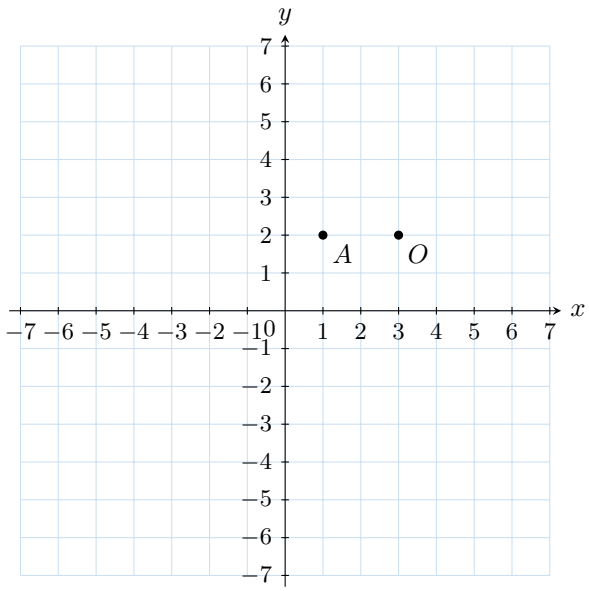
POINT REFLECTION

A DEFINITIONS

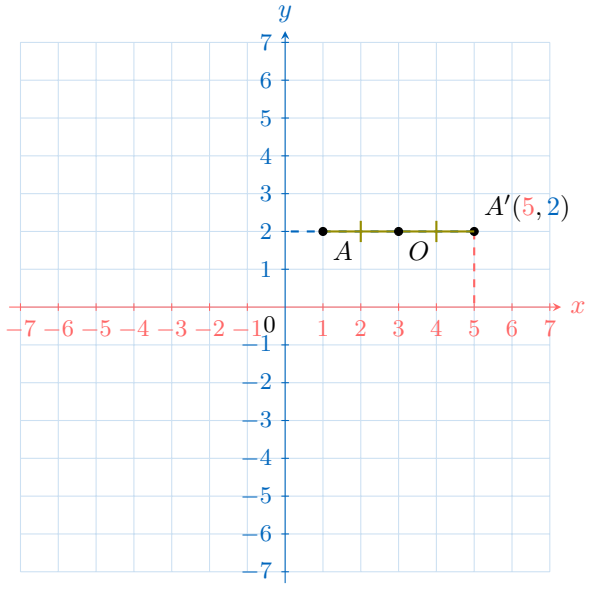
A.1 FINDING IMAGES OF POINTS

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



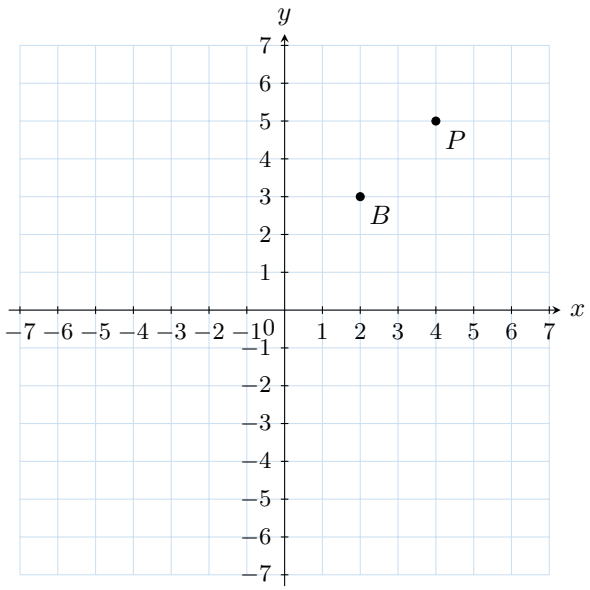
$A'(\boxed{5},\boxed{2})$

Answer:



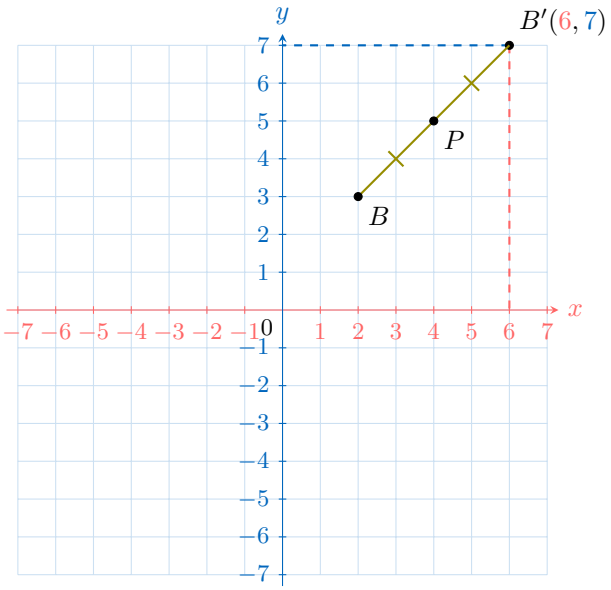
$A'(5, 2)$

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



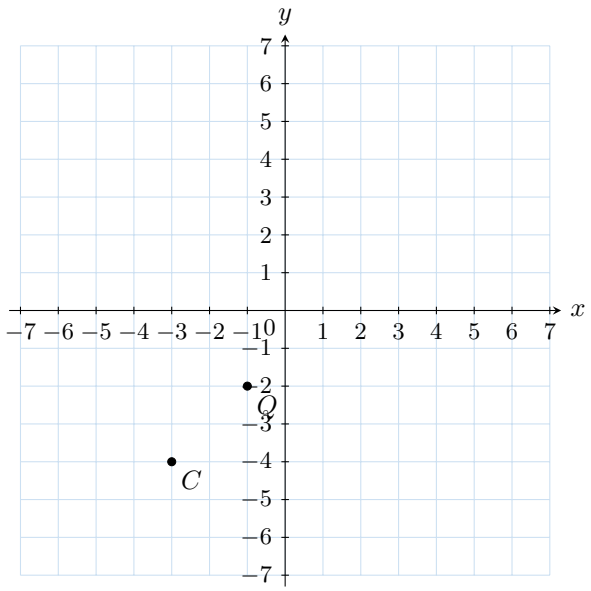
$B'(\boxed{6},\boxed{7})$

Answer:



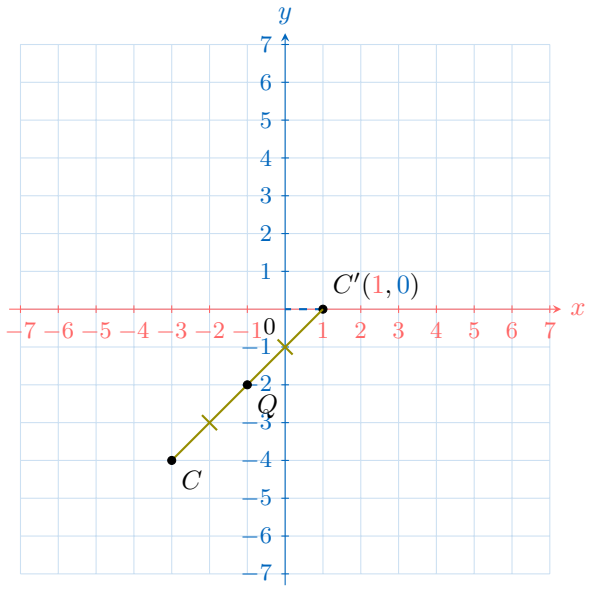
$B'(6, 7)$

Ex 3: Find the coordinates of the image of point C under a point reflection over point Q.



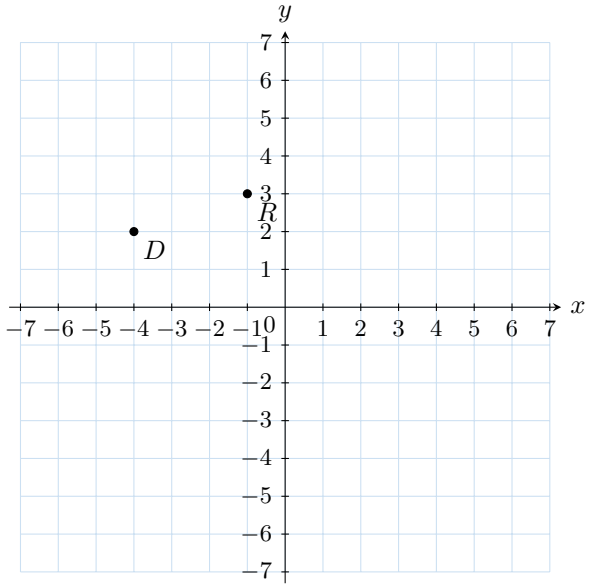
$C'(\boxed{1},\boxed{0})$

Answer:



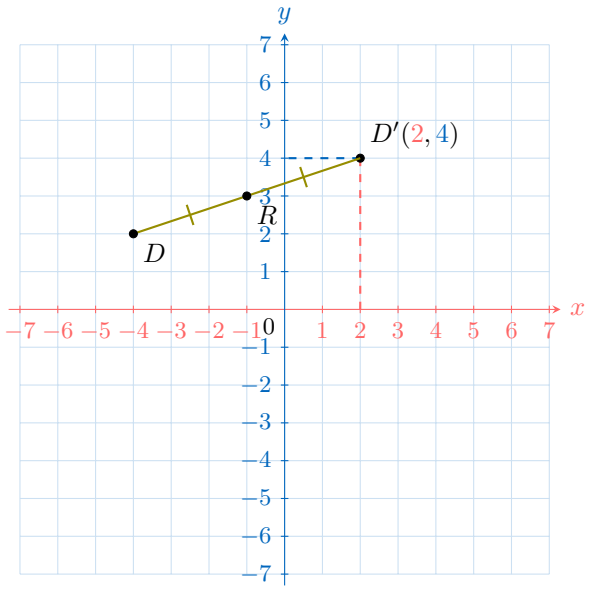
$C'(1,0)$

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



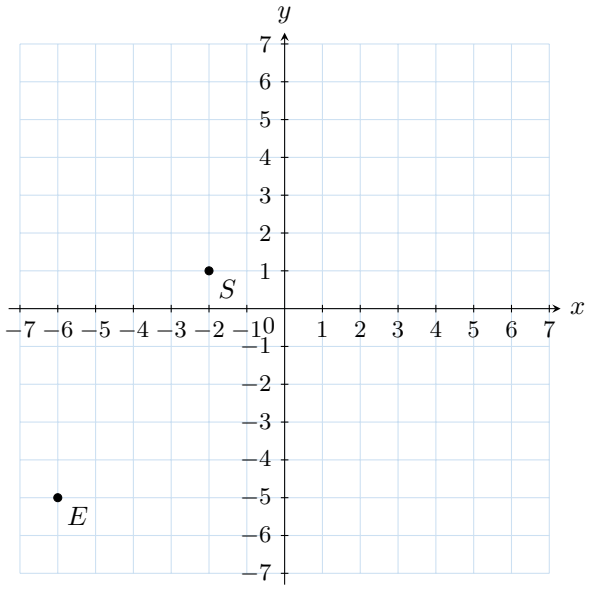
$D'(\boxed{2},\boxed{4})$

Answer:



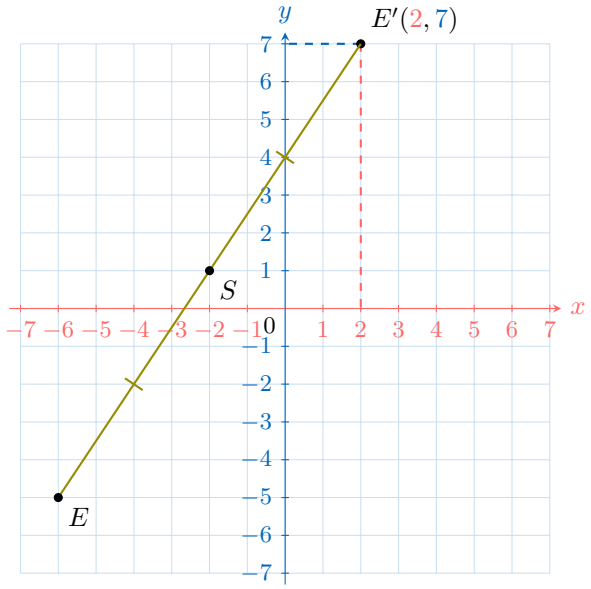
$D'(2,4)$

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



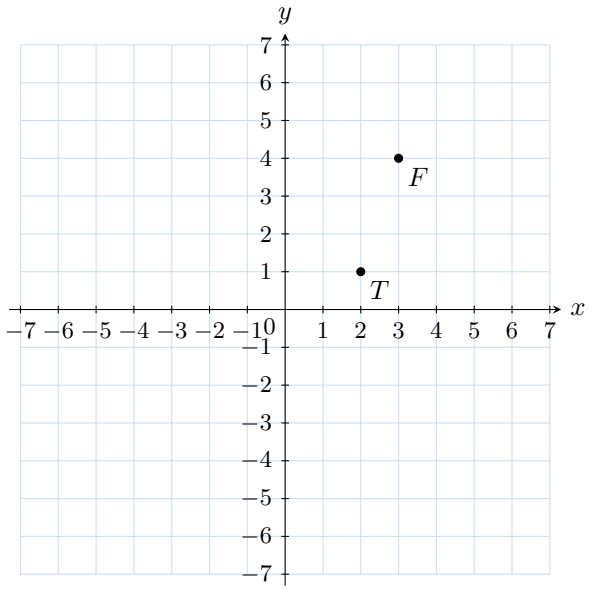
$E'(\boxed{2},\boxed{7})$

Answer:



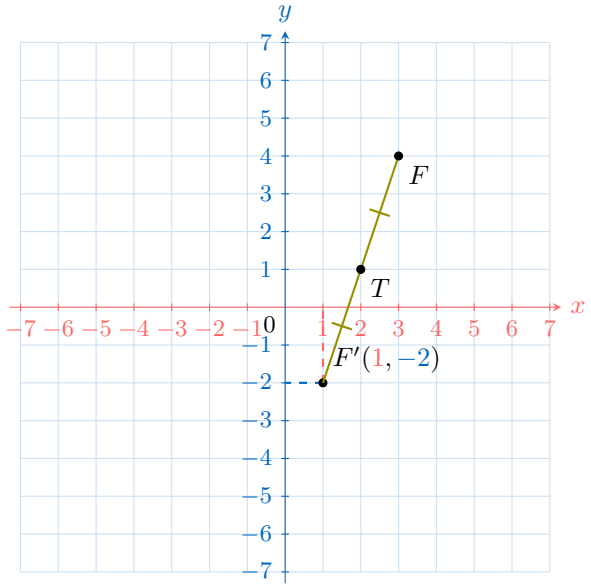
$E'(2,7)$

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



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

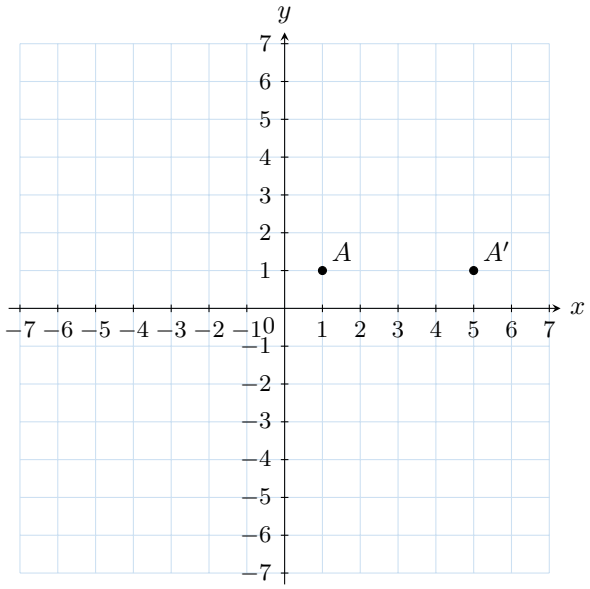
Answer:



$F'(1,-2)$

A.2 FINDING THE COORDINATES OF THE CENTER OF SYMMETRY

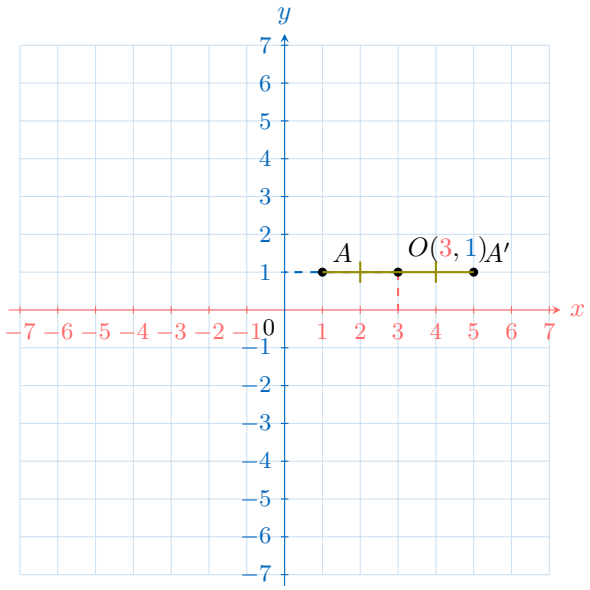
Ex 7: The point A' is the image of point A under a point reflection over point O.



Find the coordinates of the point O

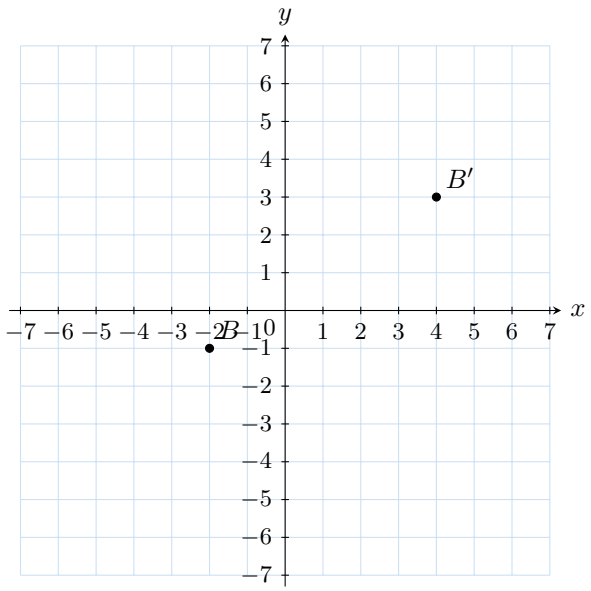
$O(\boxed{3},\boxed{1})$

Answer:



$O(3,1)$

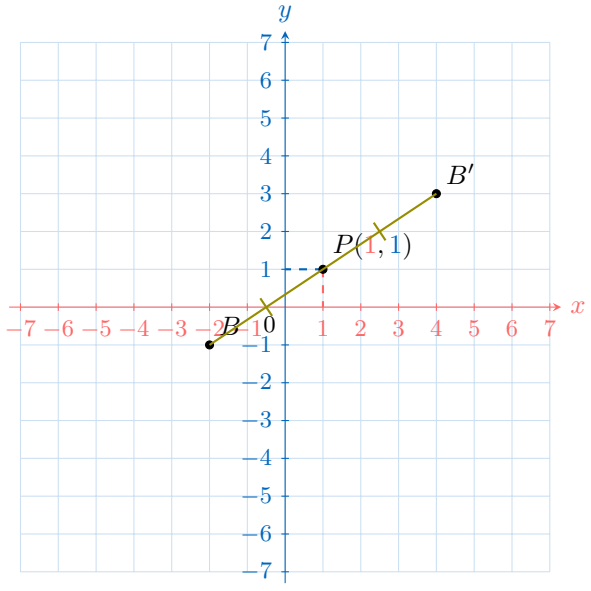
Ex 8: The point B' is the image of point B under a point reflection over point P.



Find the coordinates of the point P

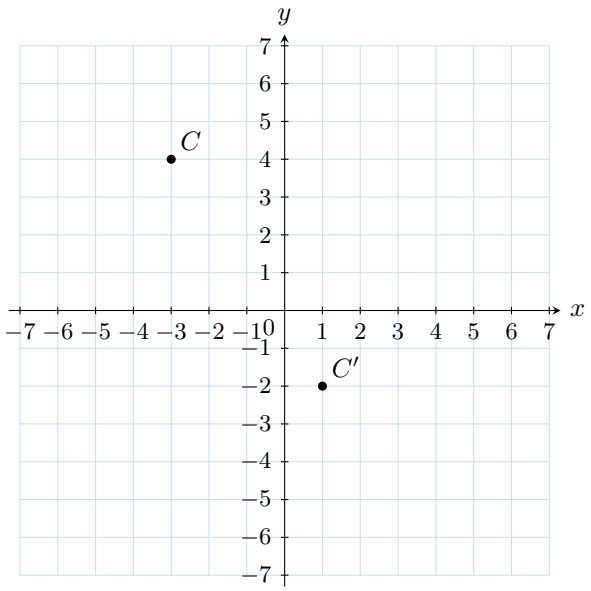
$P(\boxed{1},\boxed{1})$

Answer:



$P(1, 1)$

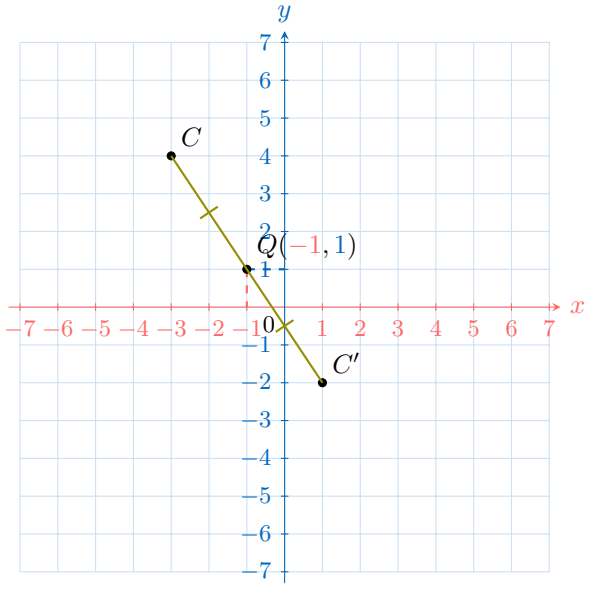
Ex 9: The point C' is the image of point C under a point reflection over point Q.



Find the coordinates of the point Q

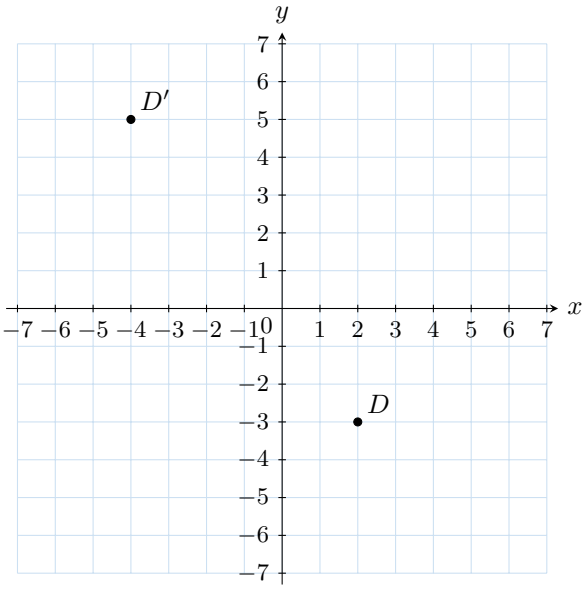
$Q(\boxed{-1},\boxed{1})$

Answer:



$Q(-1, 1)$

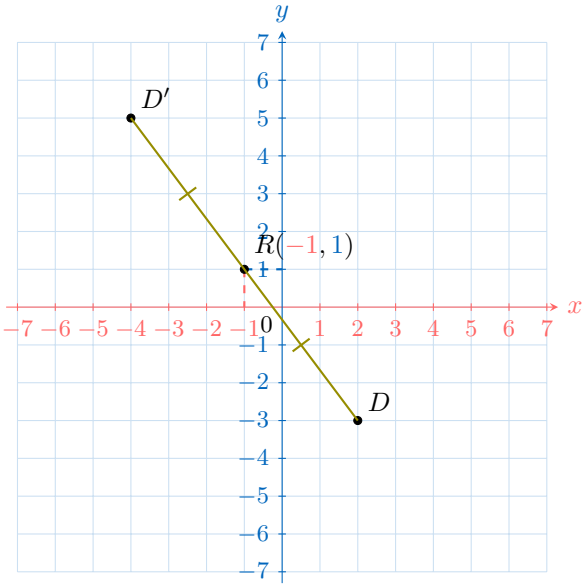
Ex 10: The point D' is the image of point D under a point reflection over point R.



Find the coordinates of the point R

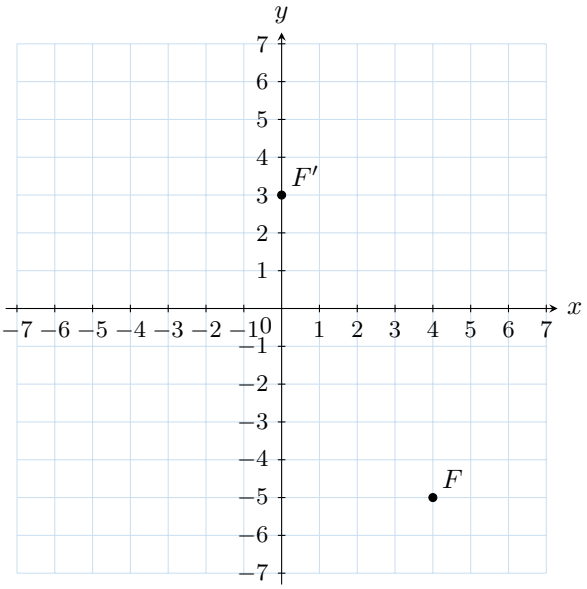
$R(\boxed{-1},\boxed{1})$

Answer:



$R(-1,1)$

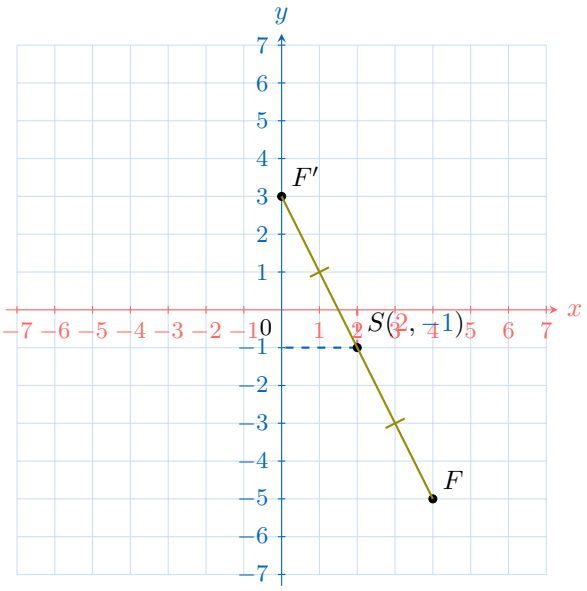
Ex 11: The point F' is the image of point F under a point reflection over point S.



Find the coordinates of the point S

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

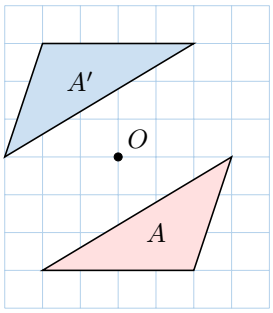
Answer:



$S(2,-1)$

A.3 REFLECTIONS OF FIGURES

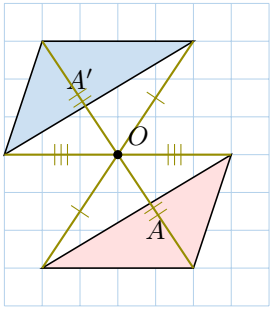
MCQ 12: Is the figure A' the image of figure A under the point reflection over point O?



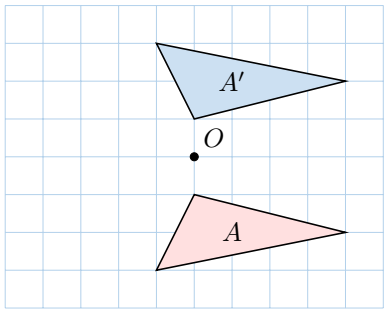
☒ Yes

☐ No

Answer: Yes



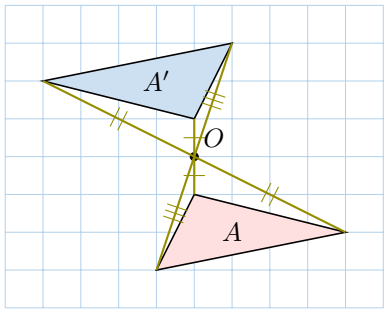
MCQ 13: Is the figure A' the image of figure A under the point reflection over point O?



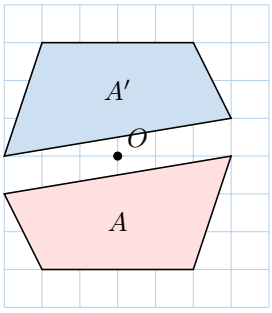
☐ Yes

☒ No

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



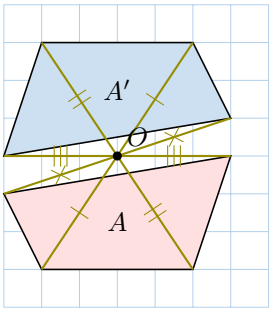
MCQ 14: Is the figure A' the image of figure A under the point reflection over point O?



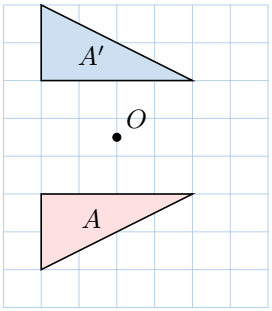
☒ Yes

☐ No

Answer: Yes



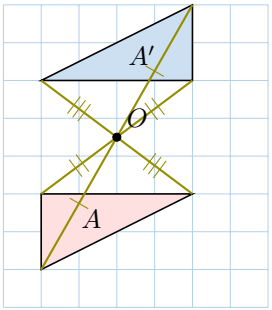
MCQ 15: Is the figure A' the image of figure A under the point reflection over point O?



☐ Yes

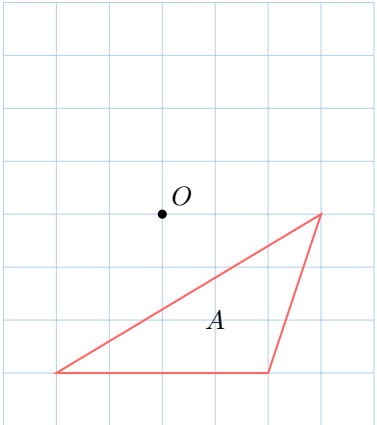
☒ No

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



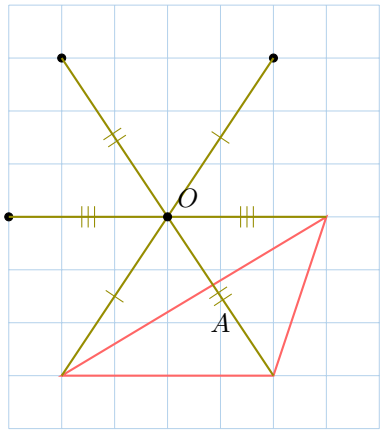
A.4 DRAWING IMAGES FIGURES

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

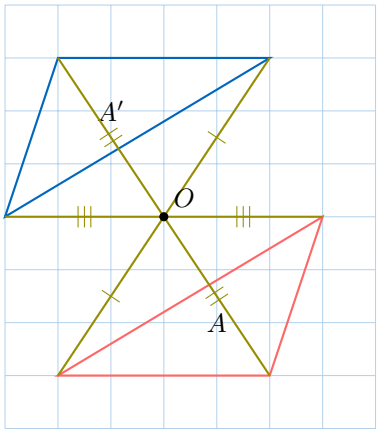


Answer:

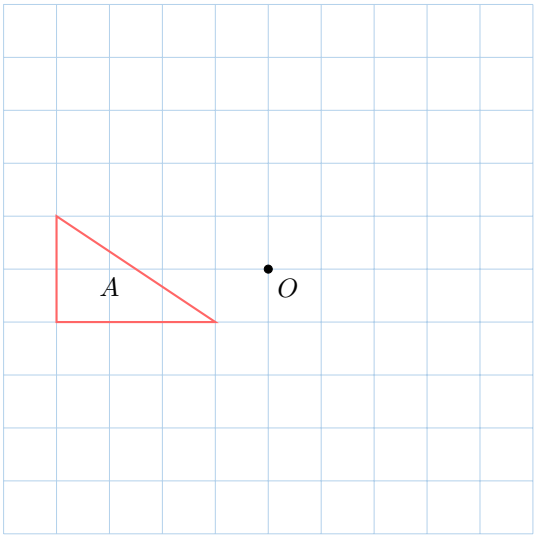
1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right). Place a new point on the other side, the same number of squares away in the opposite direction.



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

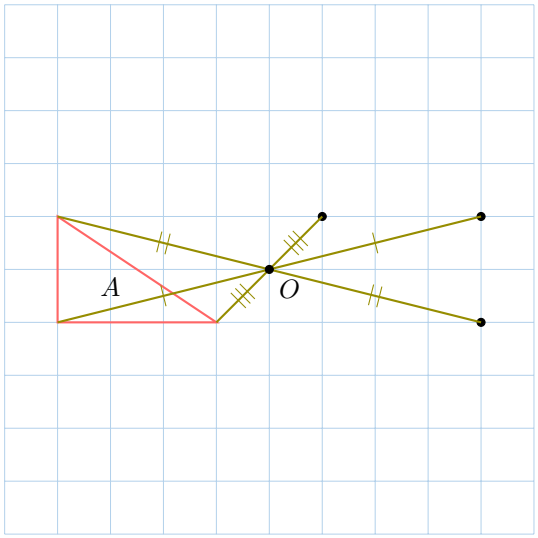


Ex 17: Draw the figure A', the image of figure A under the point reflection over point O .

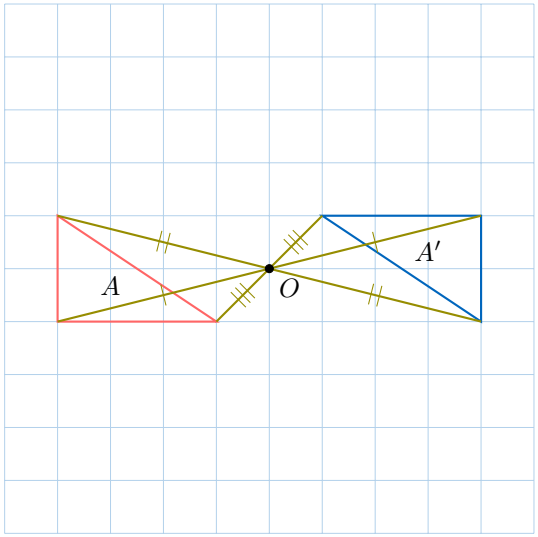


Answer:

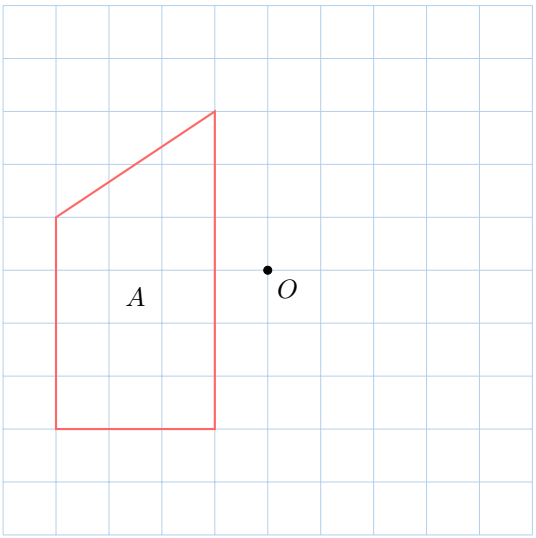
1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right, up or down). Place a new point on the other side, the same number of squares away in the opposite direction.



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

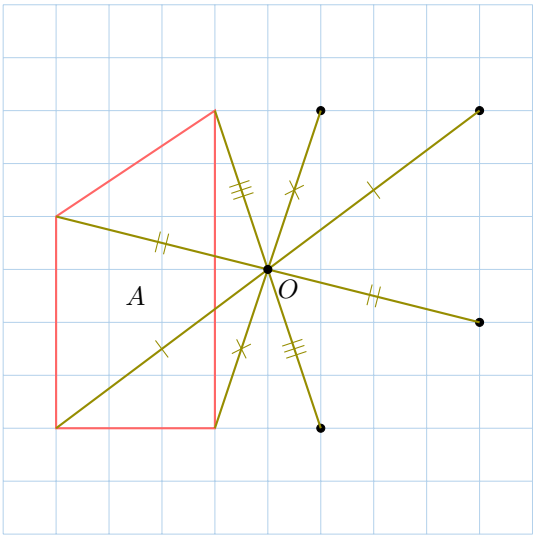


Ex 18: Draw the figure A', the image of figure A under the point reflection over point O .

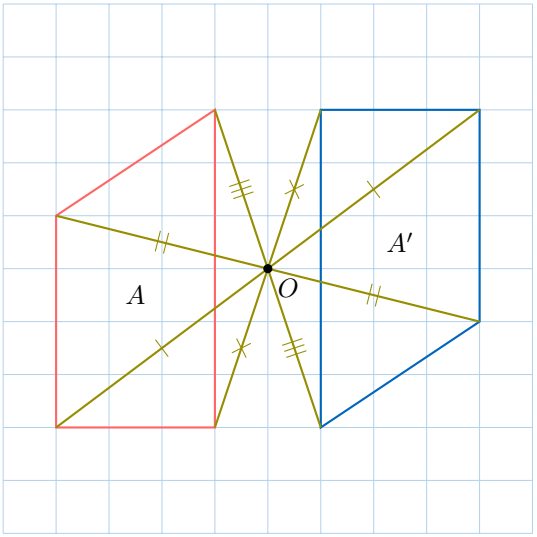


Answer:

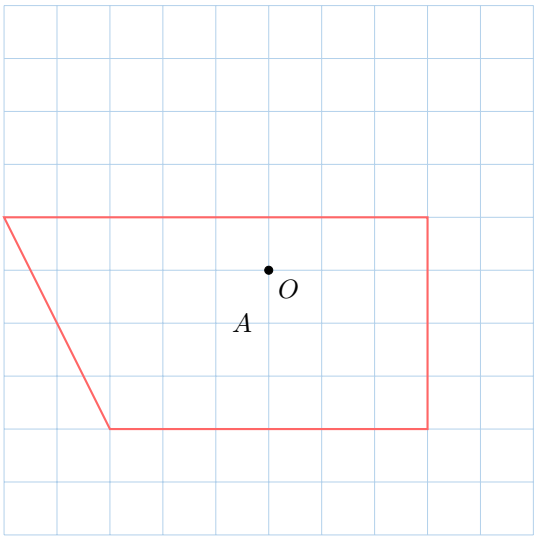
1. **Draw the image vertices**: For each vertex, count the squares to the point O (left or right, up or down). Place a new point on the other side, the same number of squares away in the opposite direction.



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

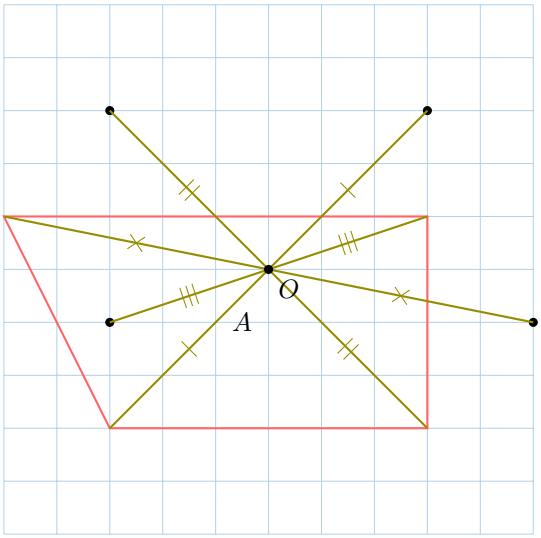


Ex 19: Draw the figure A', the image of figure A under the point reflection over point O .

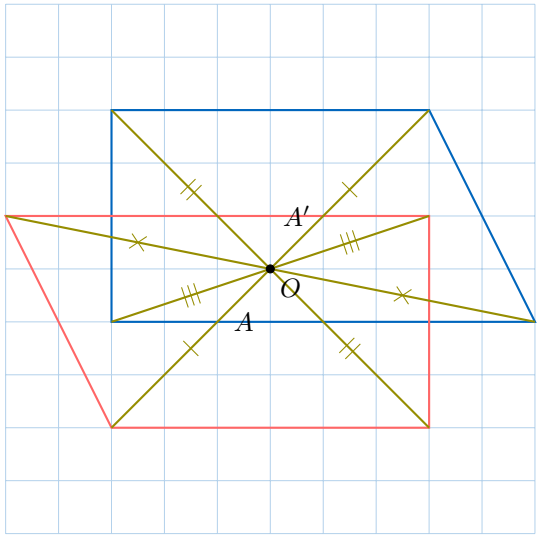


Answer:

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.



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



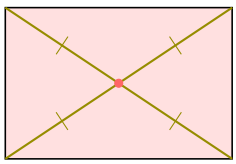
B CENTER OF SYMMETRY

B.1 NUMBER OF CENTERS OF SYMMETRY FOR COMMON SHAPES

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

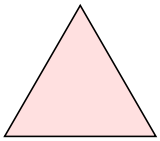
1 center of symmetry

Answer:



1 center of symmetry for the rectangle.

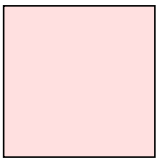
Ex 21: Count the number of centers of symmetry for the equilateral triangle.



$\boxed{0}$ centers of symmetry

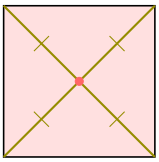
Answer: 0 centers of symmetry for the equilateral triangle.

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



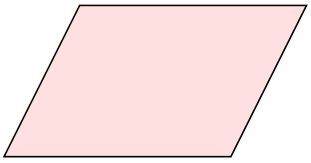
$\boxed{1}$ center of symmetry

Answer:



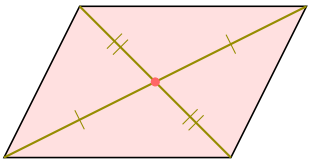
1 center of symmetry for the square.

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



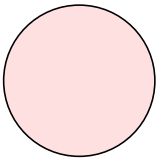
$\boxed{1}$ center of symmetry

Answer:



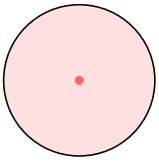
1 center of symmetry for the parallelogram.

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



$\boxed{1}$ center of symmetry

Answer:



1 center of symmetry for the circle.