

Reasoning and Problem Solving

Step 3: Translations

National Curriculum Objectives:

Mathematics Year 6: (6P2) [Draw and translate simple shapes on the coordinate plane, and reflect them in the axes](#)

Mathematics Year 6:(6P3) [Describe positions on the full coordinate grid \(all four quadrants\)](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Identify regular shapes (with up to four sides) translated across four quadrants. One translation with one movement.

Expected Identify quadrilaterals translated across four quadrants. One translation with two movements per translation.

Greater Depth Identify shapes with up to 6 sides translated across four quadrants. One translation with two movements per translation. Includes plots between increments.

Questions 2, 5 and 8 (Problem Solving)

Developing Identify coordinates of regular shapes (with up to four sides) translated across four quadrants. One movement per translation.

Expected Identify coordinates of quadrilaterals translated across four quadrants. Two movements per translation.

Greater Depth Identify coordinates of shapes (with up to six sides) translated across up to four quadrants. Includes plots between increments.

Questions 3, 6 and 9 (Reasoning)

Developing Explain the position of regular shapes (with up to four sides) translated by a single movement across four quadrants.

Expected Explain the position of a quadrilateral translated by two movements across four quadrants.

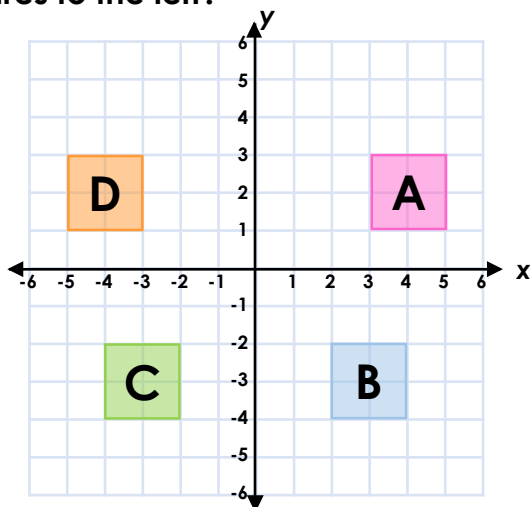
Greater Depth Explain the position of shapes (with up to six sides) translated by two movements across four quadrants. Includes plots between increments.

More [Year 6 Position and Direction](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Translations

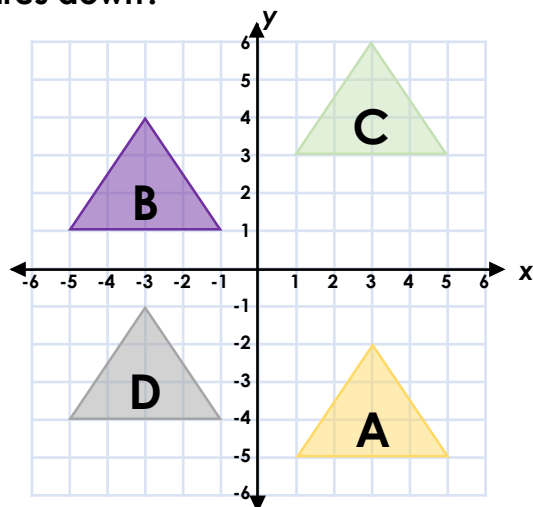
1a. Which shape has been translated 6 squares to the left?



PS

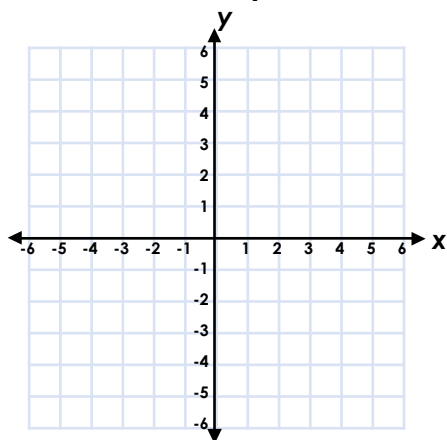
Translations

1b. Which shape has been translated 5 squares down?



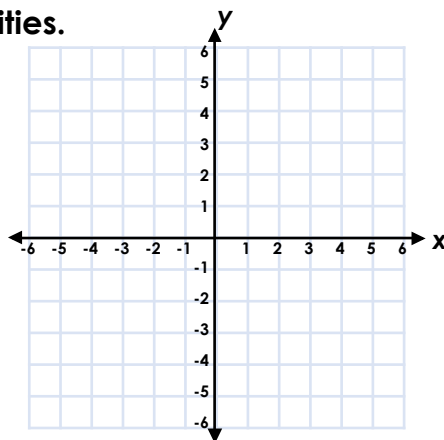
PS

2a. Here are the coordinates of a shape: (2, 1), (4, 4), and (6, 1). If one coordinate translates to (-2, 1), what could the other coordinates be? Find 2 possibilities.



PS

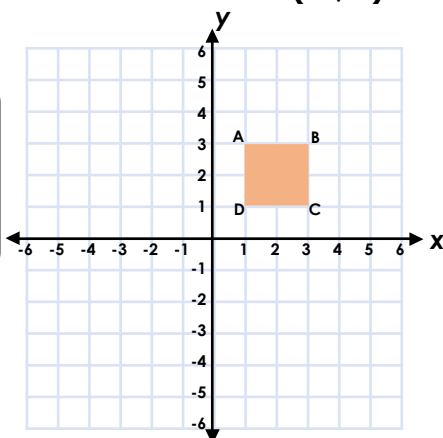
2b. Here are the coordinates of a shape: (-1, 2), (-3, 2), (-1, 4) and (-3, 4). If one coordinate translates to (-1, -2), what could the other coordinates be? Find 2 possibilities.



PS

3a. Anna draws shape ABCD on the grid. She wants to translate the shape so that point D becomes the coordinate (-4, 1). She says,

Point A will become the coordinate (3, -4).

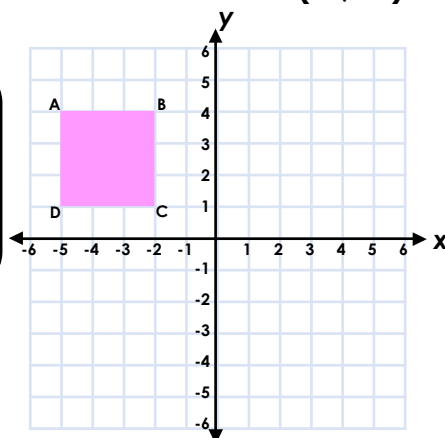


Do you agree? Explain why.

R

3b. Khan draws shape ABCD on the grid. He wants to translate the shape so that point C becomes the coordinate (-2, -5). He says,

Point D will become the coordinate (-5, -5).

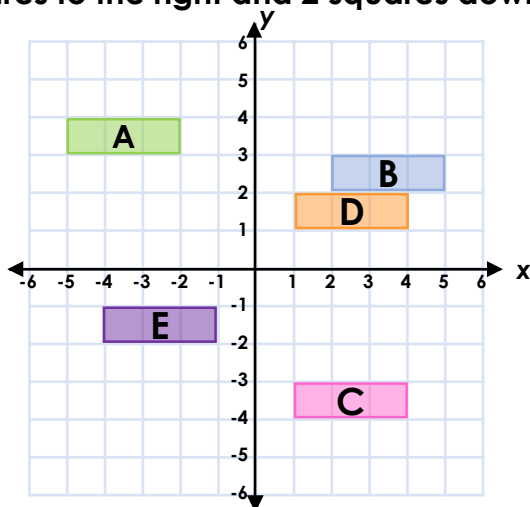


Do you agree? Explain why.

R

Translations

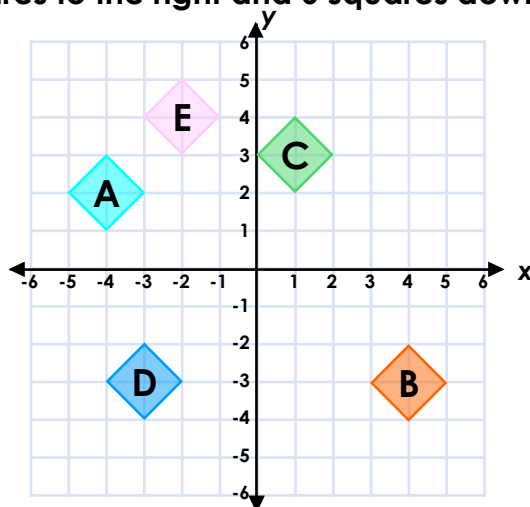
4a. Which shape has been translated 5 squares to the right and 2 squares down?



PS

Translations

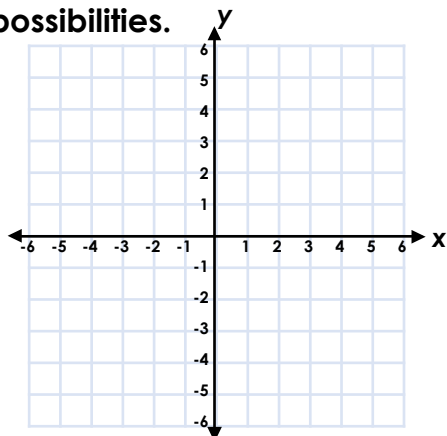
4b. Which shape has been translated 3 squares to the right and 6 squares down?



PS

5a. Below are the coordinates of a shape. If one coordinate translates to $(-3, -2)$, and the shape crosses 2 quadrants, what could the other coordinates be? Find 2 possibilities.

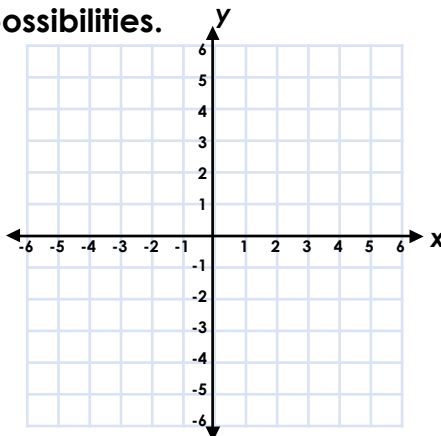
(2, 1)
(2, 5)
(5, 1)
(5, 5)



PS

5b. Below are the coordinates of a shape. If one coordinate translates to $(-1, -1)$, and the shape crosses 2 quadrants, what could the other coordinates be? Find 2 possibilities.

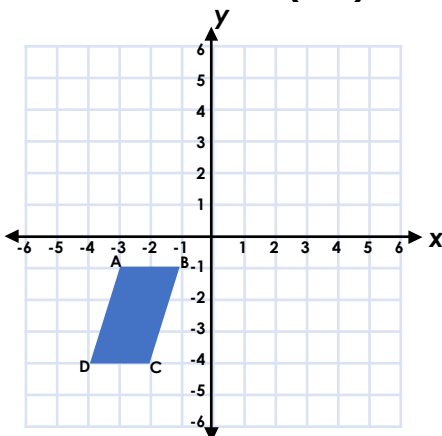
(1, 1)
(2, 3)
(3, 3)
(4, 1)



PS

6a. Daisy draws shape ABCD on the grid. She wants to translate the shape so that point B becomes the coordinate $(0, 3)$. She says,

Point A will become the coordinate $(-2, 3)$.

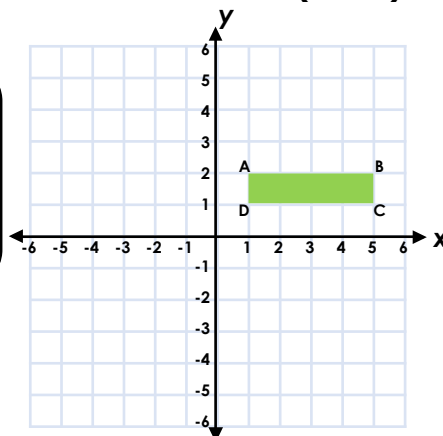


Do you agree? Explain why.

R

6b. Tom draws shape ABCD on the grid. He wants to translate the shape so that point A becomes the coordinate $(-4, -1)$. He says,

Point C will become the coordinate $(-1, -2)$.

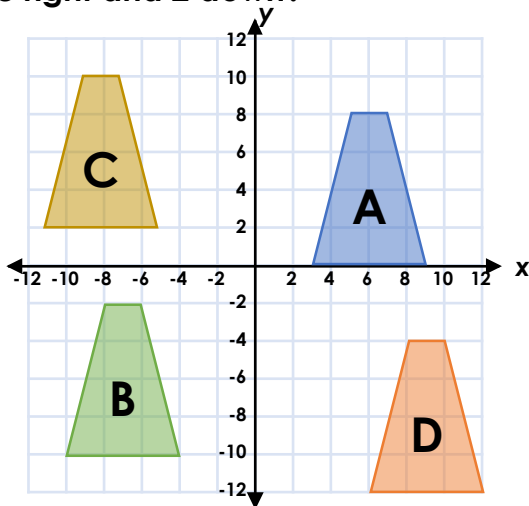


Do you agree? Explain why.

R

Translations

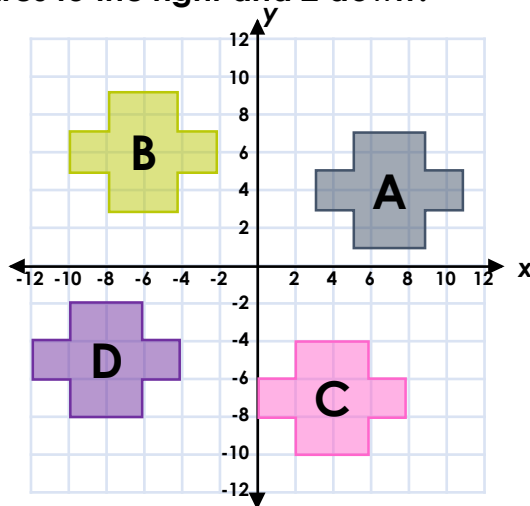
7a. Which shape has been translated 14 to the right and 2 down?



PS

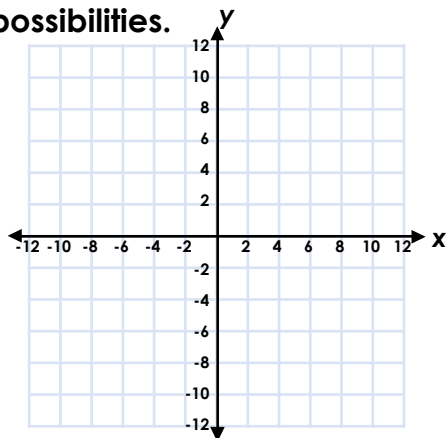
Translations

7b. Which shape has been translated 13 squares to the right and 2 down?



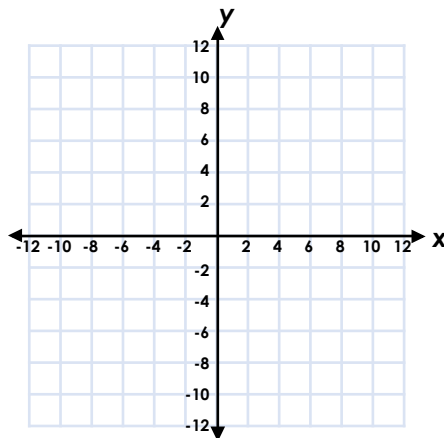
PS

8a. Here are the coordinates of a shape: (4, 2), (4, 10), (10, 10), (10, 6), (12, 6), (12, 2). If one coordinate translates to (-3, -3), what could the other coordinates be? Find 2 possibilities.



PS

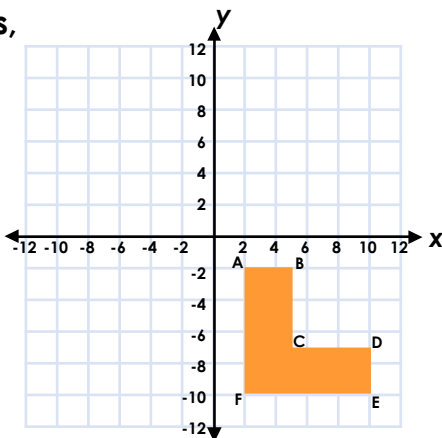
8b. Here are the coordinates of a shape: (-6, 0), (-6, 8), (-2, 4), (0, 8), (4, 4), (0, 0). If one coordinate translates to (7, -5), what could the other coordinates be?



PS

9a. Justin draws shape ABCDEF on the grid. He wants to translate the shape so that point C becomes the coordinate (2, -2). He says,

Point A will become the coordinate (-5, 7).

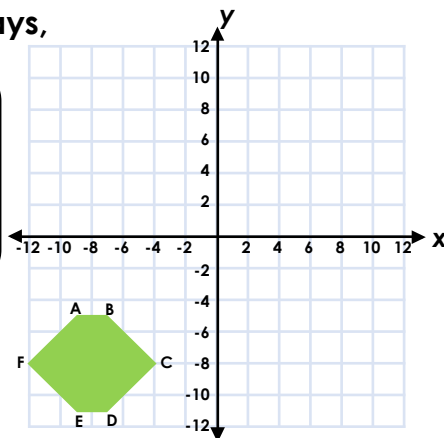


Do you agree? Explain why.

R

9b. Freya draws shape ABCDEF on the grid. She wants to translate the shape so that point E becomes the coordinate (-1, -1). She says,

Point B will become the coordinate (3, 6).



Do you agree? Explain why.

R

Reasoning and Problem Solving

Translations

Developing

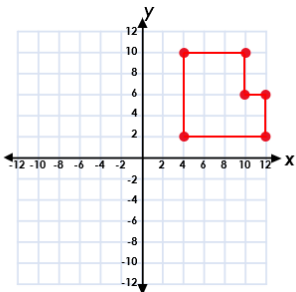
- 1a. Shape B to C
- 2a. Accept any answer that comprises of a triangle that is 4 squares wide, 4 squares high and has at least one coordinate at $(-2, 1)$.
- 3a. I disagree because Point A will become $(-4, 3)$.

Expected

- 4a. Shape E to C
- 5a. Accept any shape that comprises of a rectangle 3 squares wide and 4 squares high with one coordinate at $(-3, -2)$ and which crosses 2 quadrants.
- 6a. I agree because Point B has been translated 1 square to the right and 4 squares up. When Point A is also translated 1 square to the right and 4 squares up it becomes $(-2, 3)$.

Greater Depth

- 7a. Shape C to A
- 8a. Accept any shape that comprises of the same dimensions as the original shape and with one coordinate at $(-3, -3)$.



- 9a. I disagree because Point C has been translated up 5 and 3 to the left. If point A is also translated 5 up and 3 to the left it becomes $(-1, 3)$.

Reasoning and Problem Solving

Translations

Developing

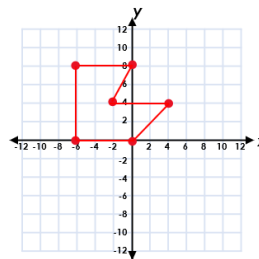
- 1b. Shape B to D
- 2b. Accept any answer that comprises of a square that is 2 squares wide and 2 squares high and has at least one coordinate at $(-1, -2)$.
- 3b. I agree because Point C has been translated 6 squares down. When Point D is also translated 6 squares down it becomes $(-5, 5)$.

Expected

- 4b. Shape C to B
- 5b. Accept any shape that comprises of a trapezium 3 squares wide and 2 squares high with one coordinate at $(-1, -1)$ and which crosses 2 quadrants.
- 6b. I disagree because Point A has been translated 5 squares to the left and 3 squares down, whereas if Point C is at $(-1, -2)$ its coordinate should be $(0, 2)$.

Greater Depth

- 7b. Shape B to A
- 8b. Accept any shape that comprises of the same dimensions as the original shape and with one coordinate at $(7, -5)$.



- 9b. I disagree because Point E has been translated up 10 and 8 to the right. If point B is also translated 10 up and 8 to the right it becomes $(1, 5)$.