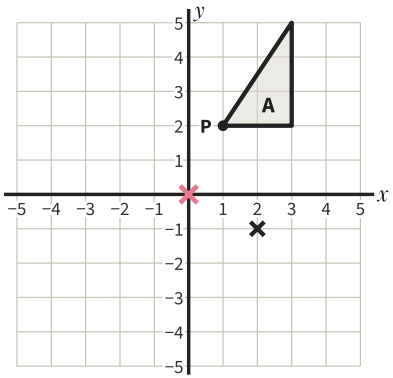
# Rotating shapes

**1**

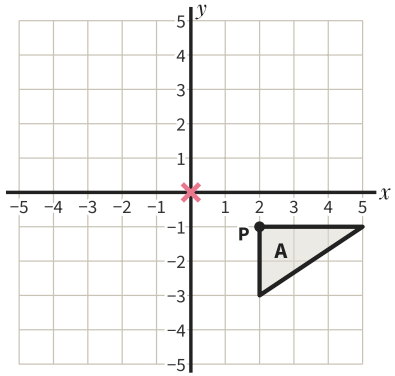
Rotate A 90° clockwise about (0, 0).
The cross shows where P lands.




P′ _____

**2**

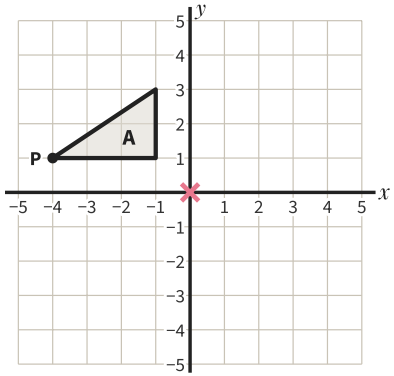
Rotate A 90° anticlockwise about (0, 0).




P′ _____

**3**

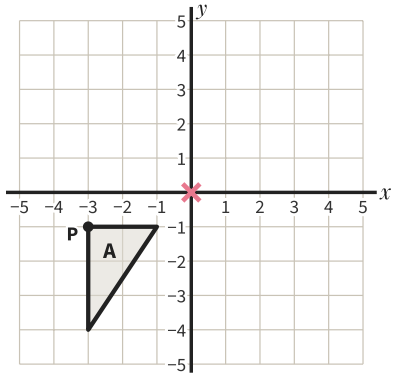
Rotate A 180° about (0, 0).




P′ _____

**4**

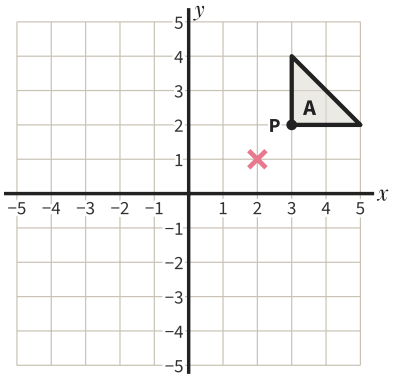
Rotate A 90° clockwise about (0, 0).




P′ _____

**5**

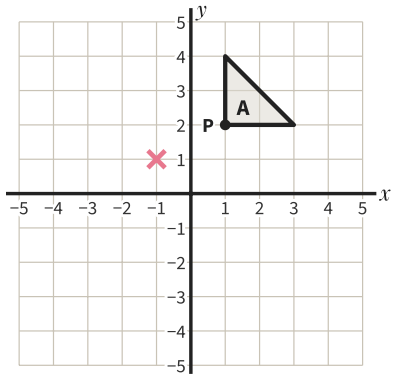
Rotate A 90° anticlockwise about (2, 1).




P′ _____

**6**

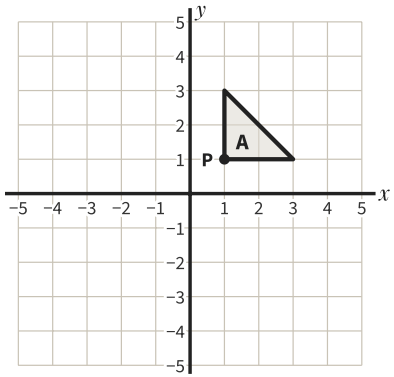
Rotate A 180° about (−1, 1).




P′ _____

**7**

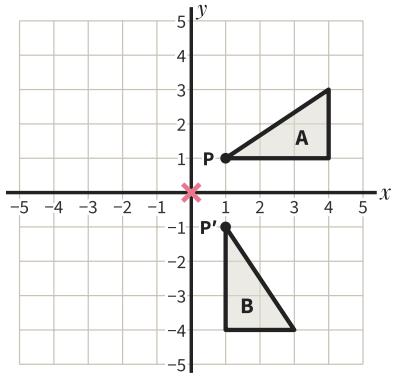
Rotate A 90° anticlockwise about (−1, 0).




P′ _____

**8**

Rotate A 90° anticlockwise about (0, 0).
Leo drew B. What did he do wrong?



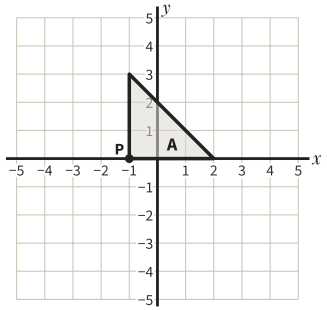

_____

P′ should be _____

# Rotating shapes *further practice*

**9**

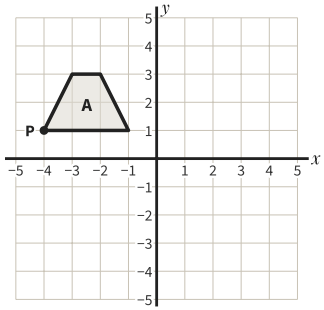
Rotate A 90° clockwise about (−2, −1).




P′ _____

**10**

Rotate the trapezium A 180° about (0, 1).




P′ _____

**11**

The point (3, −2) is rotated 90° anticlockwise about (0, 0).
Write down the coordinates of its image.

Answer _____

**12**

Kai rotates the point (4, 1) 90° anticlockwise about (1, 1). He says the image is (1, 3). Use the distance from the centre to show he is wrong, and find the image.

Answer _____

**13**

Triangle A has corners (1, 1), (4, 1) and (4, 5), and an area of 6 squares.
A is rotated 180° about (0, 0) to give B.
What is the area of B?
Explain how you know.

Answer _____

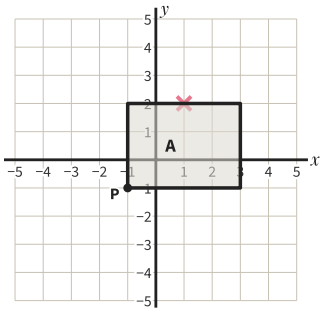
**14**

A clock is drawn on a grid with its centre at (0, 0). The tip of the minute hand is at (0, 4). Where is the tip 15 minutes later? Where is it 30 minutes later?

Answer _____

**15**

A picture frame A hangs on a nail at (1, 2), the cross. It slips round 90° anticlockwise. Draw where it ends up.




P′ _____

**16**

Ella says a rotation of 180° needs a direction, clockwise or anticlockwise. Explain why she is wrong.

Answer _____