

Solutions

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

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

2.1

- reflect in the x -axis: **(4, -3)**

2.2

- $(2 + 3, 1 - 2) = \mathbf{(5, -1)}$

2.3

- $(2 \times 2, 3 \times 2) = \mathbf{(4, 6)}$

2.4

- a **reflection** in the y -axis, the line $x = 0$

2.5

- the **angle of turn** and the **direction**
- the **centre of rotation**

3.1

- $(x, y) \rightarrow (-y, x)$
- $(4, 1) \rightarrow \mathbf{(-1, 4)}$

3.2

- an **enlargement**
- scale factor **3**
- centre **(0, 0)** — each image coordinate is three times the object

3.3

- multiply by $\frac{1}{2}$
- **(3, 2)**

3.4

(a)

- reflecting in $x = 1$ sends (x, y) to $(2 - x, y)$
- **(0, 1)**, **(-4, 1)** and **(0, 3)**

(b)

- multiply each coordinate by $\frac{3}{2}$
- **(3, 1.5)**, **(9, 1.5)** and **(3, 4.5)**

(c)

- 90° clockwise about the origin: $(x, y) \rightarrow (y, -x)$
- $(\mathbf{1}, -\mathbf{2})$, $(\mathbf{1}, -\mathbf{6})$ and $(\mathbf{3}, -\mathbf{2})$

(d)

- a **rotation** of $\mathbf{180^\circ}$ about the origin $(\mathbf{0}, \mathbf{0})$
- (an enlargement of scale factor -1 , centre the origin, is also accepted)