

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 quadrilaterals translated across up to two quadrants. One translation with one movement.

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

Greater Depth Children to create their own questions about the translation of irregular shapes across up to four quadrants.

Questions 2, 5 and 8 (Problem Solving)

Developing Identify coordinates of quadrilaterals translated across up to two quadrants. One movement per translation.

Expected Identify coordinates of common shapes translated across up to four quadrants.

Greater Depth Identify coordinates of irregular shapes translated across up to four quadrants.

Questions 3, 6 and 9 (Reasoning)

Developing Explain the position of quadrilaterals translated across up to two quadrants.

Expected Explain the position of a common shape translated across up to four quadrants.

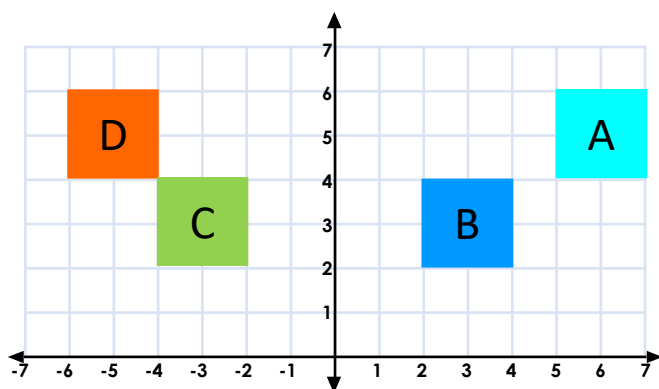
Greater Depth Explain the position of an irregular shape translated across up to four quadrants.

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

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

Translations

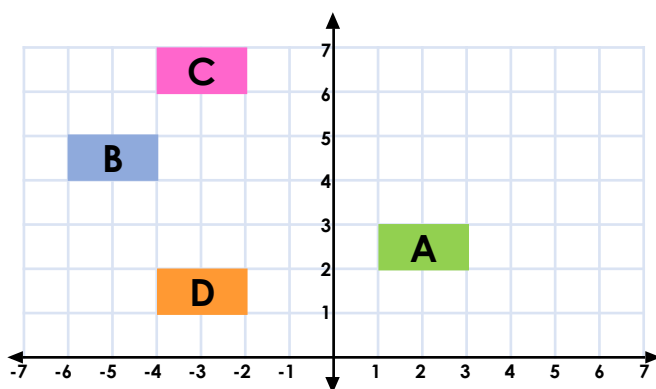
1a. Which shape has been translated 6 squares to the left?



PS

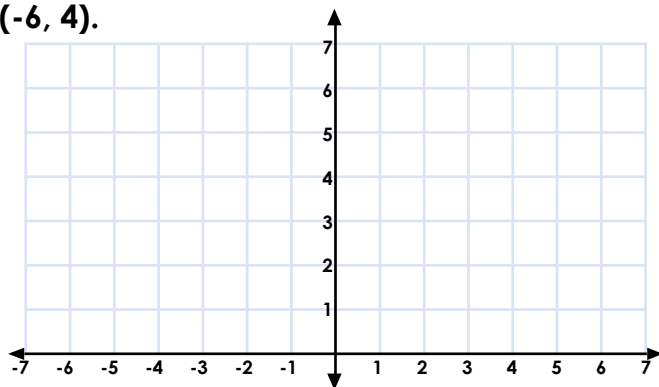
Translations

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



PS

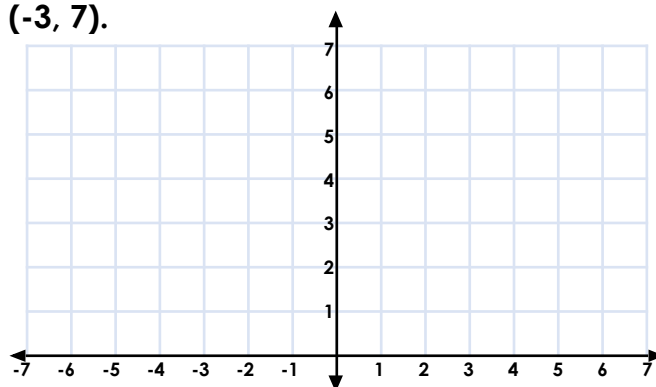
2a. Here are the coordinates of a rectangle: (2, 1), (3, 1), (2, 4), (3, 4). Two of the coordinates translate to (-5, 1), (-6, 4).



What are the other coordinates?

PS

2b. Here are the coordinates of a square: (-1, 2), (-3, 2), (-1, 4), (-3, 4). Two of the coordinates translate to (-1, 5), (-3, 7).

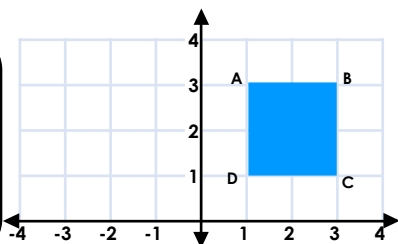


What are the other coordinates?

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).

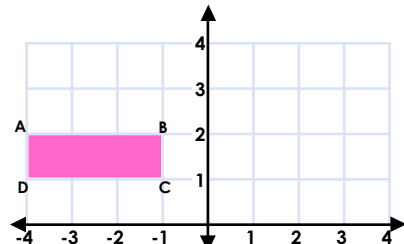


Do you agree? Explain why.

R

3b. Max draws shape ABCD on the grid. He wants to translate the shape so that point C becomes the coordinate (4, 1). He says,

Point D will become the coordinate (2, 4).

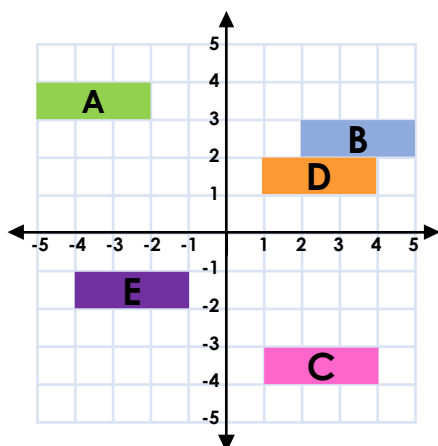


Do you agree? Explain why.

R

Translations

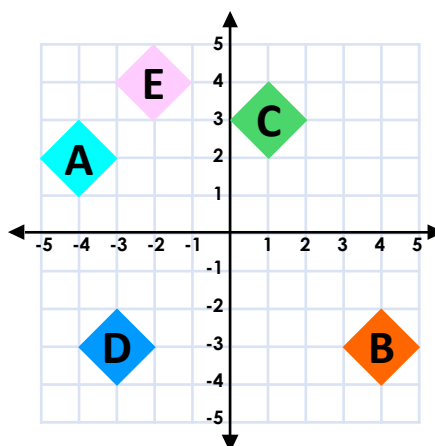
4a. Which shape has been translated 5 squares to the right and 2 squares down?



PS

Translations

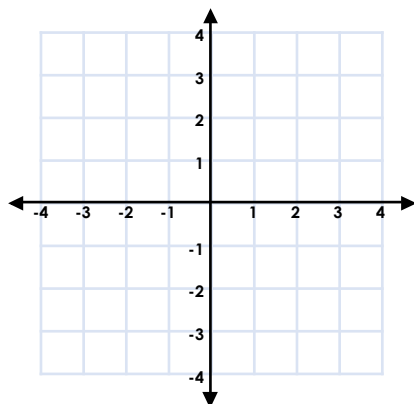
4b. Which shape has been translated 3 squares to the right and 6 squares down?



PS

5a. Here are the coordinates of a triangle: $(-1, 1)$, $(-4, 1)$, $(-4, 4)$.

The first coordinate translates to $(4, -4)$.

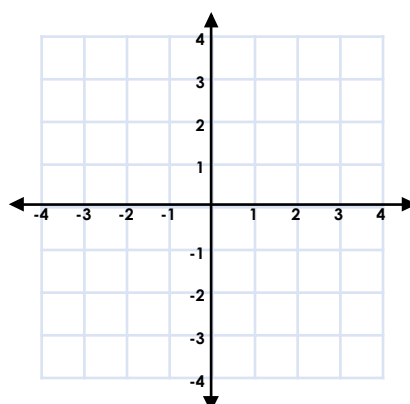


What are the other coordinates?

PS

5b. Here are the coordinates of a triangle: $(1, 1)$, $(1, 3)$, $(2, 2)$.

The first coordinate translates to $(-3, -4)$.

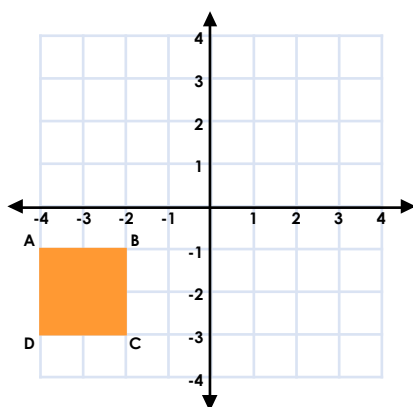


What are the other coordinates?

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 $(3, -2)$.

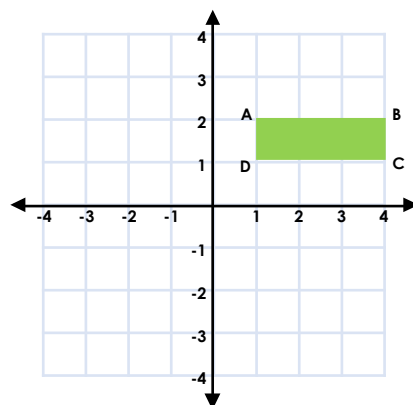


Do you agree? Explain why.

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 $(-2, -1)$.

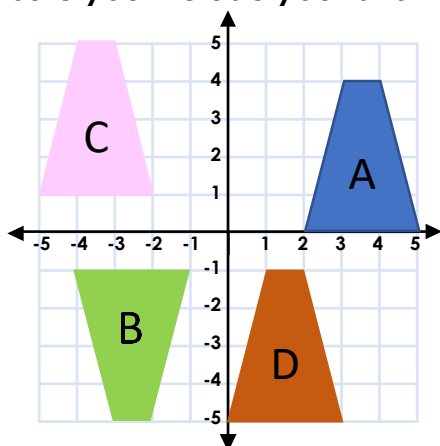


Do you agree? Explain why.

R

Translations

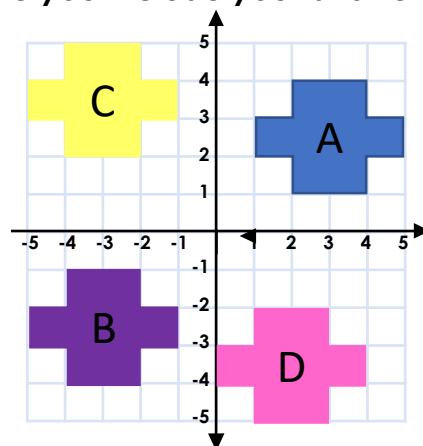
7a. Create three questions of your own about the translation of these shapes. Make sure you include your answers.



PS

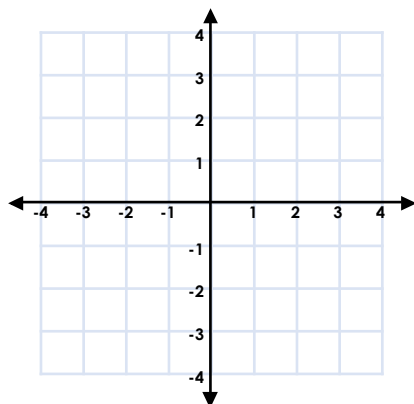
Translations

7b. Create three questions of your own about the translation of these shapes. Make sure you include your answers.



PS

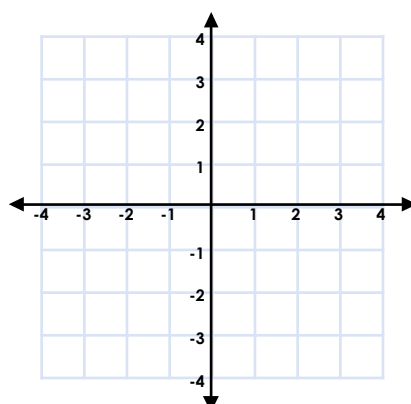
8a. Here are the coordinates of a shape: (1, 1), (1, 4), (3, 1), (3, 2), (2, 2), (2, 4). The first coordinate translates to (-3, -2).



What are the other coordinates?

PS

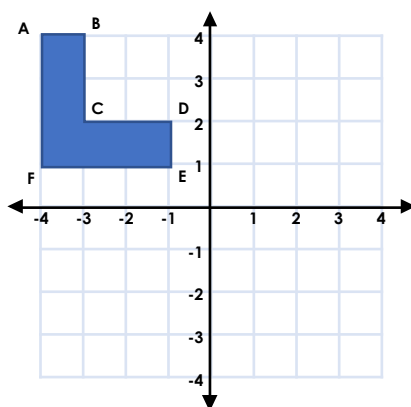
8b. Here are the coordinates of a shape: (-4, 0), (-3, 0), (-3, 2), (-2, 2), (-4, 4), (-3, 4). The first coordinate translates to (1, -2).



What are the other coordinates?

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,



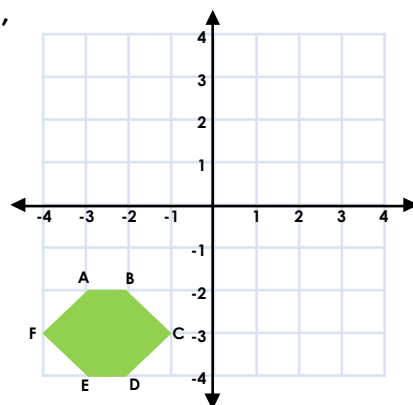
Point A will become the coordinate (2, 0).



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, 0).



Do you agree? Explain why.

R

Reasoning and Problem Solving

Translations

Developing

- 1a. Shape B to C.
- 2a. $(-5, 4)$, $(-6, 1)$.
- 3a. No, she is incorrect. Point A will become $(-4, 3)$. She has written the coordinates the wrong way round.

Expected

- 4a. Shape E to C.
- 5a. $(1, -1)$, $(1, -4)$.
- 6a. No, she is incorrect. Point A will become $(-2, 3)$ after the translation. She has written the coordinates the wrong way round.

Greater Depth

- 7a. Various answers, including; Which shape has been translated 5 squares to the left and 6 squares up? D to C. Which shape has been translated 1 squares down and 7 squares to the right? C to A.
- 8a. $(-3, 1)$, $(-1, -2)$, $(-1, -1)$, $(-2, -1)$, $(-2, 1)$
- 9a. No, he is incorrect. Point A will translate to $(1, 0)$. He has written the coordinates for point B.

Reasoning and Problem Solving

Translations

Developing

- 1b. Shape C to D.
- 2b. $(-1, 7)$, $(-3, 5)$.
- 3b. No, he is incorrect. Point D will become $(1, 1)$. He has written the coordinates the wrong way round.

Expected

- 4b. Shape E to B.
- 5b. $(-3, -2)$, $(-1, -3)$.
- 6b. No, he is incorrect. Point C will become $(-1, -2)$. He has written the coordinates the wrong way round.

Greater Depth

- 7b. Various answers, including; Which shape has been translated 6 squares to the left and 1 square up? D to B. Which shape has been translated 7 squares down and 5 squares to the right? C to D.
- 8b. $(2, -2)$, $(2, 0)$, $(3, 0)$, $(1, 2)$, $(2, 2)$
- 9b. No, she is incorrect. Point B will translate to $(0, 3)$. She has written the coordinates the wrong way round.