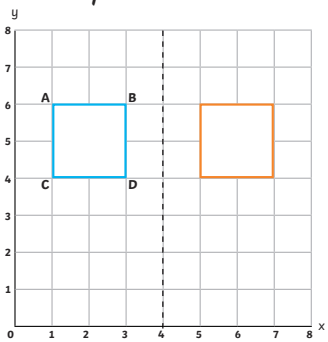
1) *The shape children should have drawn is shown by the orange square.*



2) *a) A (1,6) B (3,6) C (1,4) D (3,4)*
b) (5,6) (7,6) (5,4) (7,4)

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1) *Accept any correct answer, for example taking each vertex of the original shape one at a time and counting the distance in squares from the mirror line. Then repeating this distance across the mirror line to plot the corresponding vertex to show the reflected shape.*

2) *a) Children should identify that the x coordinate stays the same and the 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 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.

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1) a) If you reflect a square in a vertical line, which coordinates will change and which will stay the same? Why?
The x coordinate will change as it moves to the side; the y coordinate stays the same because the shape doesn't go any higher.

b) Which coordinates will change if you reflect a square in a horizontal line?
The y coordinate will change as the shape moves up or down.

c) Investigate if this is the same for other shapes.
Encourage children to draw and reflect shapes to carry out their investigations. Can they prove that only one coordinate changes if they reflect any shape in a horizontal or vertical line?

2) *a) The shape has been reflected in a line that is parallel to the x axis. Accept any correct answer, for example the child might have worked out the original coordinates of B (7,8) and then identified that the second digit (the y coordinate) has changed.*

b)

Original shape	Reflected shape
(5,8)	(5,2)
B (7,8)	(7,2)
C (5,6)	(5,4)
(7,6)	(7,4)

Teacher to check children's explanations. Children may wish to use drawings to assist them with their explanations.

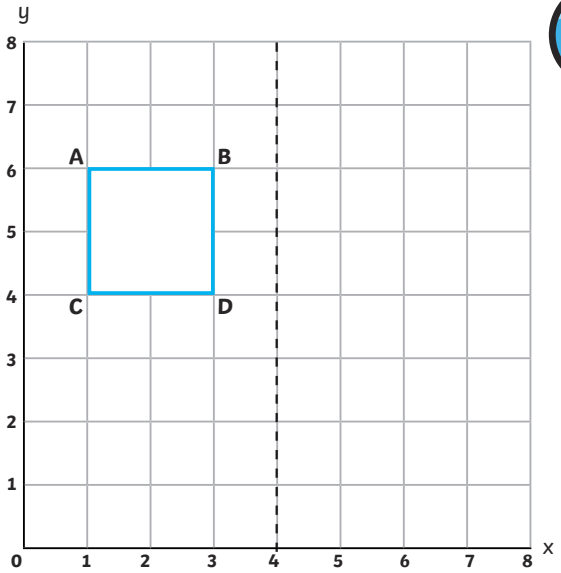
1) Jane wants to reflect the blue square in the mirror line. Draw the reflected shape, using a pencil and ruler.

2) a) What are the coordinates of the vertices of the original blue square?

A (,) **B** (,) **C** (,) **D** (,)

b) What are the coordinates of the vertices of the reflected square?

(,) (,) (,) (,)

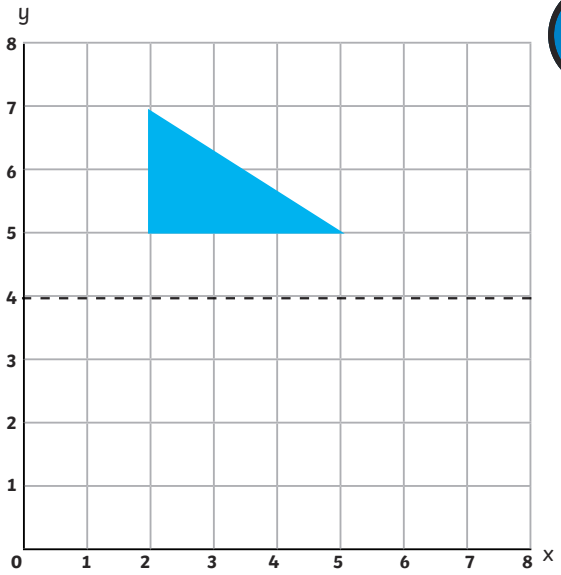


1) Brigitte and Taylor are reflecting the triangle in the mirror line. Taylor says, 'I need a mirror to do this.' Brigitte says, 'I have a different method that doesn't need a mirror.'
What could Brigitte's method be?

_____

_____

_____



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.

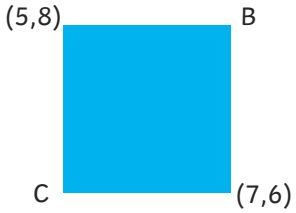
1) a) If you reflect a square in a vertical line, which coordinates will change and which will stay the same?

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.

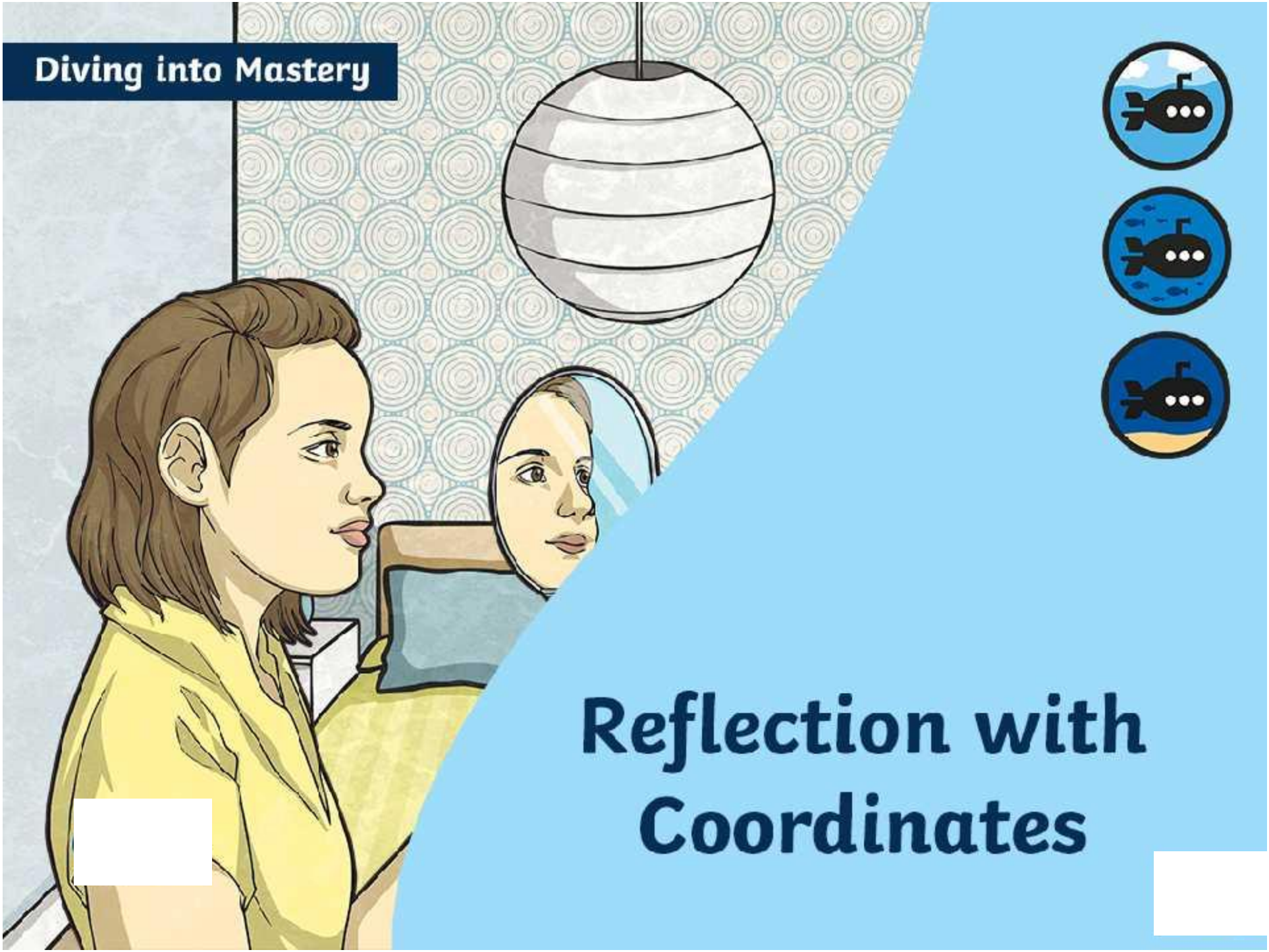


a) Harry reflects the square in a mirror line. Looking at the reflected shape, Harry says the coordinates of vertex B are now (7,2).
Has the square been reflected in a mirror line that is parallel to the x-axis or the y-axis?
How do you know?

b) What are the coordinates of the other three vertices? Complete the table.

Original shape	Reflected shape
(5,8)	
B (,)	(7,2)
C (,)	
(7,6)	

Explain how you have worked out the missing coordinates.


Diving into Mastery
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

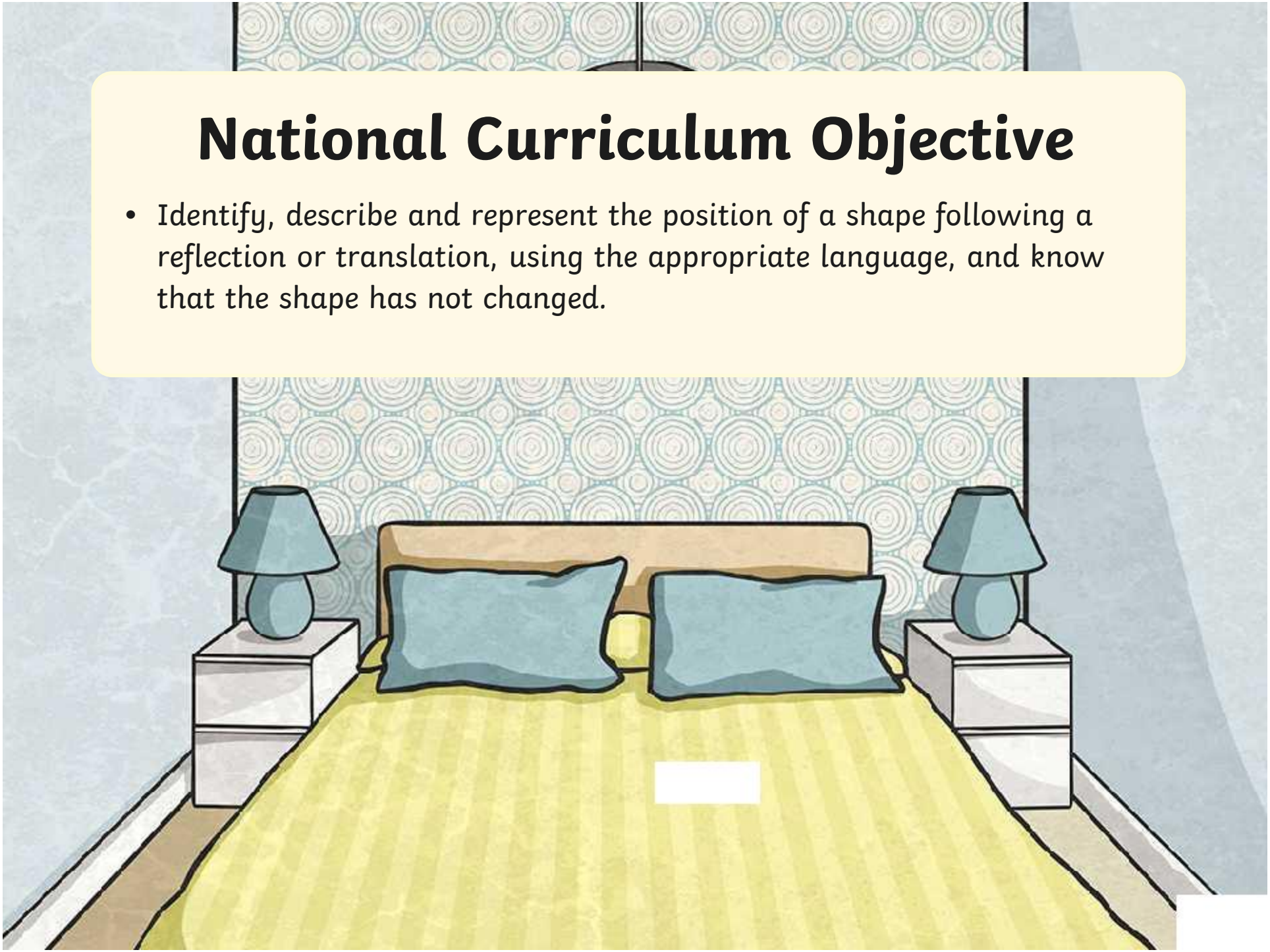
Deepest

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

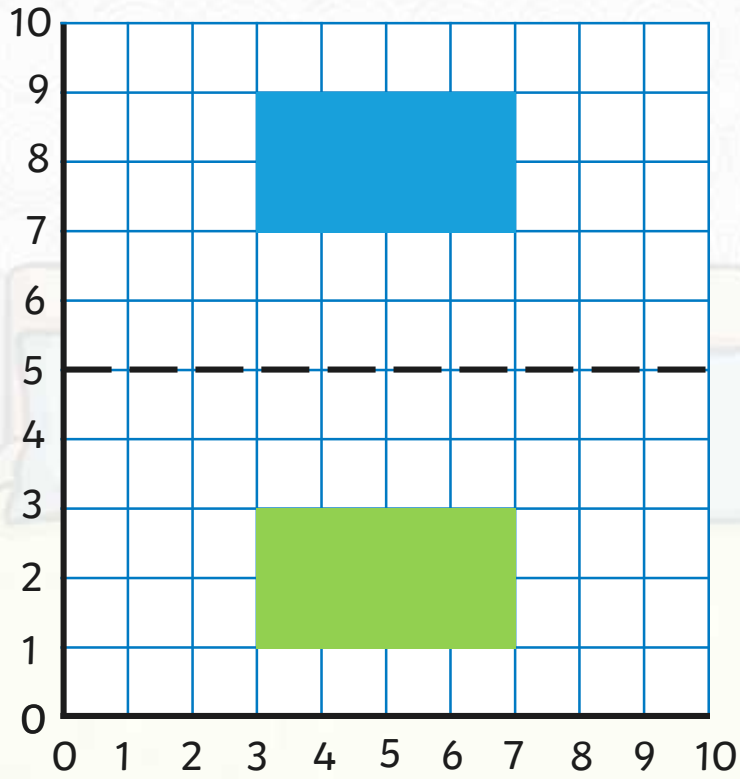
- Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.



Reflection with Coordinates | **Diving**

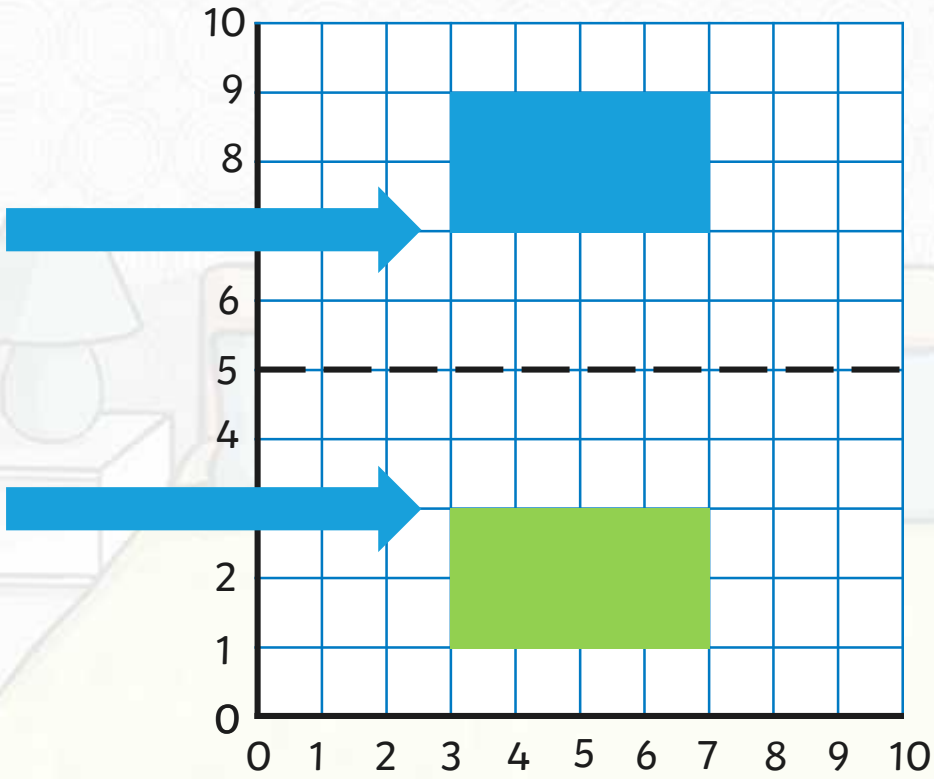
Jermaine wants to reflect the blue rectangle in the mirror line.

The reflected shape is shown in green.



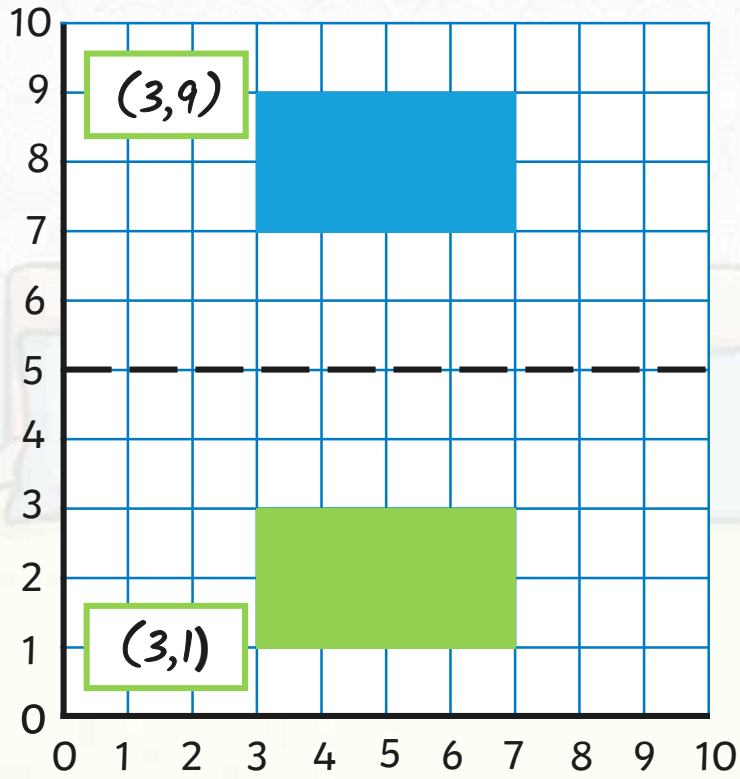
Reflection with Coordinates | Deeper

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.



Reflection with Coordinates | Deeper

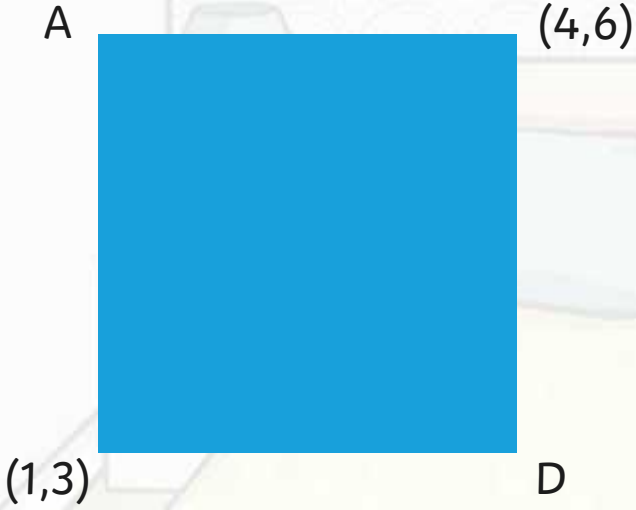
When reflecting a shape in a horizontal mirror line that passes through the y-axis, the x coordinate is the same but the y coordinate changes.



Reflection with Coordinates | Deepest

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

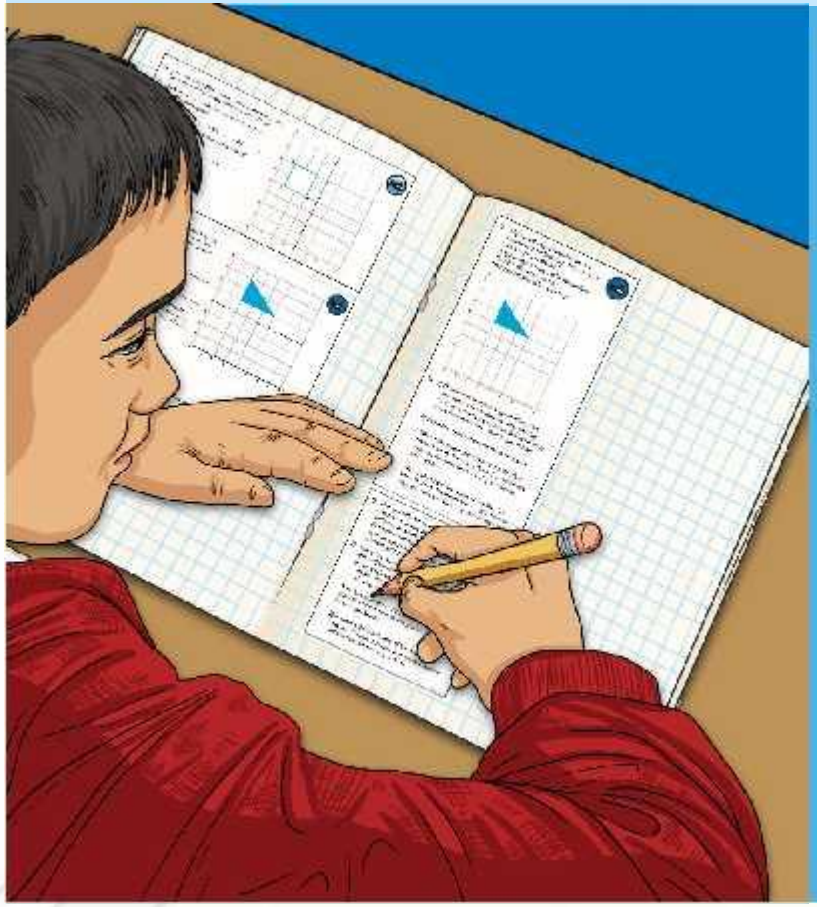
How can you work out the coordinates of the original square?
Has the square been reflected in a mirror line that passes through the x or y axis? How do you know?
Discuss with your Learning Partner.

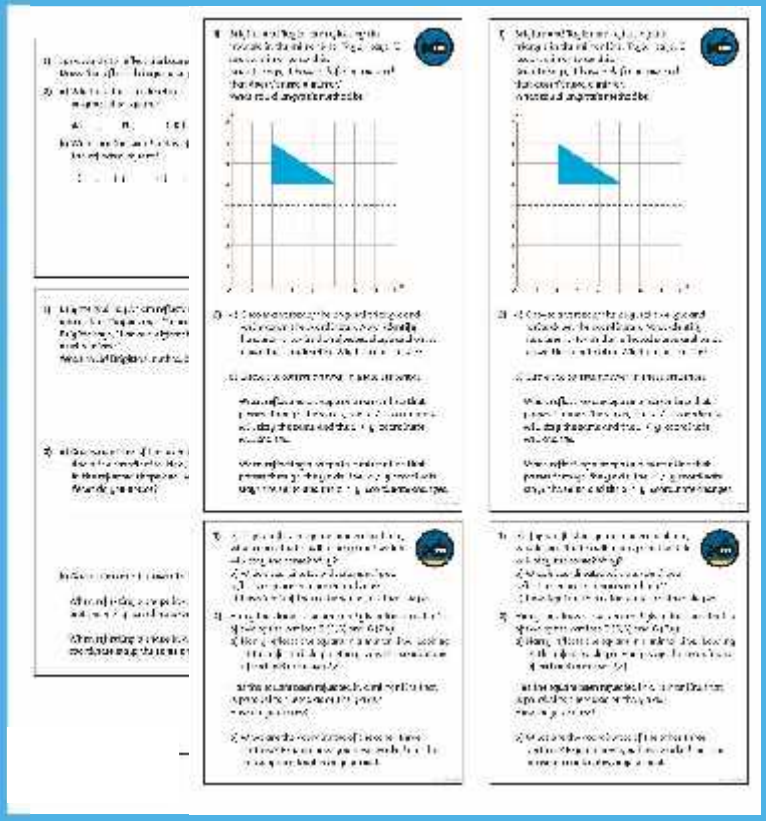


We know vertex A of the original square is (11,6) and the new position of A is (1,6). The difference between the x coordinates is 10. We can therefore deduce that the square is 5 squares from the mirror line. We also know that the sides of the square are 3 squares in length. Vertex B was originally (14,6),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

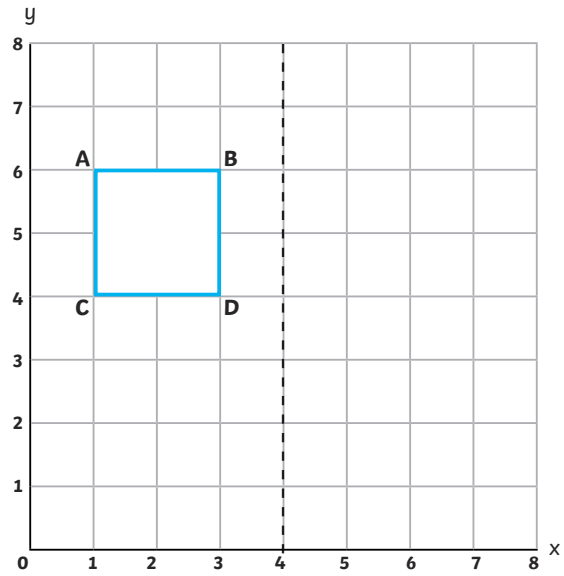
Reflection with Coordinates

Dive in by completing your own activity!





1) Jane wants to reflect the blue square in the mirror line.
Draw the reflected shape, using a pencil and ruler.



2) These shapes have been reflected in the mirror lines shown. Work out the missing coordinates.

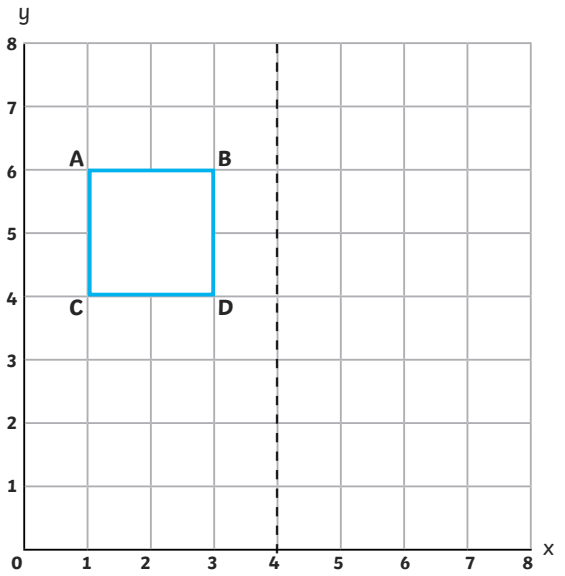
a) What are the coordinates of the vertices of the original blue square?

A (,) **B** (,) **C** (,) **D** (,)

b) What are the coordinates of the vertices of the reflected square?

(,) (,) (,) (,)

1) Jane wants to reflect the blue square in the mirror line.
Draw the reflected shape, using a pencil and ruler.



2) These shapes have been reflected in the mirror lines shown. Work out the missing coordinates.

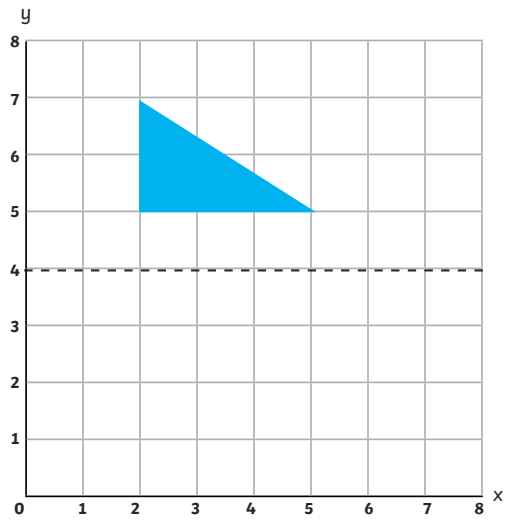
a) What are the coordinates of the vertices of the original blue square?

A (,) **B** (,) **C** (,) **D** (,)

b) What are the coordinates of the vertices 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 he 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.

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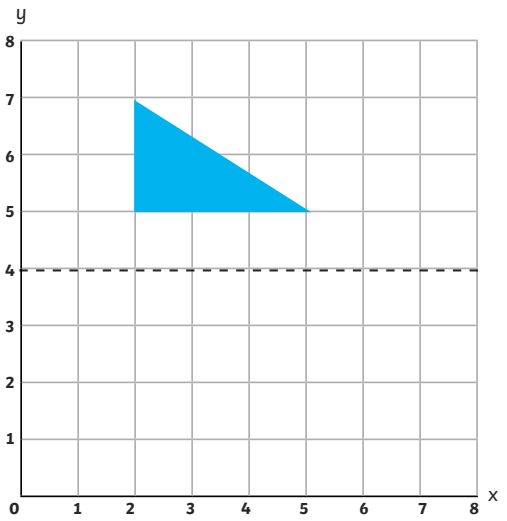

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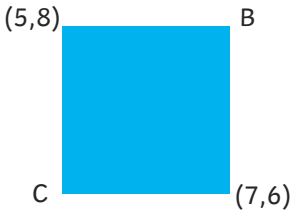
When reflecting a shape in a mirror line that passes through the y-axis, the x / y coordinate stays the same and the x / y coordinate changes.

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? Complete the table.

Original shape	Reflected shape
(5,8)	
B (,)	(7,2)
C (,)	
(7,6)	

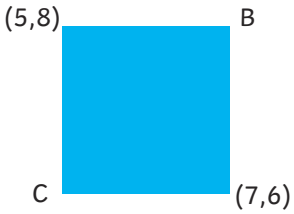
Explain how you have worked out the missing coordinates in your book.

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).



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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? Complete the table.

Original shape	Reflected shape
(5,8)	
B (,)	(7,2)
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