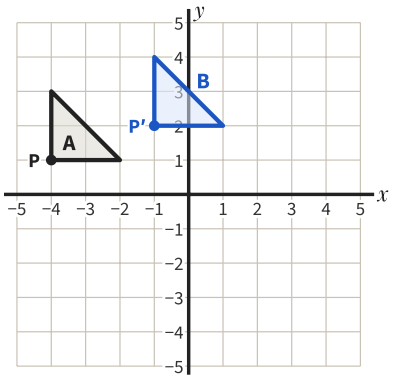
Mixed transformations: drawing the image

ANSWERS

1

Translate A by the vector $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$.

Label the image B. The cross shows where P lands.

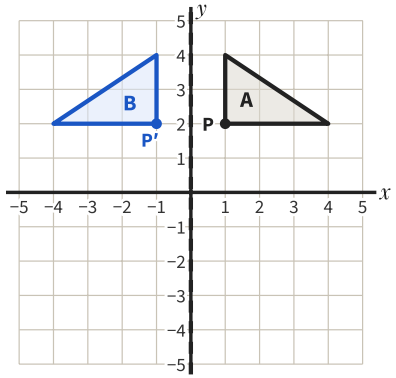


(−1, 2)

P′ _____

2

Reflect A in the y-axis. Label the image B.



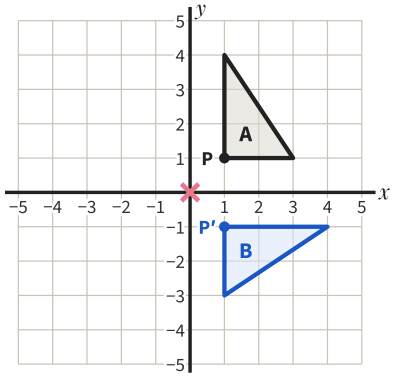
(−1, 2)

P′ _____

3

Rotate A 90° clockwise about (0, 0).

Label the image B.



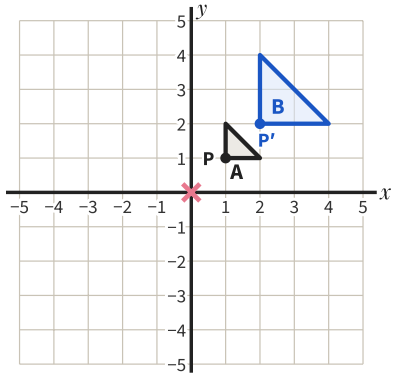
(1, −1)

P′ _____

4

Enlarge A by scale factor 2, centre (0, 0).

Label the image B.



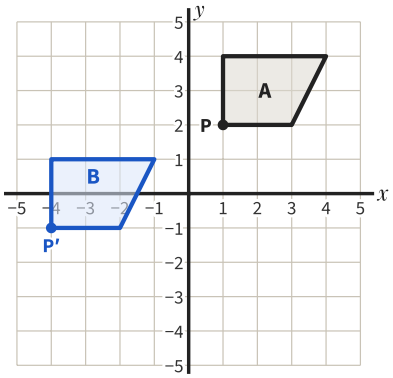
(2, 2)

P′ _____

5

Translate A by the vector $\begin{pmatrix} -5 \\ -3 \end{pmatrix}$.

Label the image B.



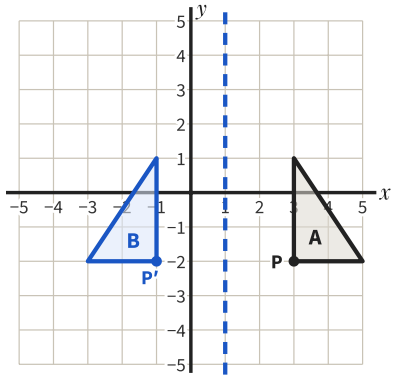
(−4, −1)

P′ _____

6

Reflect A in the line $x = 1$.

Label the image B.



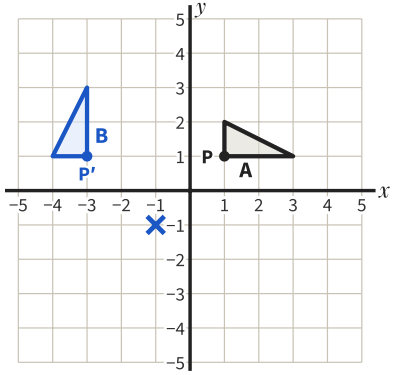
(−1, −2)

P′ _____

7

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

Label the image B.



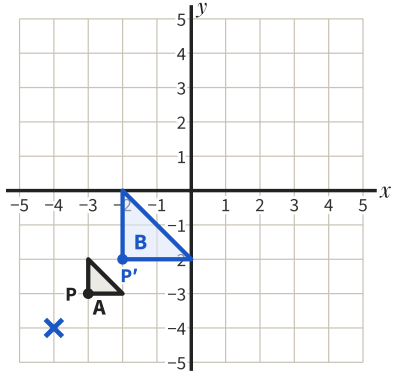
(−3, 1)

P′ _____

8

Enlarge A by scale factor 2, centre (−4, −4).

Label the image B.



(−2, −2)

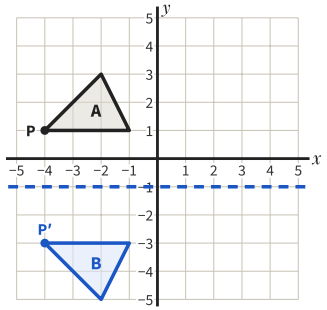
P′ _____

Mixed transformations: drawing the image *further practice*

ANSWERS

9

Reflect A in the line $y = -1$.

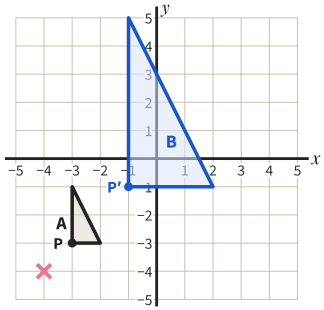


draw the line $y = -1$ first

P′ (−4, −3)

10

Enlarge A by scale factor 3, centre (−4, −4).



P: right 1, up 1, so P′: right 3, up 3

P′ (−1, −1)

11

The point (3, −2) is translated by the vector $\begin{pmatrix} -5 \\ 4 \end{pmatrix}$. Write down the coordinates of its image.

5 left, 4 up

3 − 5 = −2, −2 + 4 = 2

Answer (−2, 2)

12

A shape moves 3 squares left and 5 squares up. Write this as a column vector.

left is negative, up is positive

Answer $\begin{pmatrix} -3 \\ 5 \end{pmatrix}$

13

A robot on a grid starts at (−2, 1).
It moves by the vector $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$, then by $\begin{pmatrix} -1 \\ 5 \end{pmatrix}$. Where does it end up?

after the first move: (2, −2)

then 1 left, 5 up

Answer (1, 3)

14

A photo is 3 cm wide and 2 cm tall.
It is enlarged by scale factor 2.
What is the perimeter of the enlarged photo?

6 cm by 4 cm

6 + 4 + 6 + 4 = 20

Answer 20 cm

15

Ola translates the point (2, 3) by the vector $\begin{pmatrix} -1 \\ 4 \end{pmatrix}$. She gets (6, 2).
What did she do wrong?
Write down the correct image.

she read the vector the wrong way round

1 left, 4 up gives (1, 7)

Answer (1, 7)

16

Jay translates a shape by $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$, then translates the image by $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$.
He says the shape ends up back where it started. Is he right? Explain.

3 right, then 3 left

2 down, then 2 up

Answer Yes