with gradient $\frac{1}{2}$
- $y - 1 = \frac{1}{2}(x - 1)$ so $\mathbf{y = \frac{1}{2}x + \frac{1}{2}}$