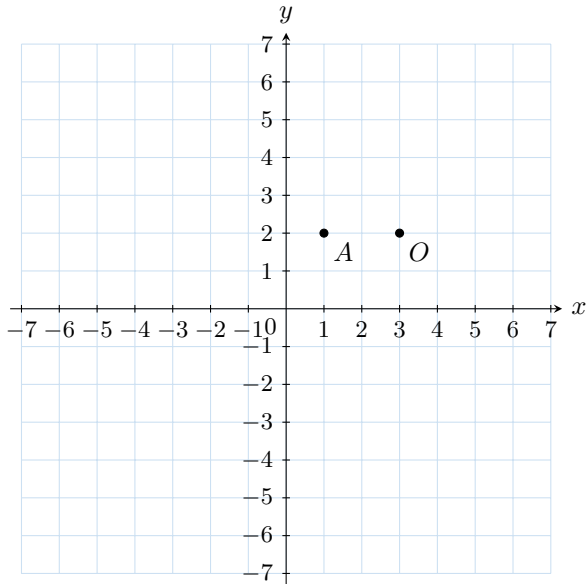# POINT REFLECTION

A DEFINITIONS
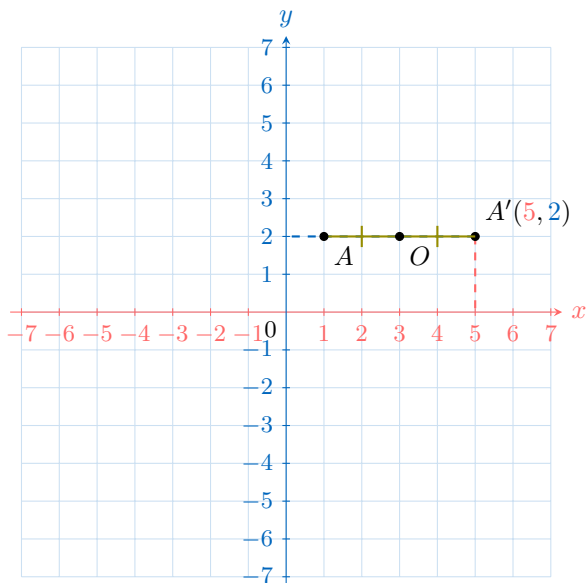
A.1 FINDING IMAGES OF POINTS

Ex 1: Find the coordinates of the image of point A under a point reflection over point O.
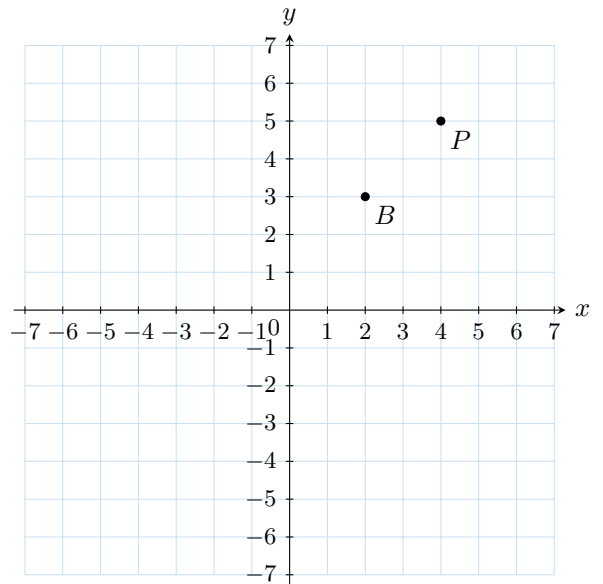

Answer:

$A'(\boxed{5},\boxed{2})$

$B'(\boxed{6},\boxed{7})$

Answer:

$A'(5,2)$

$B'(6,7)$

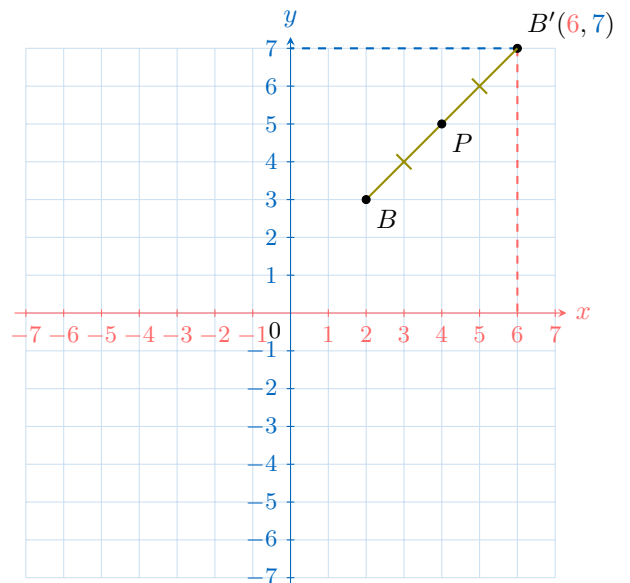**Ex 2:** Find the coordinates of the image of point B under a point reflection over point P.

Ex 3: Find the coordinates of the image of point C under a point reflection over point Q.
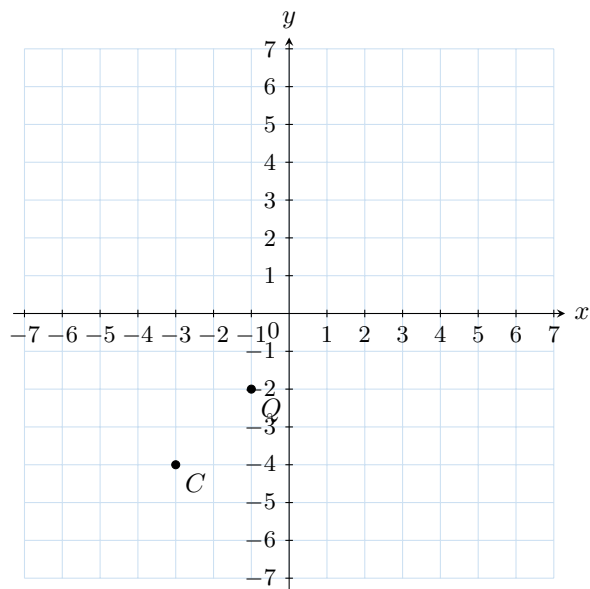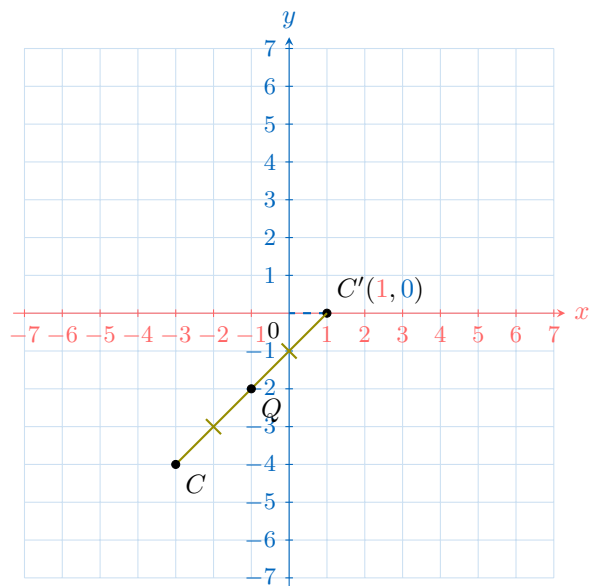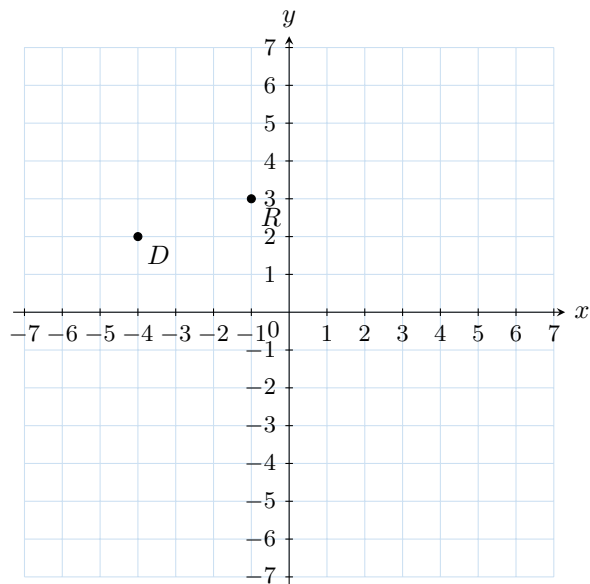
$$D'(\boxed{2},\boxed{4})$$

Answer:

$C'(\boxed{1},\boxed{0})$

Answer:

$C'(1,0)$

Ex 4: Find the coordinates of the image of point D under a point reflection over point R.

$D'(2,4)$

Ex 5: Find the coordinates of the image of point E under a point reflection over point S.

$E'(\boxed{2},\boxed{7})$

Answer:

$E'(2,7)$

Ex 6: Find the coordinates of the image of point F under a point reflection over point T.
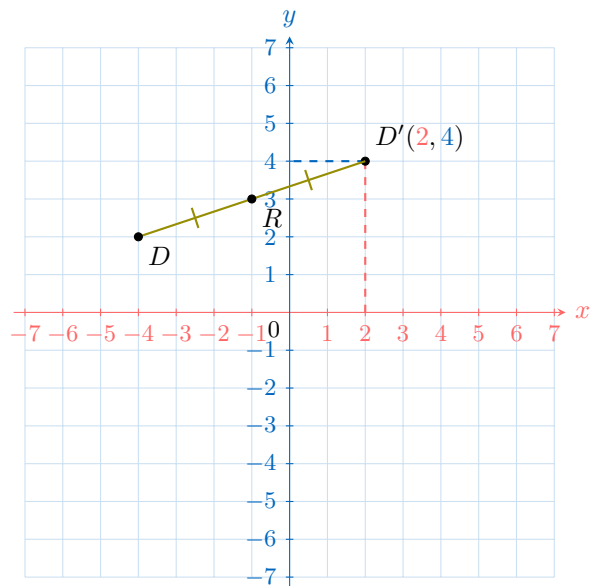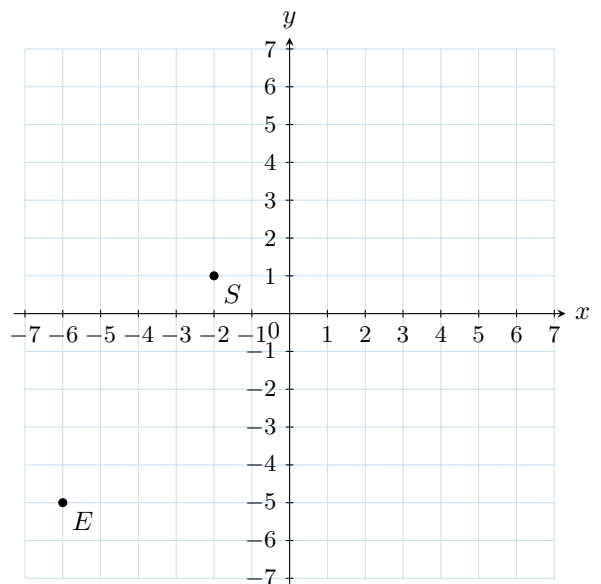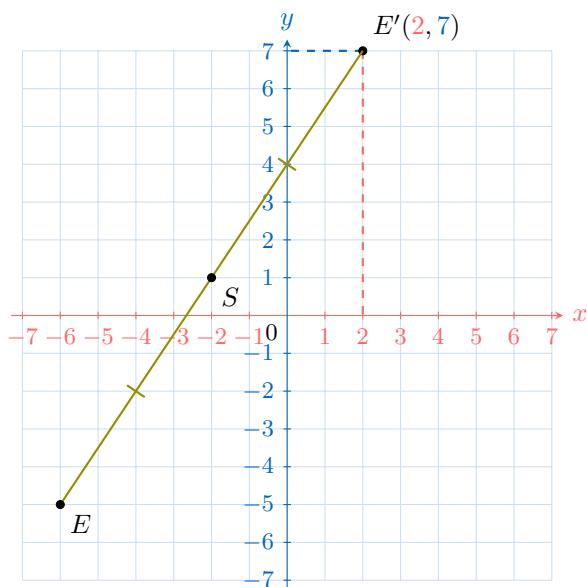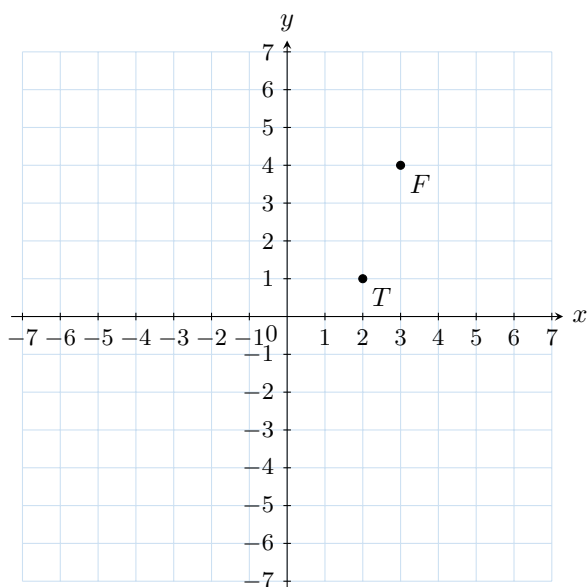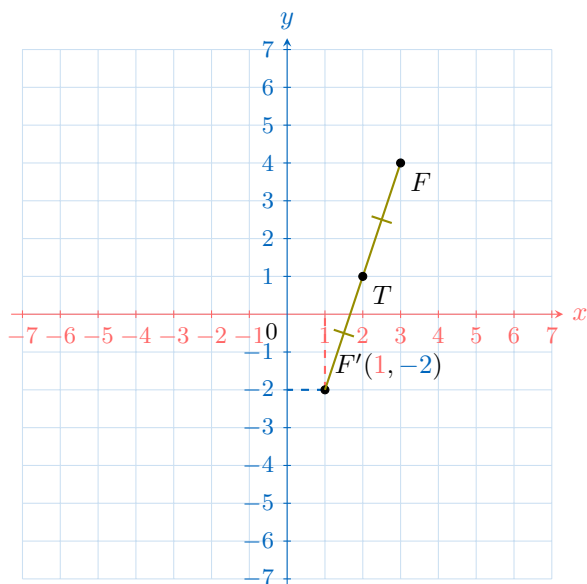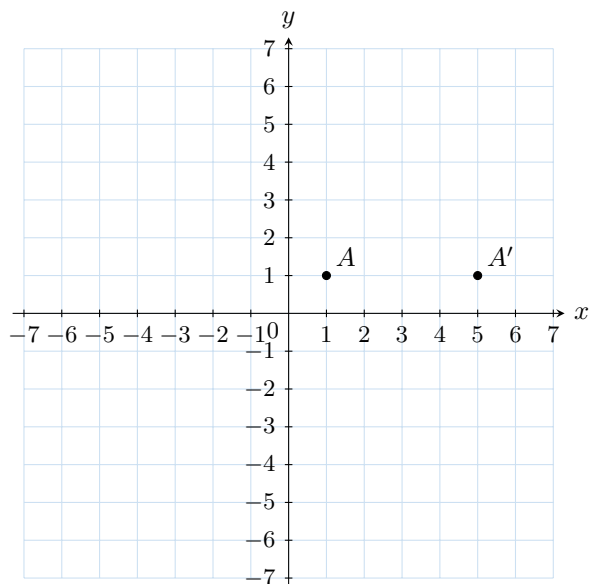

$F'(\boxed{1},\boxed{-2})$

Answer:

$F'(1,-2)$
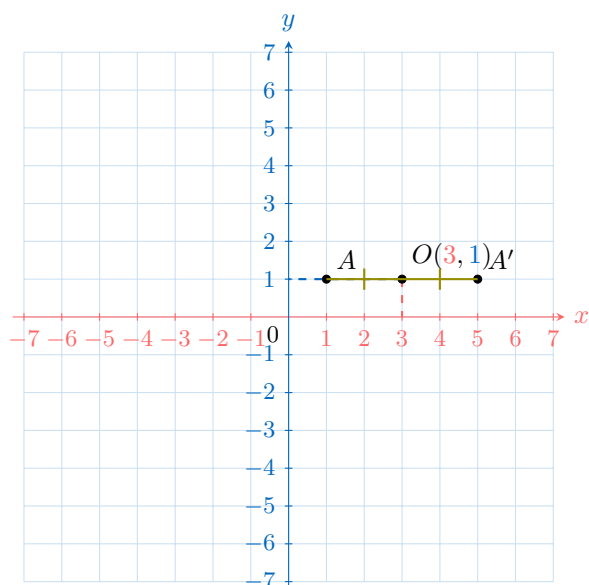
A.2 FINDING THE COORDINATES OF THE CENTER OF SYMMETRY

Ex 7: The point A' is the image of point A under a point reflection over point O.
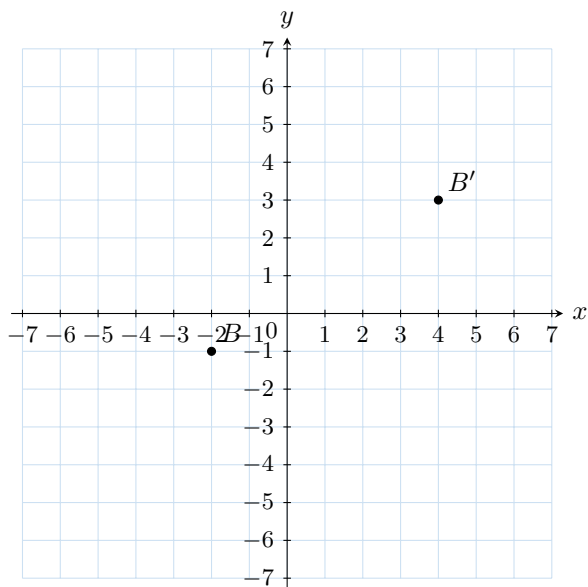

Find the coordinates of the point O

$$O(\boxed{3},\boxed{2})$$
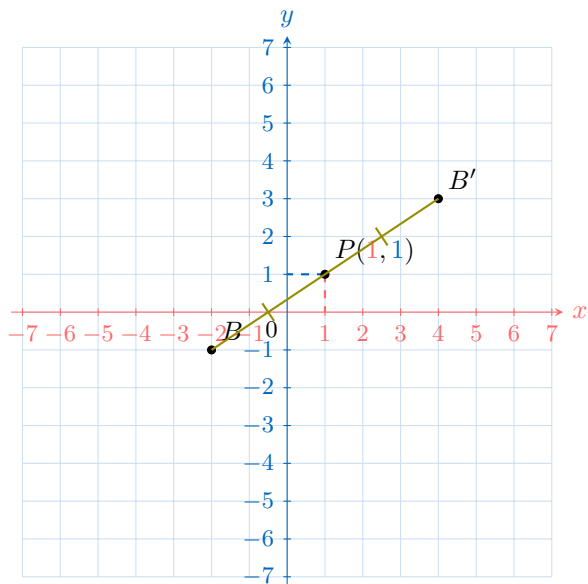
Answer:

$O(3,1)$

Ex 8: The point B' is the image of point B under a point reflection over point P.
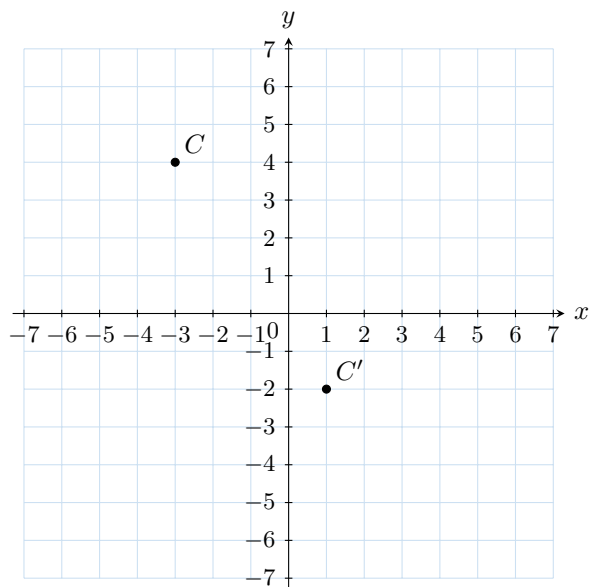
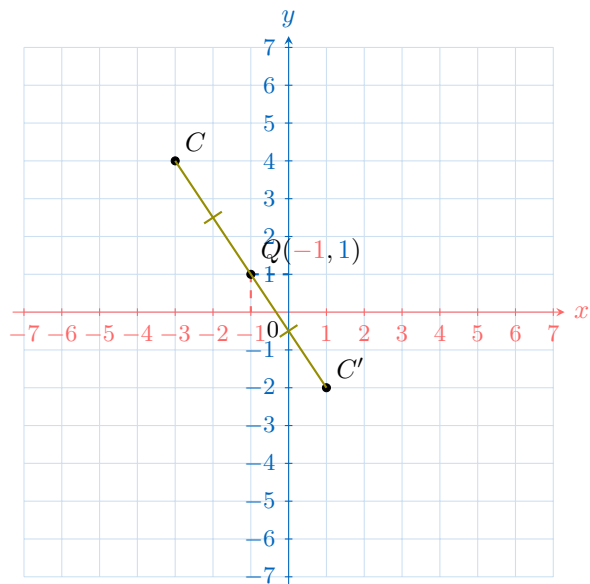Find the coordinates of the point P

$$P(\boxed{1}, \boxed{1})$$

Answer:

Find the coordinates of the point Q

$$Q(\boxed{-1}, \boxed{1})$$

Answer:

$P(1,1)$

$Q(-1,1)$

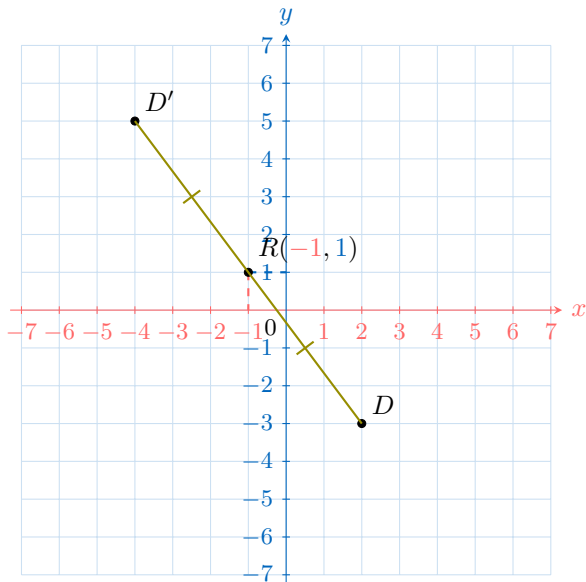**Ex 9:** The point C' is the image of point C under a point reflection over point Q.

Ex 10: The point D' is the image of point D under a point reflection over point R.
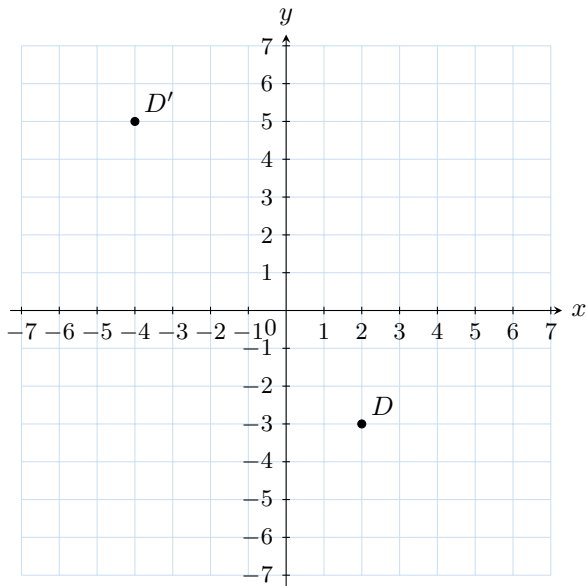
Find the coordinates of the point R

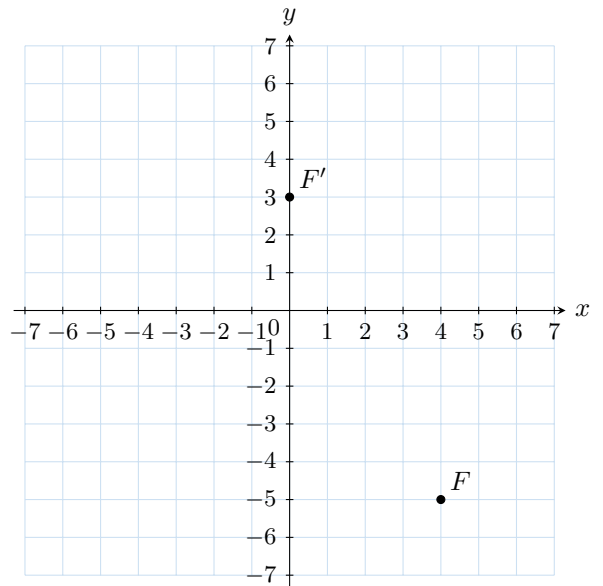Find the coordinates of the point S

$$S(\boxed{2},\boxed{-1})$$

Answer:
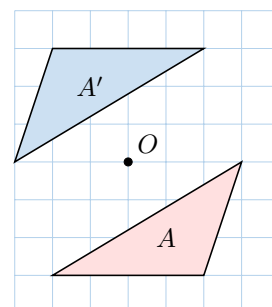
$$R(\boxed{-1},\boxed{1})$$

Answer:

$S(2,-1)$
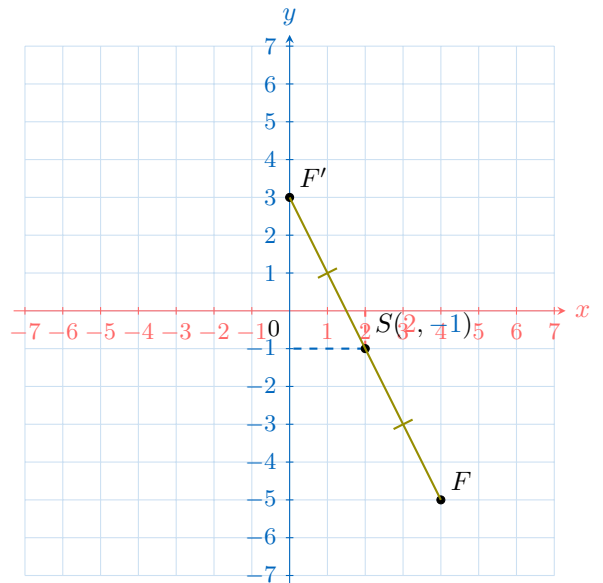
$R(-1,1)$

A.3 REFLECTIONS OF FIGURES

MCQ 12: Is the figure A' the image of figure A under the point reflection over point O?

Ex 11: The point F' is the image of point F under a point reflection over point S.

☒ Yes

☐ No

Answer: Yes

MCQ 13: Is the figure A' the image of figure A under the point reflection over point O?

☐ Yes

☒ No

Answer: No, the figure A' is misplaced. Here is where it should be.
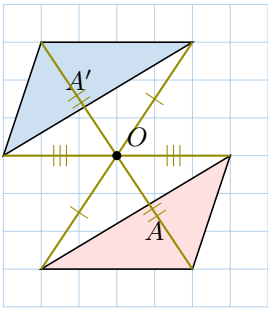

MCQ 14: Is the figure A' the image of figure A under the point reflection over point O?
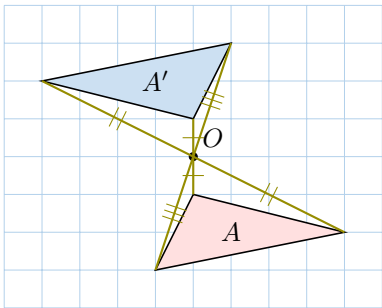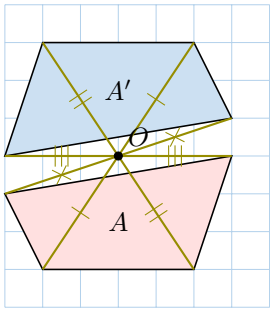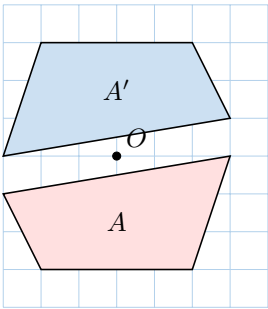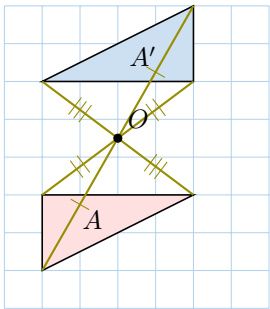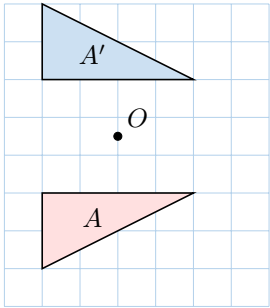

☒ Yes

☐ No

Answer: Yes

MCQ 15: Is the figure A' the image of figure A under the point reflection over point O?
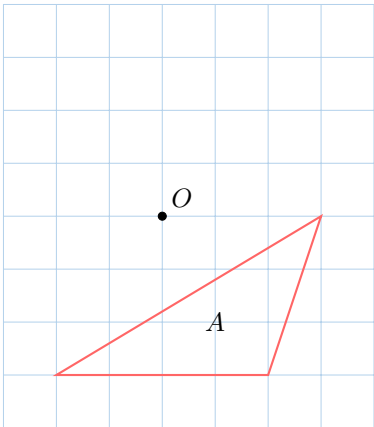

☐ Yes

☒ No

Answer: No, the figure A' is misplaced. Here is where it should be.

A.4 DRAWING IMAGES FIGURES

Ex 16: Draw the figure A', the image of figure A under the point reflection over point O .

Answer:

1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right). Place a new point on the other side, the same number of squares away in the opposite direction.

2. **Draw the image figure**: Connect the image vertices with lines in the same order as the original figure.

2. **Draw the image figure**: Connect the image vertices with lines in the same order as the original figure.

Ex 17: Draw the figure A', the image of figure A under the point reflection over point O .
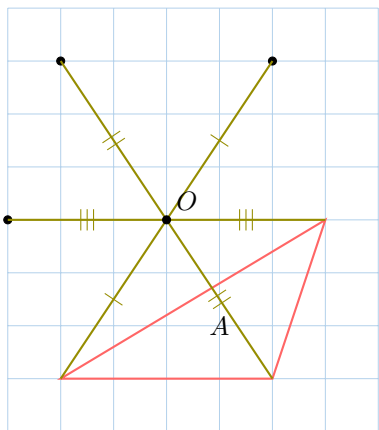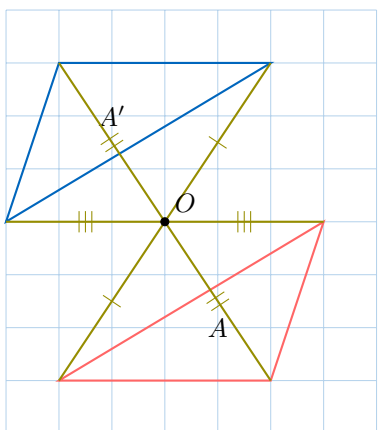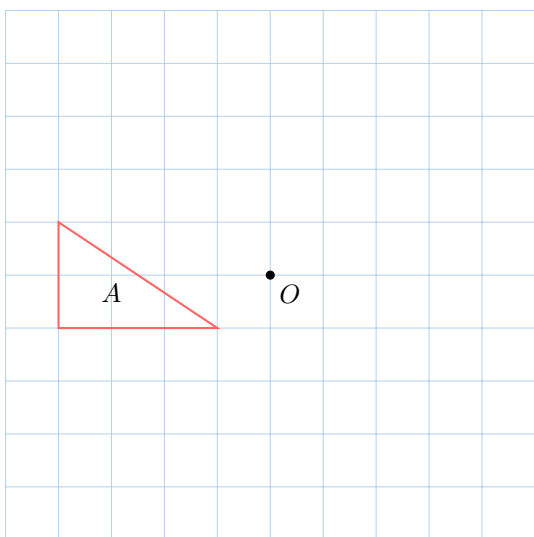

Ex 18: Draw the figure A', the image of figure A under the point reflection over point O .

Answer:

1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right, up or down). Place a new point on the other side, the same number of squares away in the opposite direction.

Answer:

1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right, up or down). Place a new point on the other side, the same number of squares away in the opposite direction.

2. **Draw the image figure**: Connect the image vertices with lines in the same order as the original figure.
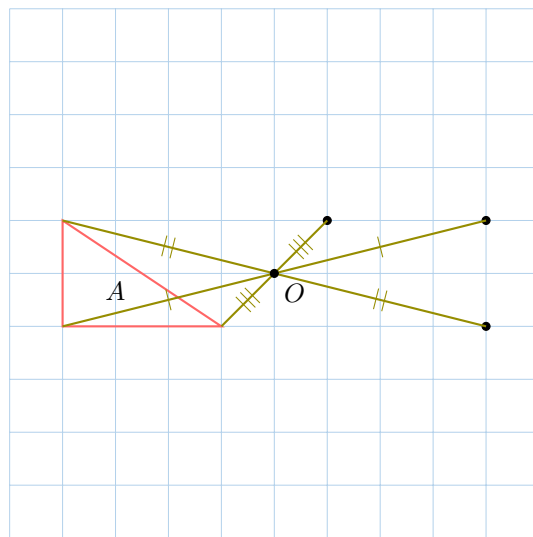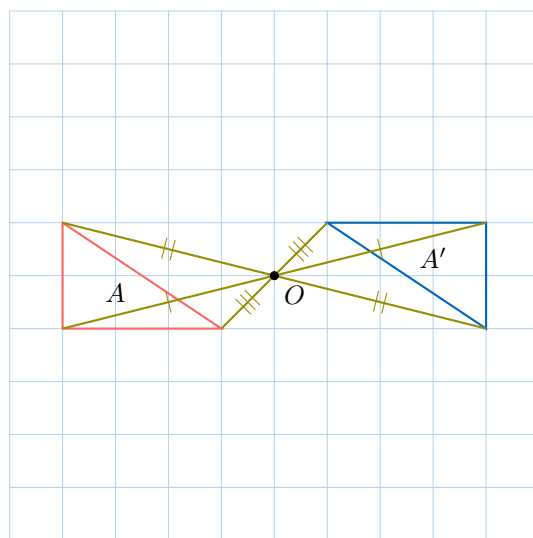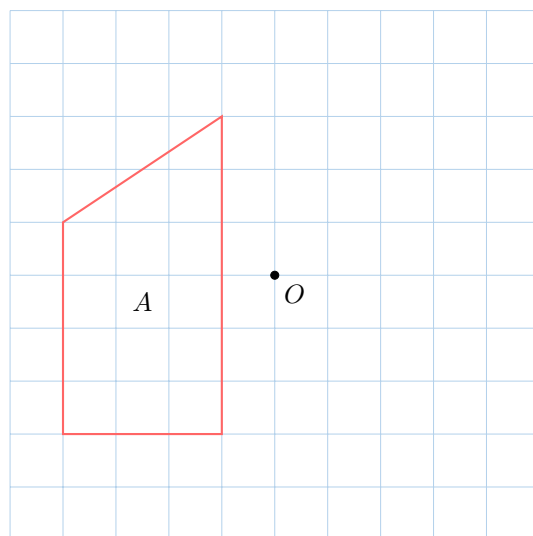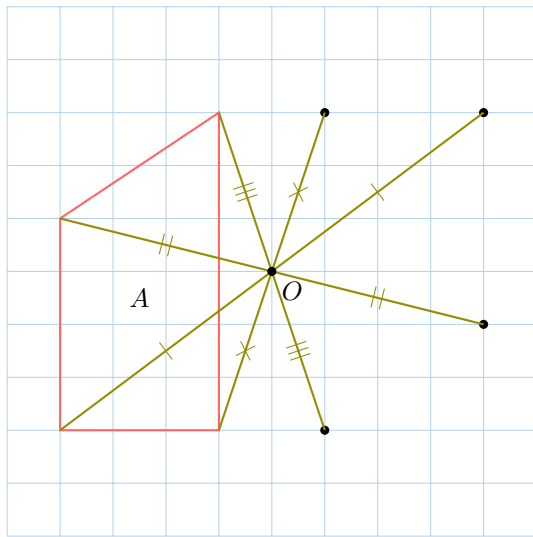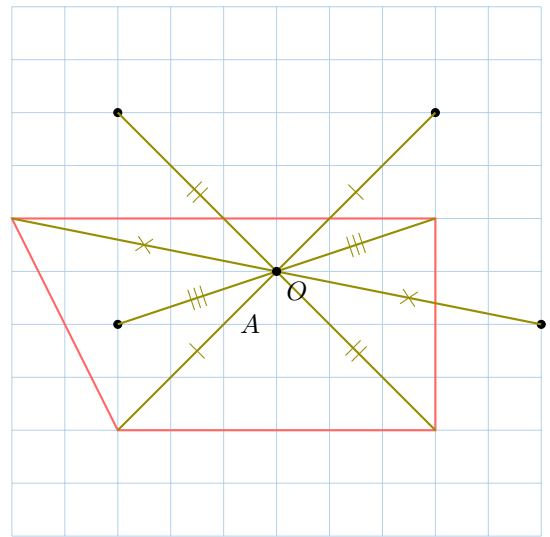

2. **Draw the image figure**: Connect the image vertices with lines in the same order as the original figure.

Ex 19: Draw the figure A', the image of figure A under the point reflection over point O.
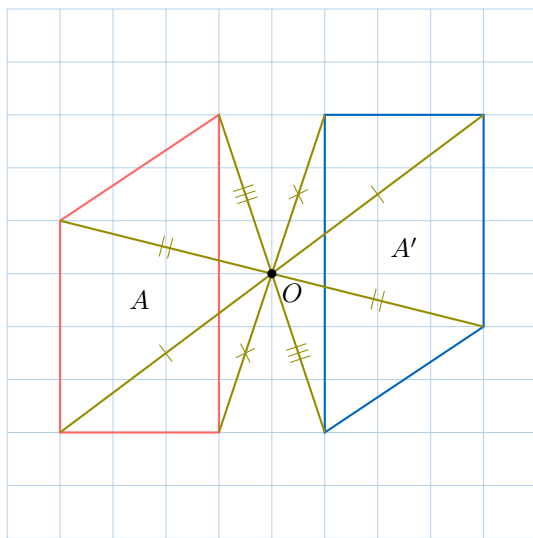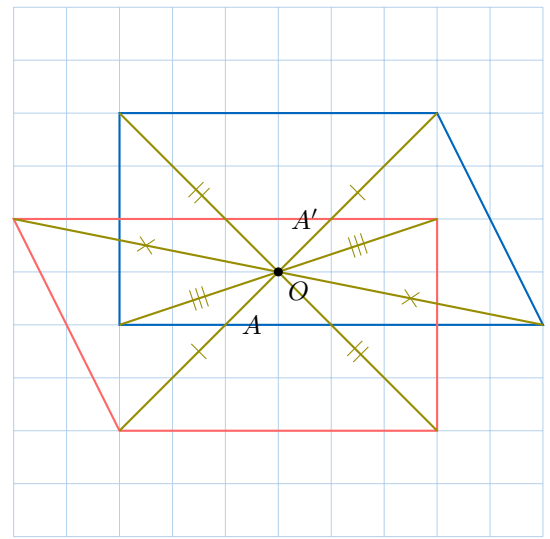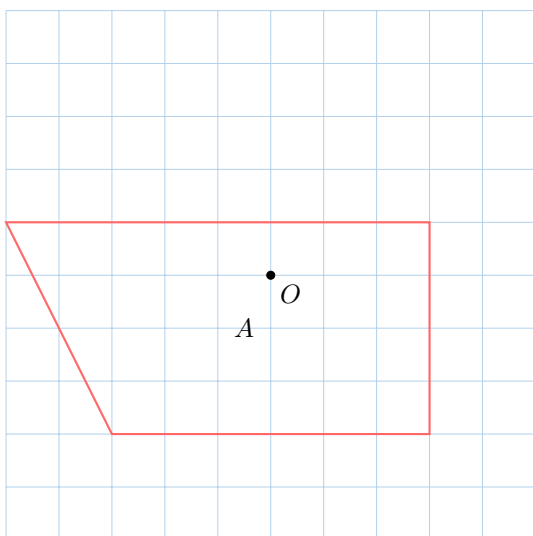

Answer:

1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right, up or down). Place a new point on the other side, the same number of squares away in the opposite direction.
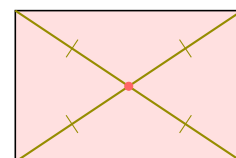
B CENTER OF SYMMETRY

B.1 NUMBER OF CENTERS OF SYMMETRY FOR COMMON SHAPES

Ex 20: Count the number of centers of symmetry for the rectangle.
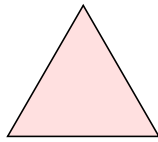

$\boxed{1}$ center of symmetry

Answer:

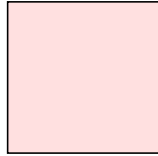1 center of symmetry for the rectangle.

Ex 21: Count the number of centers of symmetry for the equilateral triangle.
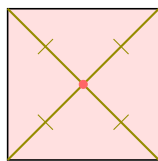
0 centers of symmetry

Answer: 0 centers of symmetry for the equilateral triangle.

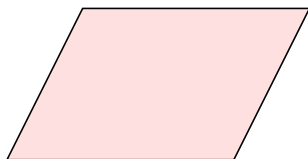**Ex 22:** Count the number of centers of symmetry for the square.
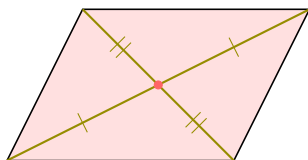
1 center of symmetry

Answer:

1 center of symmetry for the square.

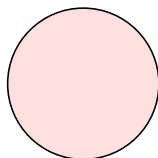**Ex 23:** Count the number of centers of symmetry for the parallelogram.
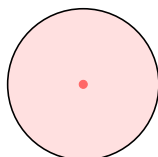
1 center of symmetry

Answer:

1 center of symmetry for the parallelogram.

Ex 24: Count the number of centers of symmetry for the circle.

1 center of symmetry

Answer:

1 center of symmetry for the circle.