



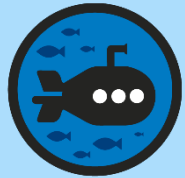
Reflection with Coordinates

Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



Diving



Deeper



Deepest

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

National Curriculum Objective

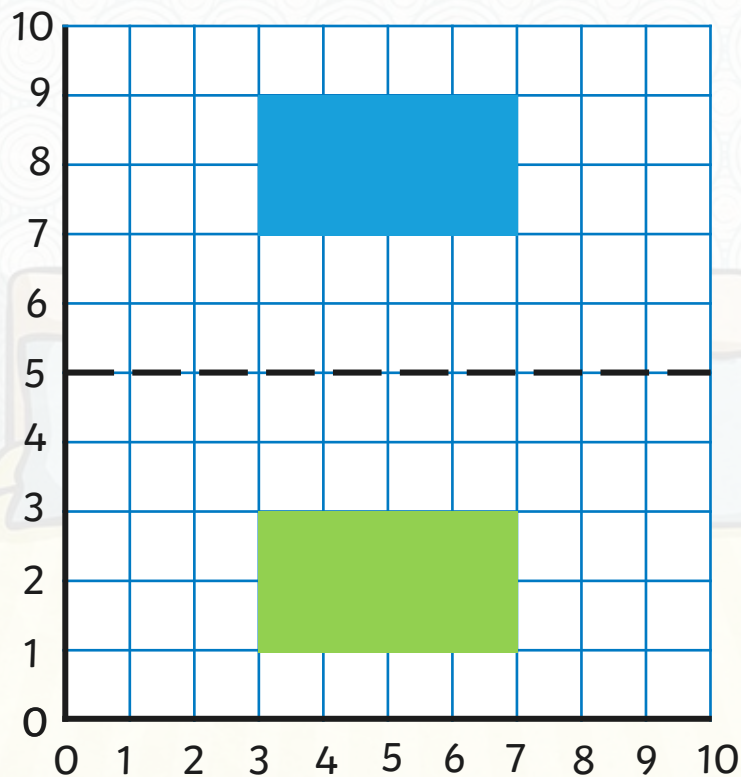
- Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.





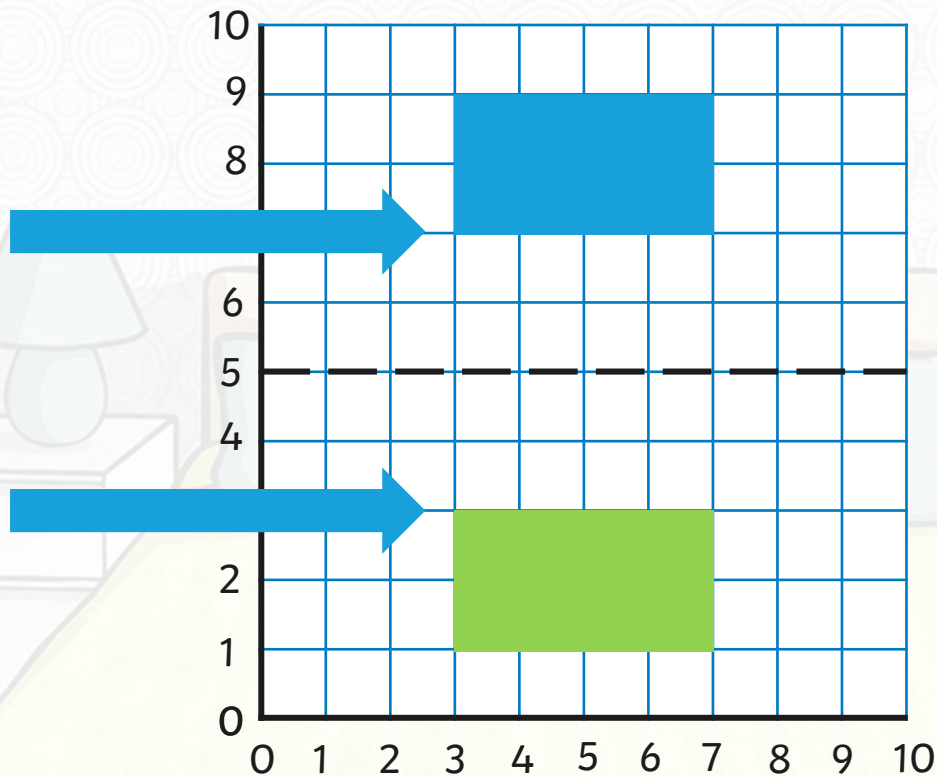
Jermaine wants to reflect the blue rectangle in the mirror line.

The reflected shape is shown in green.



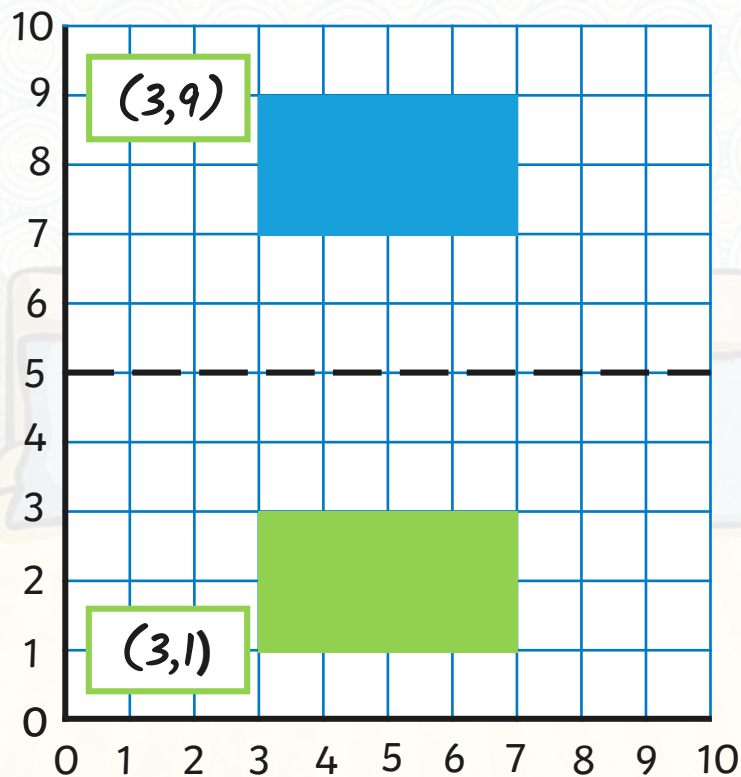


You could focus on one vertex at a time, counting the distance from the mirror line and repeating this distance across the mirror line, plotting the points as you go to show the reflected shape.





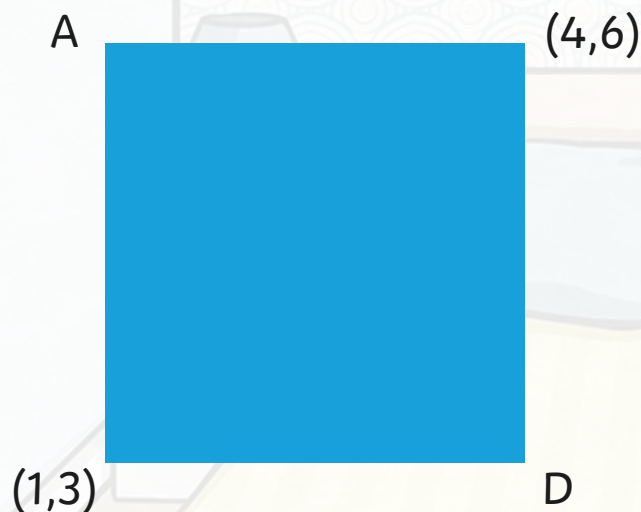
When reflecting a shape in a horizontal mirror line that passes through the y-axis, the x coordinate is the same but the y coordinate changes.





Shaun has reflected a square in the first quadrant.
Here is the reflected square.
The original coordinates of vertex A were (11,6).

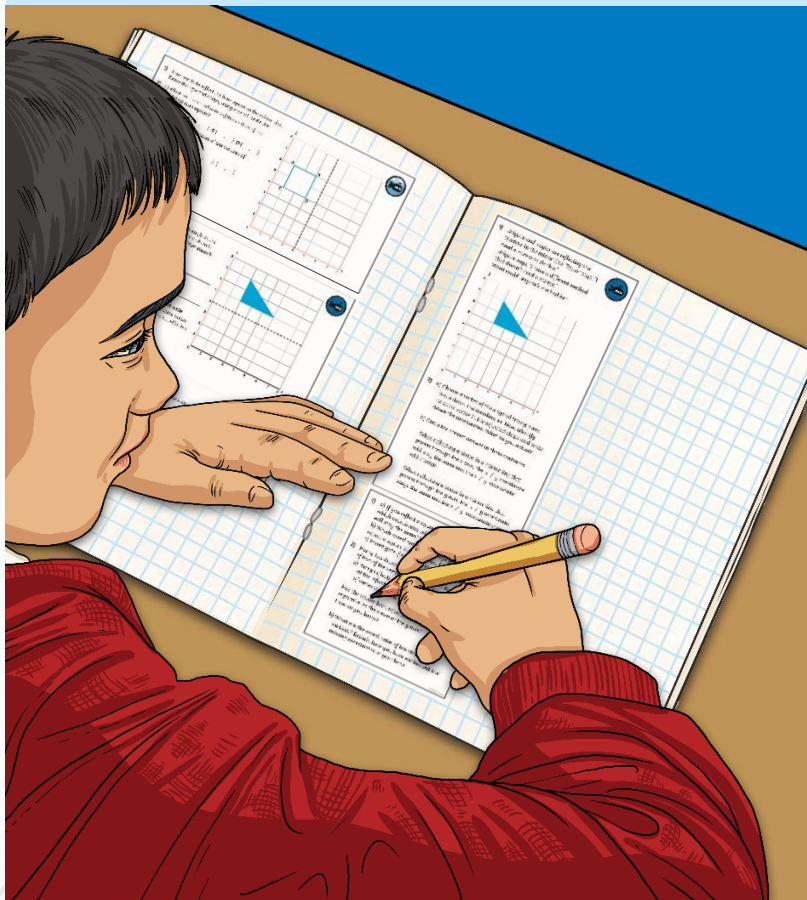
How can you work out the coordinates of the original square?
Was the square reflected in a line of the grid that passes through the x or y axis? How do you know?



We know vertex A of the original square is (11,6) and the new position of A is (1,6). The difference between the x coordinates is 10. We can therefore deduce that the square is 5 squares from the mirror line. We also know that the sides of the square are 3 squares in length. Vertex B was originally (14,6), C was (11,3) and D was (14,3).

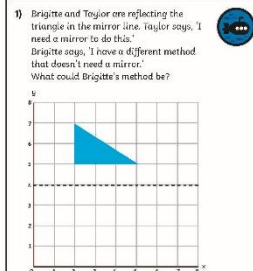
Reflection with Coordinates

Dive in by completing your own activity!



- 1) Jane wants to reflect the blue square. Draw the reflected shape, using a mirror line.
- 2) a) What are the coordinates of the original blue square?
 A (,) B (,) C (,)
 b) What are the coordinates of the reflected square?
 (,) (,) (,) (,)

- 1) Brigitte and Taylor are reflecting the triangle in the mirror line. Taylor says, 'I need a mirror to do this.' Brigitte says, 'I have a different method that doesn't need a mirror.' What could Brigitte's method be?



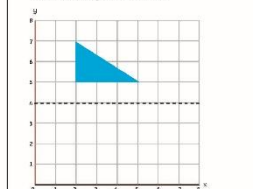
- 2) a) Choose a vertex of the original triangle and write down the coordinates. Now, identify the same vertex in the reflected shape and write down the coordinates. What do you notice?
 b) Circle the correct answer in these sentences.

When reflecting a shape in a mirror line that passes through the x axis, the x / y coordinate will stay the same and the x / y coordinate will change.

When reflecting a shape in a mirror line that passes through the y axis, the x / y coordinate stays the same and the x / y coordinate changes.

- 2) a) Choose a vertex of the original triangle and write down the coordinates. Now, identify the same vertex in the reflected shape and write down the coordinates. What do you notice?

- 1) Brigitte and Taylor are reflecting the triangle in the mirror line. Taylor says, 'I need a mirror to do this.' Brigitte says, 'I have a different method that doesn't need a mirror.' What could Brigitte's method be?



- 2) a) Choose a vertex of the original triangle and write down the coordinates. Now, identify the same vertex in the reflected shape and write down the coordinates. What do you notice?
 b) Circle the correct answer in these sentences.

When reflecting a shape in a mirror line that passes through the x axis, the x / y coordinate will stay the same and the x / y coordinate will change.

When reflecting a shape in a mirror line that passes through the y axis, the x / y coordinate stays the same and the x / y coordinate changes.

- b) Circle the correct answer in these sentences.

When reflecting a shape in a mirror line that passes through the x axis, the x / y coordinate stays the same and the x / y coordinate changes.

- 1) a) If you reflect a square in a vertical line, which coordinates will change and which will stay the same? Why?
 b) Which coordinates will change if you reflect a square in a horizontal line?
 c) Investigate if this is the same for other shapes.

- 2) Harry has drawn a square and given the coordinates of two of the vertices B (5,8) and C (7,6).
 a) Harry reflects the square in a mirror line. Looking at the reflected shape, Harry says the coordinates of vertex B are now (7,2).

Has the square been reflected in a mirror line that is parallel to the x axis or the y axis? How do you know?

- b) What are the coordinates of the other three vertices? Explain how you have worked out the missing coordinates in your book.

- 1) a) If you reflect a square in a vertical line, which coordinates will change and which will stay the same? Why?
 b) Which coordinates will change if you reflect a square in a horizontal line?
 c) Investigate if this is the same for other shapes.

- 2) Harry has drawn a square and given the coordinates of two of the vertices B (5,8) and C (7,6).
 a) Harry reflects the square in a mirror line. Looking at the reflected shape, Harry says the coordinates of vertex B are now (7,2).

Has the square been reflected in a mirror line that is parallel to the x axis or the y axis? How do you know?

- b) What are the coordinates of the other three vertices? Explain how you have worked out the missing coordinates in your book.

Need Planning to Complement this Resource?

National Curriculum Aim

Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

For more planning resources to support this aim, [click here](#).

Geometry – Position and Direction

Twinkl is the centre to support teachers and Parents/Helpers to plan the most effective lessons to their own class or needs. To do this, we have created a series of plans for White Rose Maths scheme of working to make full use of the resources available on the White Rose Maths website. We have also created a series of plans for the most popular of the White Rose Maths scheme of working.

Y5 Yearly Overview

	Place Value	Number – Addition and Subtraction	Statistics	Number – Multiplication and Division	Perimeter and Area	Constructions
Autumn	Number – Place Value	Number – Addition and Subtraction	Statistics	Number – Multiplication and Division	Perimeter and Area	Constructions
Spring	Number – Multiplication and Division	Number – Addition and Subtraction	Number – Fractions	Number – Decimals and Percentages	Constructions	Constructions
Summer	Number – Decimals	Geometry – Properties of Shapes	Geometry – Position and Direction	Measurement – Capacity and Units	Measurement – Volume	Constructions

twinkl planit

Position and Direction

Starter Ideas

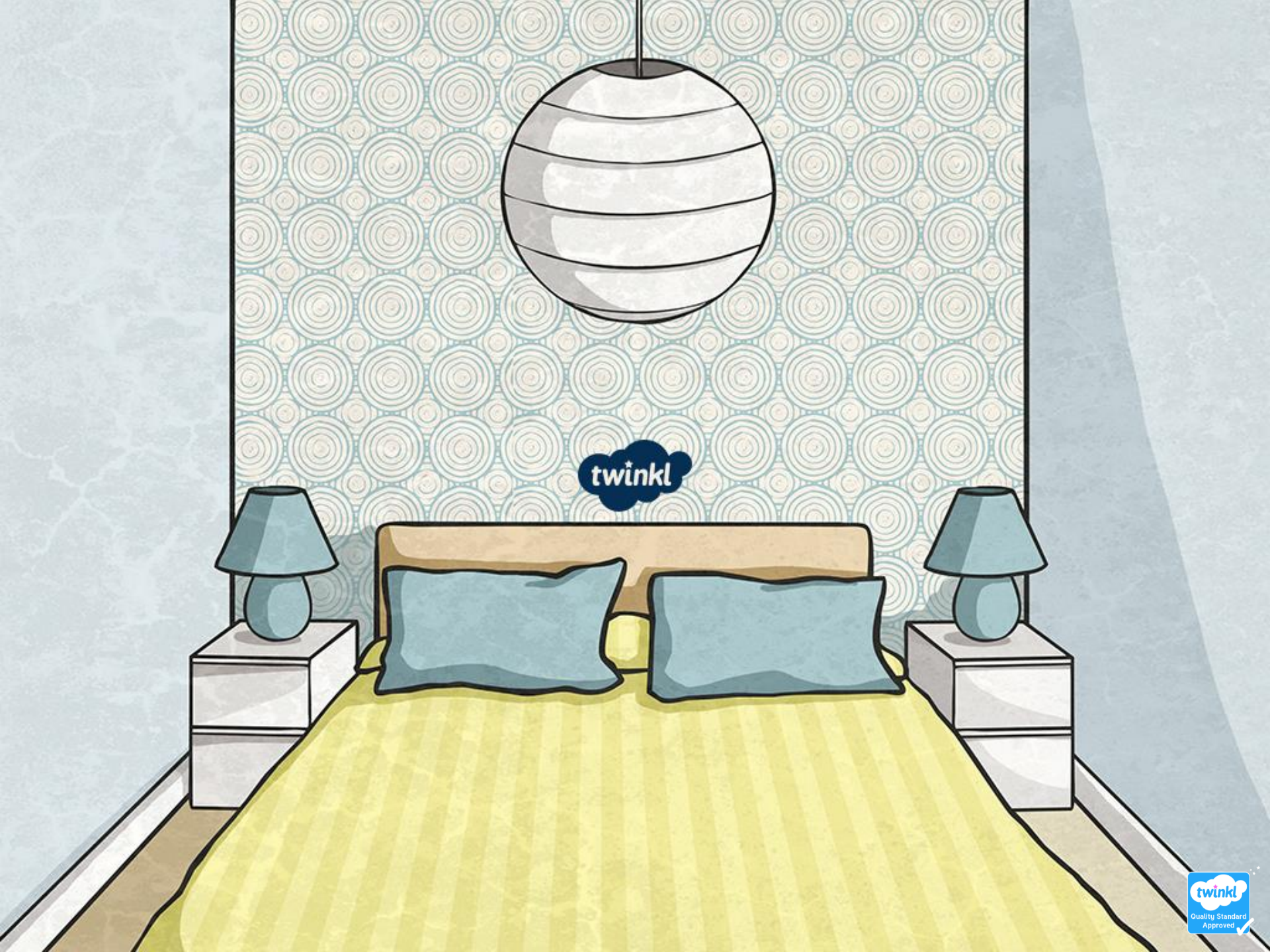
Position and Direction Starter Ideas

1	Coordinate Draw a 3 x 3 grid using lines, zigzag lines, marks etc. Two children are chosen to stand in two opposite corners of the grid. The rest of the class are divided into two teams to help guide their shape around the grid. The rest of the game is to indicate the other player by telling on the squares they are occupying. On their turn the team will have to give their numbers for left or right and up or down translation. The children can choose which number to use as the horizontal or vertical translation.	
2	Practical Coordinate Description Using the interactive slides on the Starter Presentation, the children are challenged to collect the ingredients for the fruit smoothie by taking the correct position on the coordinate grid in the 5th quadrant.	
3	Translation Quiz Challenge the class to guess shown on the Starter Presentation, the children correctly identify the translation for the shape shown on a 2D grid.	
4	Reflection Patterns The children work in partners with small manipulatives such as bearbuds, cones, counters etc. Use a string rope to lay out a vertical or horizontal mirror line on the floor. Taking it in turns, one child places an object on one side of the mirror line, which the other child reflects over the mirror line. Encourage the children to describe with the appropriate mathematical language from the mirror line. If appropriate, record the patterns by taking a digital photo.	
5	Is it a Reflection? Using the images shown on the Starter Presentation, the children decide whether the design shown is an accurate reflection.	
6	Using Cartesian Coordinates Using the interactive slides on the Starter Presentation, children are challenged to collect the items to pack in the suitcase by clicking on the correct position on the coordinate grid in the 5th quadrant.	

twinkl planit

Twinkl Planit is our award-winning scheme of work with over 4000 resources.





twinkl