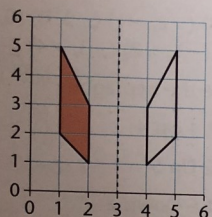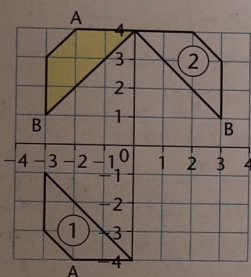## TARGET To reflect shapes on the co-ordinate plane.

Examples

The orange shape is reflected in a mirror line (3, 0) to (3, 6).

The yellow trapezium is reflected:

① in the *x* axis

② in the *y* axis.

Each point in the reflected shape matches a point in the original shape.

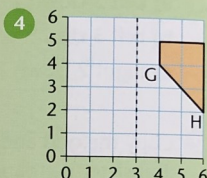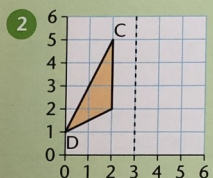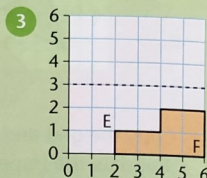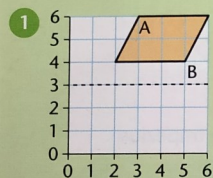Matching points are an equal distance from the mirror line.

For example, look at the yellow trapezium.

A $(-2, 4)$ becomes $(-2, -4)$ in reflection ①.

B $(-3, 1)$ becomes $(3, 1)$ in reflection ②.

A

Copy the grid, the shape and the mirror line. Sketch the reflection.

①

③

②

④

⑤ Give the co-ordinates of points A–H:
   a) in the above shapes
   b) in the reflected shapes.

Plot the co-ordinates for each of the following on a 6 × 6 grid and join them up in the order given to form a shape. Draw the mirror line and sketch the reflection.
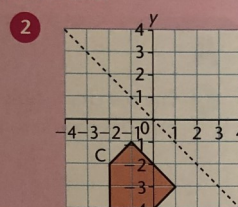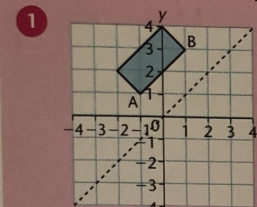
⑥ (3, 0) (1, 2) (5, 2) (3, 0)
   Mirror line (0, 3) to (6, 3)

⑦ (4, 2) (4, 4) (6, 2) (6, 0) (4, 2)
   Mirror line (3, 0) to (3, 6)

⑧ (0, 6) (4, 6) (3, 4) (1, 4) (0, 6)
   Mirror line (0, 3) to (6, 3)

⑨ (0, 2) (0, 3) (1, 4) (2, 4) (2, 1) (1, 1) (0, 2)
   Mirror line (3, 0) to (3, 6)

⑩ (3, 4) (1, 4) (2, 6) (3, 6)
   Plot the above co-ordinates and join them up in the order given to form one half of a symmetrical trapezium. Complete the shape and draw its reflection in a mirror line (0, 3) to (6, 3).
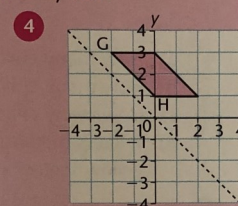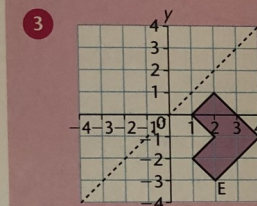
B

Copy the grid, the shape and the mirror line. Sketch the reflection:
a) in the mirror line   b) in the *x* axis.

①

②

Copy the grid, the shape and the mirror line. Sketch the reflection:
a) in the mirror line   b) in the *y* axis.

③

④

⑤ Give the co-ordinates of point A–H:
   a) in the above shape
   b) in the reflection in the mirror line
   c) in the reflection in the *x* or *y* axis.

Draw an 8 × 8 grid with both axes labelled −4 to 4 as above. Plot the points and join them up in the order given to form a shape. Draw the mirror line and sketch the reflection:
   a) in the mirror line
   b) in the *x* axis.

⑥ (−2, −4) (1, −1) (1, −3) (0, −4) (−2, −4)
   Mirror line (−4, −4) to (4, 4)

⑦ (1, 1) (−1, 3) (1, 3) (2, 4) (4, 4) (1, 1)
   Mirror line (−4, 4) to (4, −4)

C

Copy the grid, the shape and the mirror line. Sketch the reflection:
a) in the mirror line
b) in the *y* axis.

①

②

③ Give the co-ordinates of the reflection of the hexagon:
   a) in the mirror line
   b) in the *y* axis.

④ Give the co-ordinates of the reflection of the octagon:
   a) in the mirror line
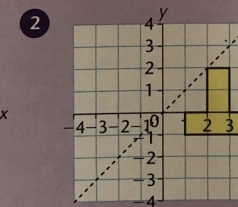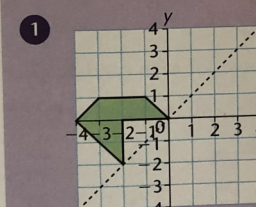   b) in the *y* axis.

For each of the following draw an 8 × 8 grid with both axes labelled −4 to 4 as above. Plot the points and join them up in the order given to form a shape. Draw the mirror line and sketch the reflection:
a) in the mirror line
b) in the axis indicated.

⑤ (2, 0) (−1, 2) (2, 4) (1, 2) (2, 0)
   a) Mirror line (−4, 4) to (4, −4).
   b) *x* axis.

⑥ (0, −2) (−1, −2) (−1, −1) (2, −1) (2, −4) (1, −4) (1, −3) (0, −3) (0, −2)
   a) Mirror line (−4, −4) to (4, 4)
   b) *x* axis.

⑦ (−4, 0) (−3, 0) (−3, 1) (−1, 1) (−1, −1) (−2, −1) (−2, −2) (−4, 0)
   a) Mirror line (−4, 4) to (4, −4)
   b) *y* axis.

⑧ (−1, 2) (−1, −1) (−4, −1) (−3, 0) (−4, 1) (−3, 2) (−2, 1) (−1, 2)
   a) Mirror line (−4, −4) to (4, 4)
   b) *y* axis.