

### Coordinates Prior Assessment Question 5

**Objective:** I can translate simple shapes on a 4-quadrant grid.

**SH7:** draw and translate simple shapes on the coordinate plane, and reflect them in the axis.

#### Teacher Input Ideas:

- Create a large grid outside, large enough for the children to stand in a square. Give each child a coordinate to stand on. Encourage the children to think about where they need to stand, do they need to stand inside the squares or on the lines? Create a quadrilateral using 4 children standing in the correct coordinates on the grid. The children could use skipping ropes to create the sides and to join the vertices. Introduce the word translate and ask children to discuss what the meaning in mathematics is. Establish that the word translate means to move an object without changing its shape or size to another position.

Pick another four children to help translate the shape. Choose one child at a time to be one of the vertices. Inform the children that you would like to translate this shape 6 places to the left and 5 places up. Encourage one child at a time to move 6 places left and 5 places up. Repeat for all four vertices. Ensure that another set of children are used so that it is clear to see the starting coordinates and the new coordinates after the shape has been translated. Repeat with other shapes to translate.

- Create a large grid display in class room. Children to plot different vocabulary and the meaning of this onto the grid, with different coordinates. Children to find out the meaning of translate using maths dictionaries or the internet and add this to the display. Show a large 4 quadrant grid onto the WB and children to move shapes around the grid. Give the children instructions such as 4 squares left, 2 squares down.
- Give each child a four-quadrant grid. Place coordinates for a shape around the classroom for the children to find and then plot and draw. Introduce the word translate and discuss the meaning of this. Provide the children with instructions as to how to translate the shape. Allow children time to have a go on their own and then allow children to model using different strategies such as: focusing on one vertex at a time when moving them and checking answers with the coordinate reference, such as if asked to move up 5, is there a difference of 5 in the new coordinate for the y axis?

## Practice Activities

**Purple Practice:** most suited for children who made errors in Question 5 of the prior learning assessment and require more support with translating shapes.

This activity sheet has the shapes already plotted on for the children. The children can then focus on finding the coordinates once the shape has been translated. The children are asked to move the shapes up/down or left/right first and then progressively the translation gets a little trickier. Encourage the children to focus on one vertex at a time and to check the difference between the coordinates once they have drawn the shape.

**Green Practice:** most suited for children who made errors in Question 5 of the prior learning assessment.

The children are to draw their own 4 quadrant grid. The children are given the coordinates for different shapes that they must work out what they are. They are then asked to translate the shape and record the new coordinates of the shape. The questions are presented on blocks. These can be cut up for a group of children and they can select different ones to explore. The children may want to use the same 4 quadrant grid or they may want to draw a new one each time.

**Yellow Practice** Most suited for children who show confidence in translating shapes.

Children are presented with a game that can be played independently or with a partner. The children are asked to draw their own grid and then select a block with a shape on. The children are given some of the coordinates, encouraging them to work out any missing coordinates. After the children have completed the shape they are asked to roll two dice. The children need to use these numbers and decide how they are going to translate the shape (for example: I rolled a 4 so I need to decide whether to translate the shape 4 squares right/left or 4 squares up/down). The aim of the game is to translate the shape around the grid as many times as possible without any vertices or sides overlapping. The children are then to explore with other shapes on the blocks.

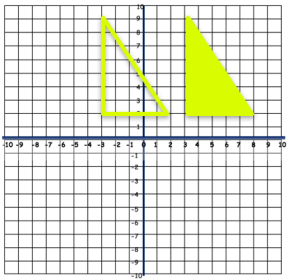
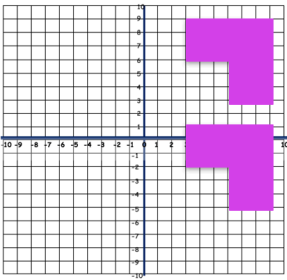
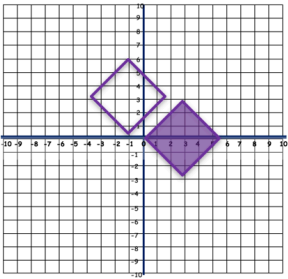
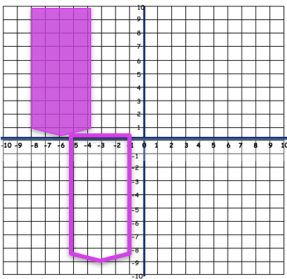
Encourage talk between partners about the decisions they make. How did the size of the shape and position effect the decision you made when translating the shape up/down or left/right? Encourage the children to make improvements in their decisions as the game goes on.

**Mastery:** For this mastery activity, the children are presented with a grid with shapes that have been translated already. The children need to work out the starting points for each shape using the clues given. Encourage the children to work out that they need to do the opposite to what has been asked to work out the journey the shapes have taken.

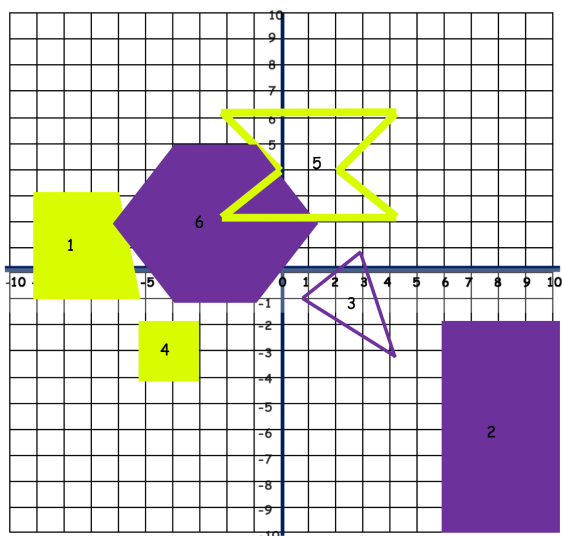
Also, there are 2 trapezium cards that contain clues. Encourage the children to perform both instructions backwards on both shapes to help to work out which trapezium card belongs to which shape. One of the cards will not work on one of the trapeziums as that means the shape would have not been on the grid to start with.

**Answers:**

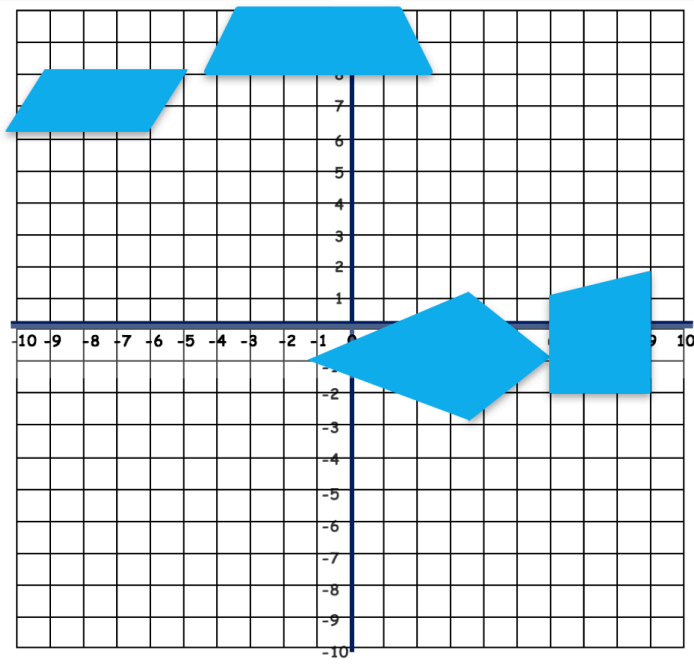
**Purple:**

	
<p>Shape name: scalene triangle            Translate 6 squares to the left            New coordinates: (2,2) (-3,2) (-3,9)</p>	<p>Shape name: hexagon            Translate 8 squares down            New coordinates: (3,1) (9,1) (9,-5) (6,-5) (6,-2) (3,-2)</p>
	
<p>Shape name: square            Translate 3 squares up and 4 squares to the left</p>	<p>Shape name: pentagon            Translate 9 squares down and 3 squares to the right</p>

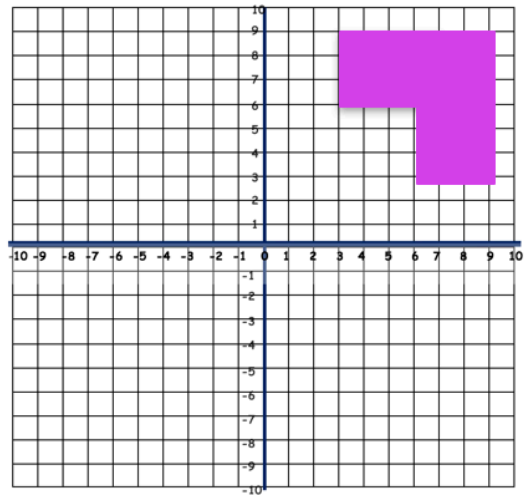
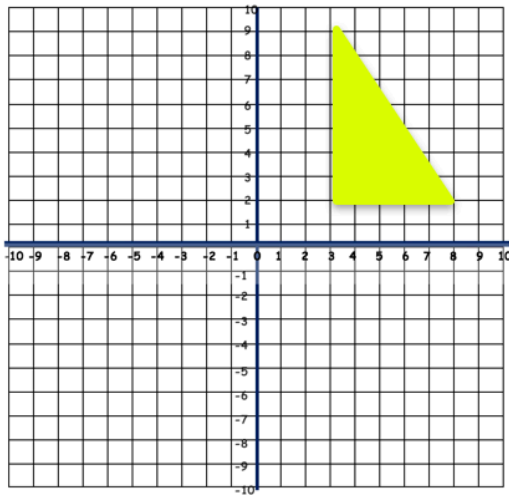
**Green:**



# Mastery

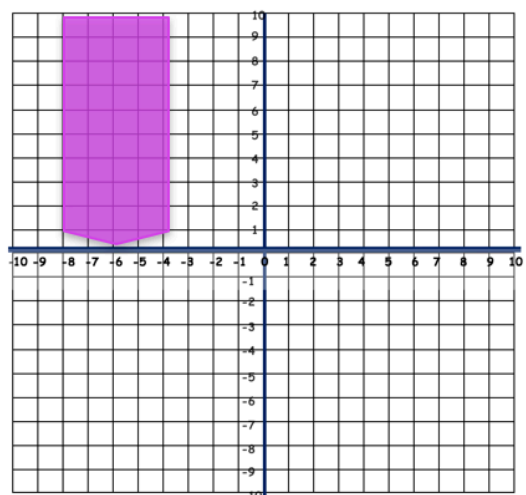
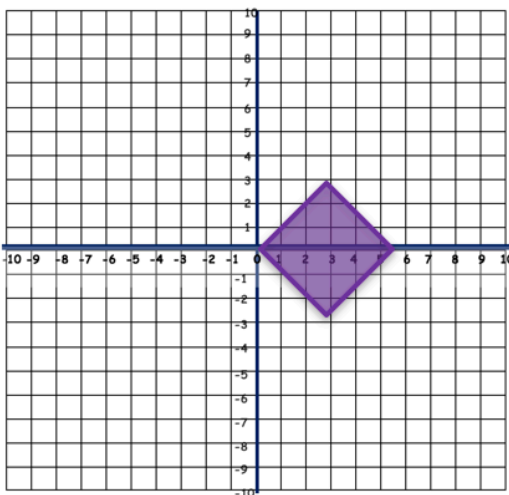


Look at the shape on each grid. Translate the shape as asked in each question.



Shape name:  
Translate 6 squares to the left  
New coordinates:

Shape name:  
Translate 8 squares down  
New coordinates:



Shape name:  
Translate 3 squares up and 4 squares to the left

Shape name:  
Translate 9 squares down and 3 squares to the right

Lo: I can translate shapes on a 4-quadrant grid.

- 1) Draw a 4-quadrant grid.
- 2) Pick a block and plot the coordinates given. What shape have you created?
- 3) Each block contains how many squares to translate the shape up/down and left/right.
- 4) Plot the new coordinates of the shape and draw this on to the same grid. Can you record the coordinates of the new positioned shape?

Coordinates:  
 $(-7, 8)$   $(-4, 8)$   $(-7, 4)$   $(-3, 4)$

Translate the shape 5 squares down and 2 squares left.

Coordinates:  
 $(2, 4)$   $(-2, 4)$   $(-2, -4)$   $(2, -4)$

Translate the shape 8 squares right and 6 squares down.

Coordinates:  
 $(9, -7)$   $(8, -3)$   $(6, -5)$

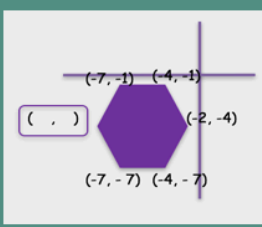
Translate the shape 4 squares up and 5 squares left.

Coordinates:  
 $(-7, -7)$   $(-7, -5)$   
 $(-5, -5)$   $(-5, -7)$

Translate the shape 3 squares up and 2 squares right

Coordinates:  
 $(0, 8)$   $(0, 4)$   $(2, 6)$   
 $(6, 8)$   $(4, 6)$   $(6, 4)$

Translate the shape 2 squares left and 2 squares down



Translate the shape 6 squares up and 3 squares right

LO: I can translate shapes on a 4-quadrant grid.

- 1) Draw your own grid with the scale 7, to -7 on the y and x axis.
- 2) Pick a shape below and the starting coordinates. Plot the coordinates on to your grid completing the shapes by finding any missing coordinates.
- 3) Roll a dice and record the number. Then roll the dice again and record this number. Decide which number you will use to translate your shape left or right and which number you will use to translate your shape up or down.
- 4) Move your shape and plot its new position. Repeat again by rolling the dice and translate the shape from this position.
- 5) The aim of the game is to see how many times you can translate your shape without any of the vertices or sides overlapping. So, the decisions you make are very important.



$(-7, 4)$   $(-6, 7)$   
 $(-4, 7)$



$(-1, -1)$   $(-1, 1)$



$(3, 7)$   $(1, 5)$   
 $(7, 7)$



$(4, -2)$   $(2, -4)$



$(-2, -2)$   $(-4, -2)$



$(0, 7)$   $(5, 3)$

Is there anything you noticed? Which shapes and their starting coordinates were the most successful? Why?

What strategies did you use when selecting the number of spaces to move up/down or left/ right?

Pippa and Sara are playing a game. They have been translating shapes around the grid. When it's their turn, they pick up a card and move the shape as instructed.

Pippa and Sara have moved 2 shapes each. Their teacher has asked them to record the shapes' starting coordinates. Sara and Pippa have forgotten where the shapes started. Use the cards they have picked up to work out the starting coordinates of each shape.

Translate the kite

4 squares up and 2 squares right

Translate the parallelogram

3 squares down and 4 squares right

Translate the trapezium

7 squares down and 3 squares left

Translate the trapezium

2 squares down and 5 squares right

