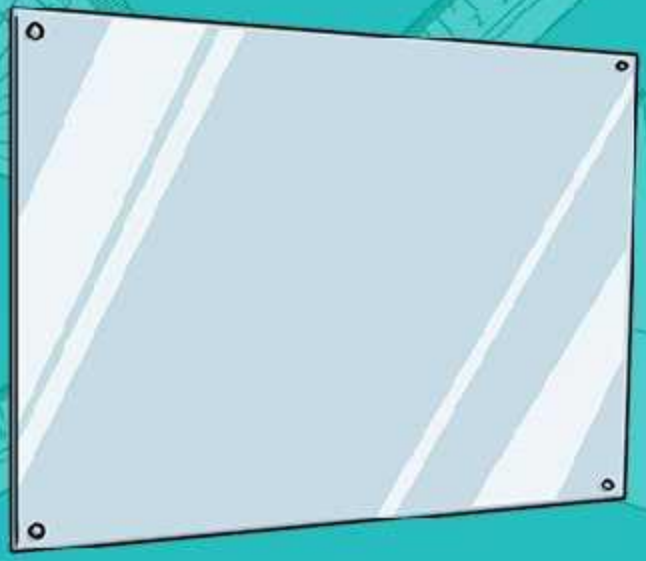
Mathematics

Measurement and Geometry

Identifying Reflected Shapes



Aim

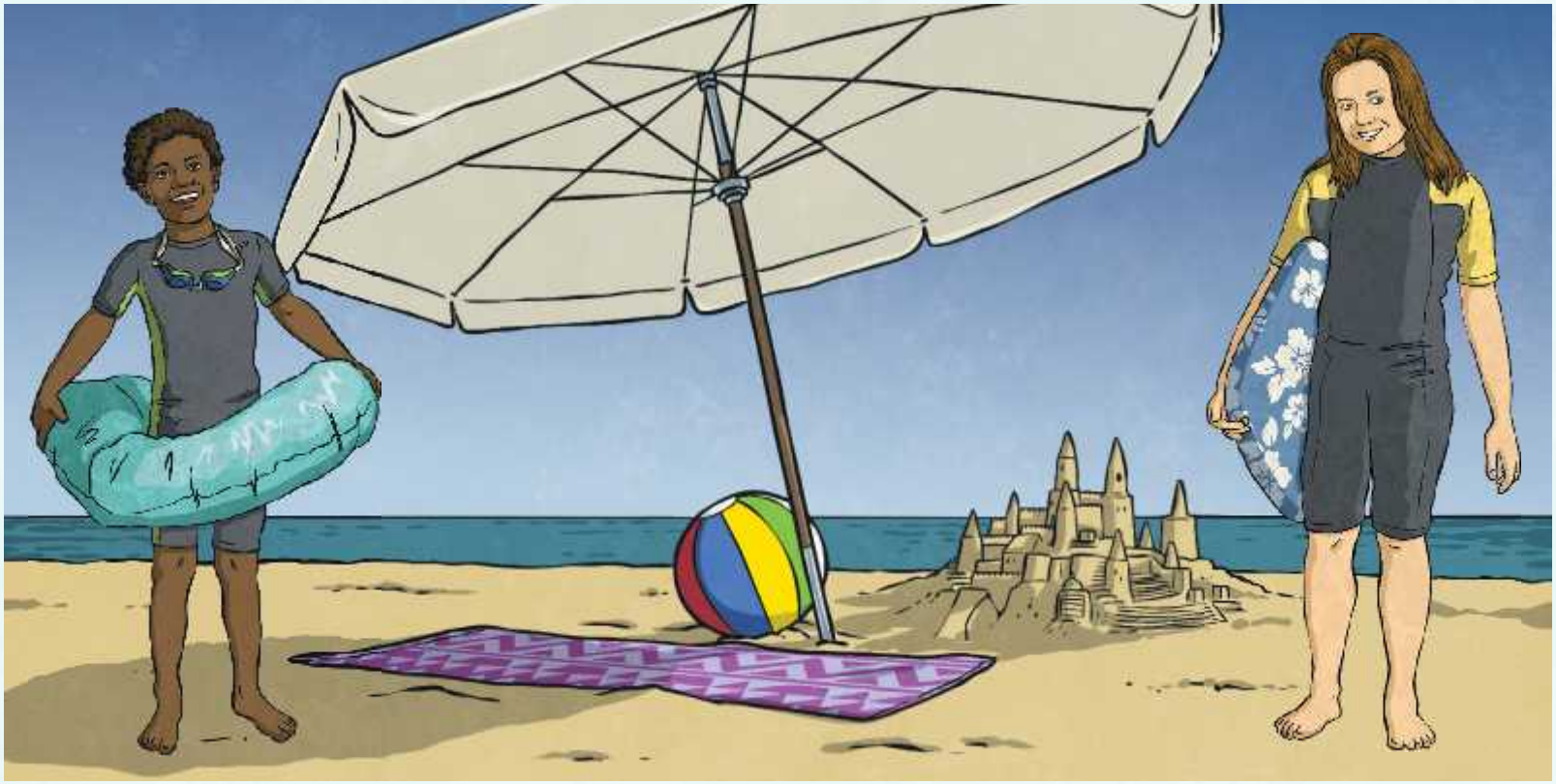
- I can identify the position of a shape following a reflection.

Success Criteria

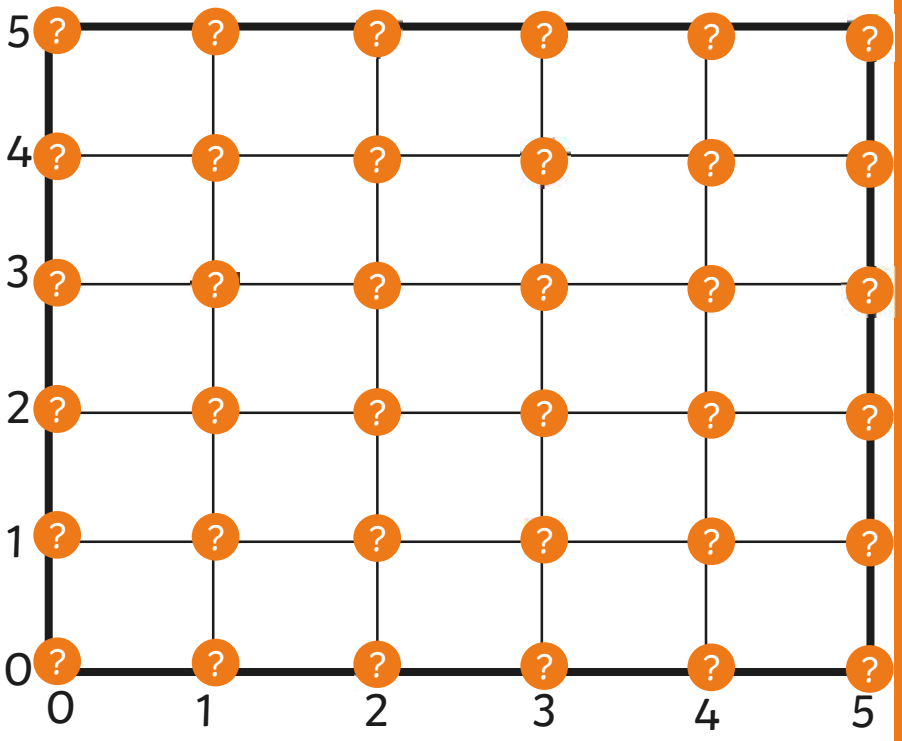
- I can read, write and plot coordinates in the first quadrant.
- I know that when reflected, a shape does not change shape and each point is the same distance from the mirror line.

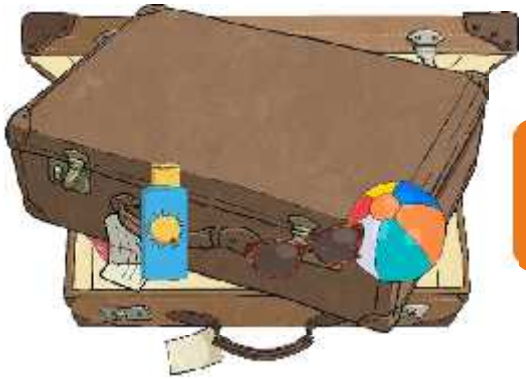
Holiday Suitcase Coordinates

Collect the items to help the child pack their holiday suitcase by reading and plotting the coordinates correctly.



(5,5), (2,5), (3,4), (1,3), (5,3), (0,2) and (3,1)

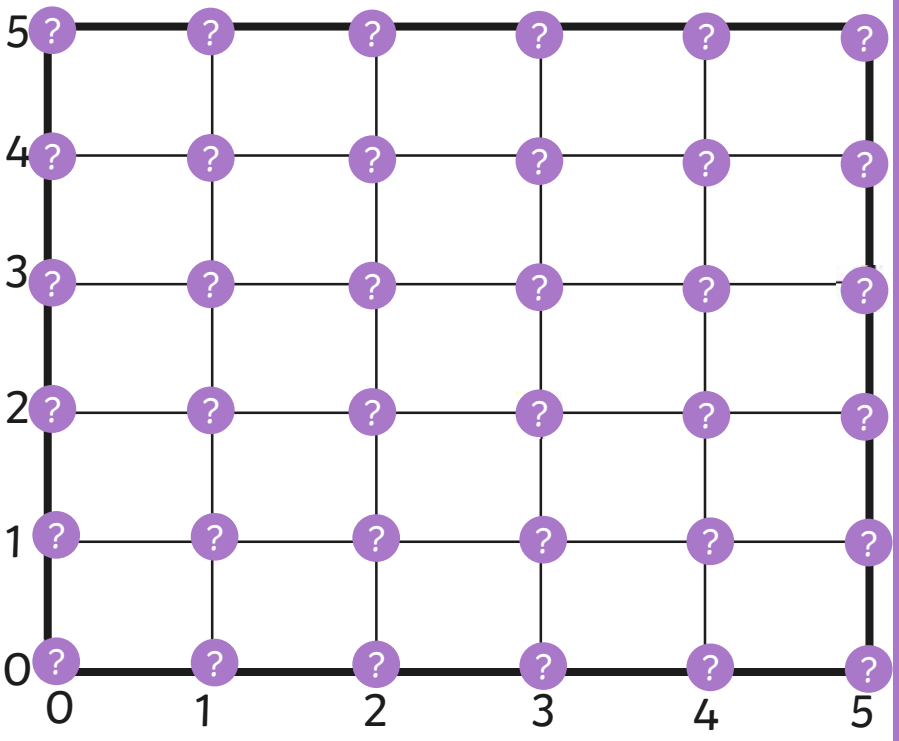




Pack the Suitcase

Thank you for helping me pack my suitcase for my beach holiday!

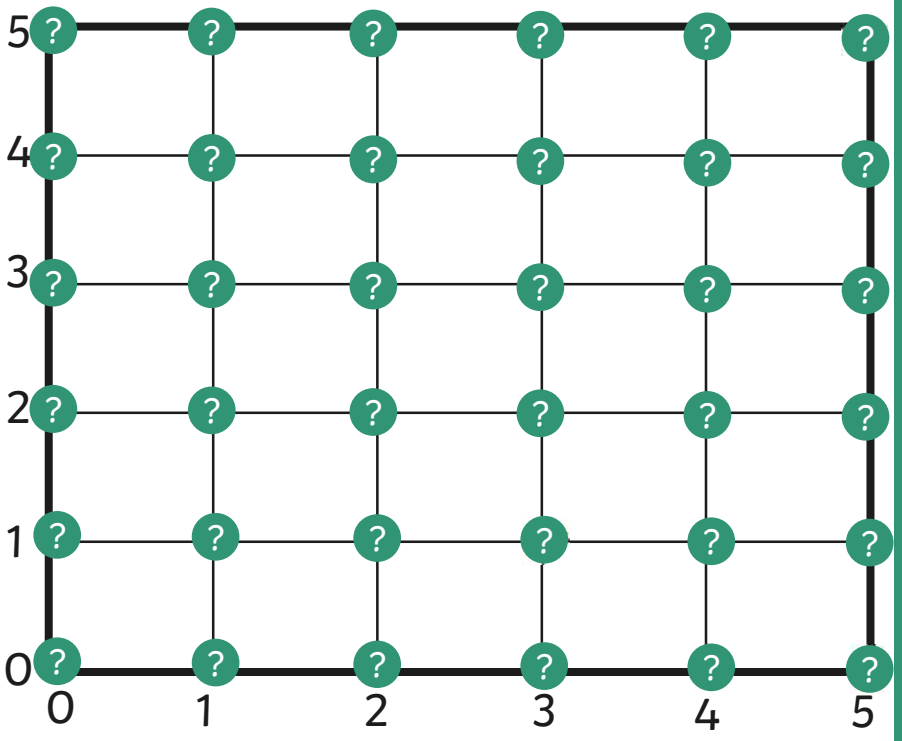
(1,5), (5,2), (3,4), (0,0), (5,3), (3,2) and (5,0)



Pack the Suitcase

Thank you for helping me pack my suitcase for my ski holiday!

(0,5), (5,5), (5,1), (3,1), (2,0) and (5,0)

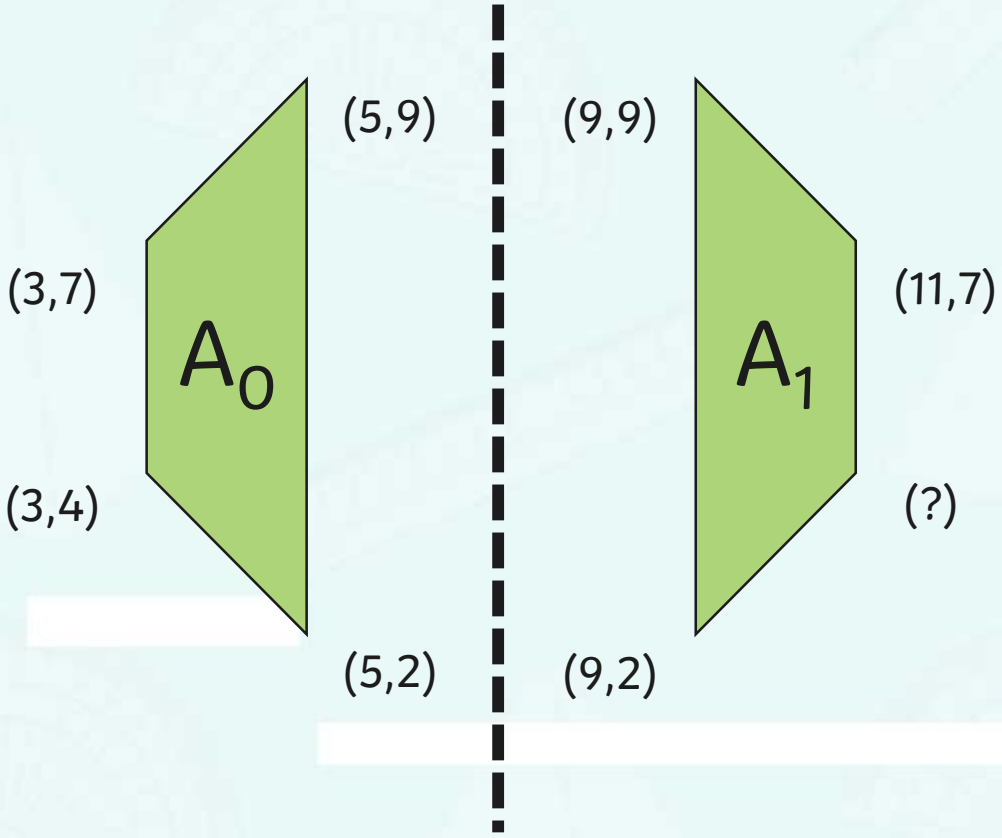


Pack the Suitcase

Thank you for helping me pack my suitcase for my safari holiday!

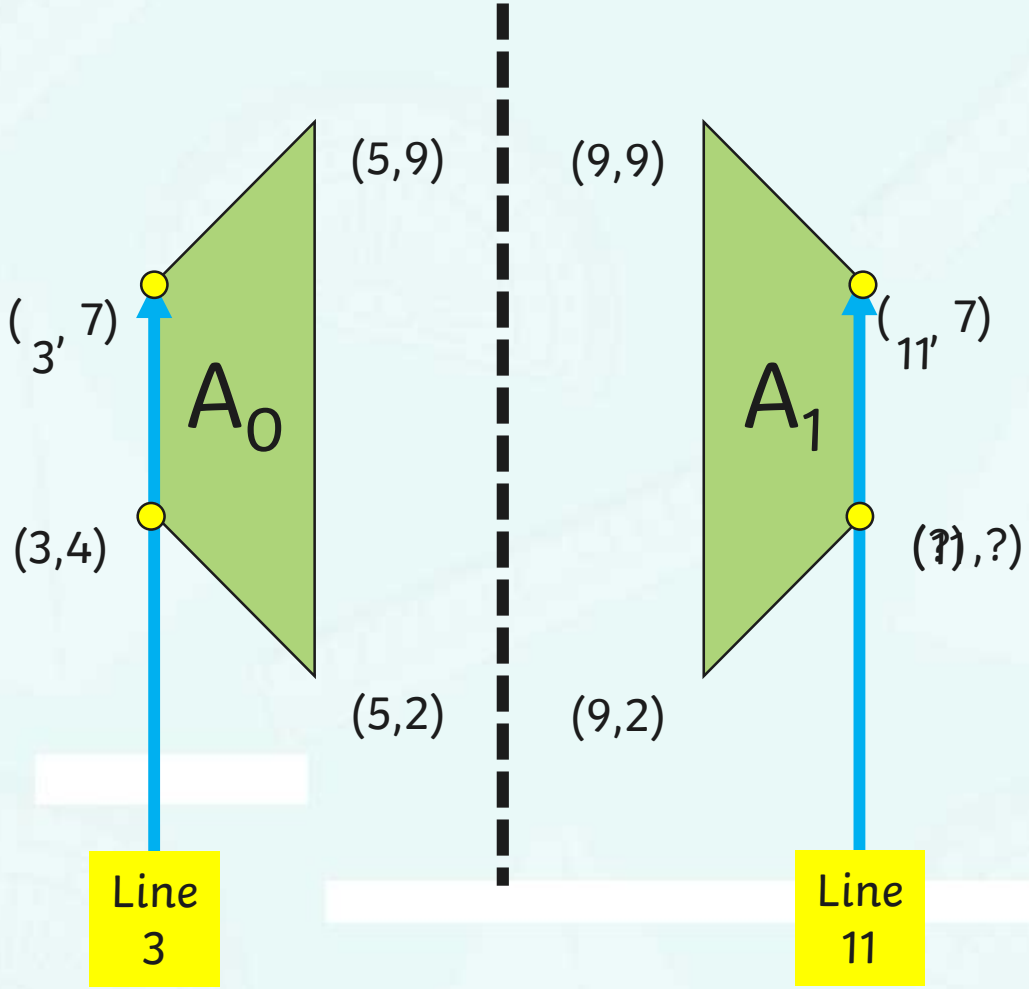
Reflection Without a Grid

Click on shape A to see it reflected to a new position.



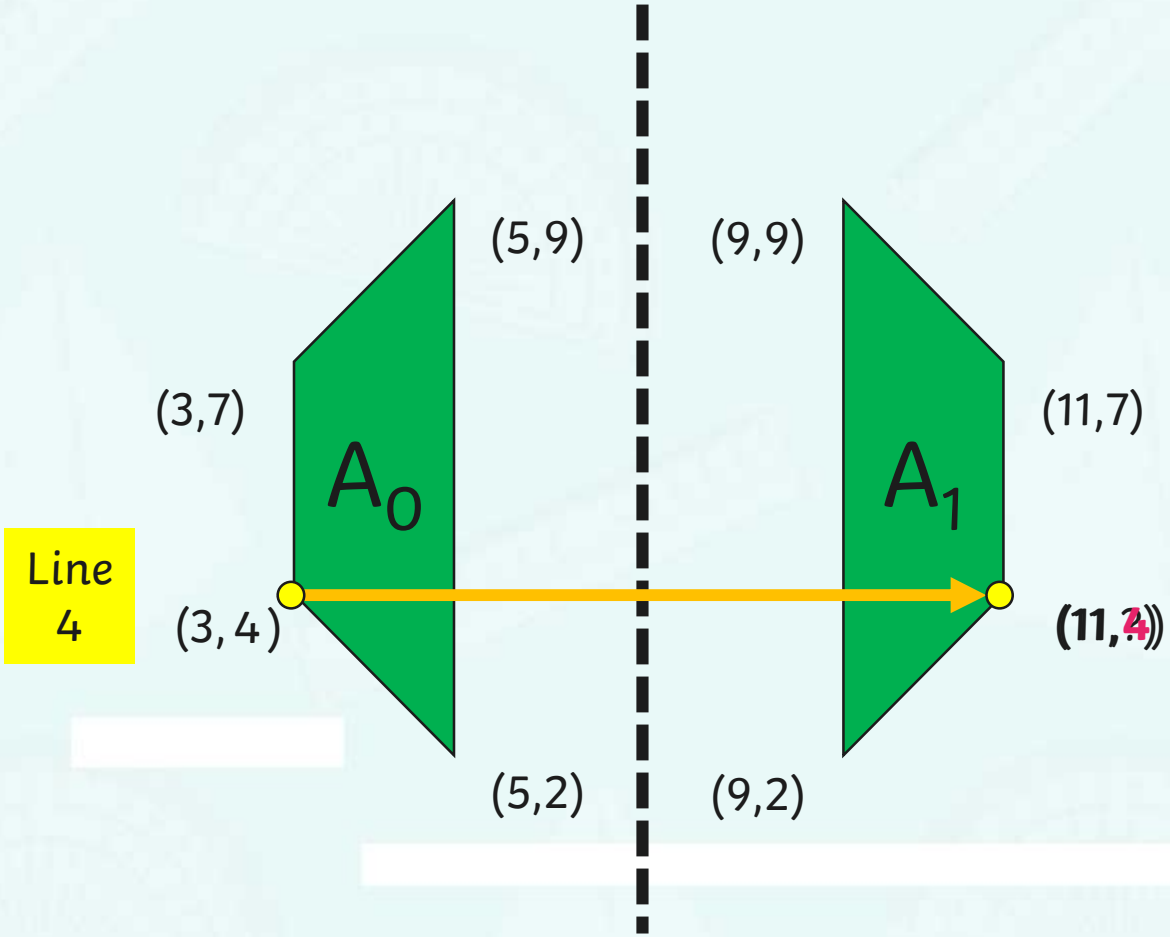
We have been given the coordinate positions of all the corners of the original shape but only three of the reflected shape. Let's use this information to identify the missing corner coordinate.

Reflection Without a Grid



3. We can identify that the corners directly underneath are on the same lines of the x-axis, so the first number of the missing coordinate is **11**.

Reflection Without a Grid

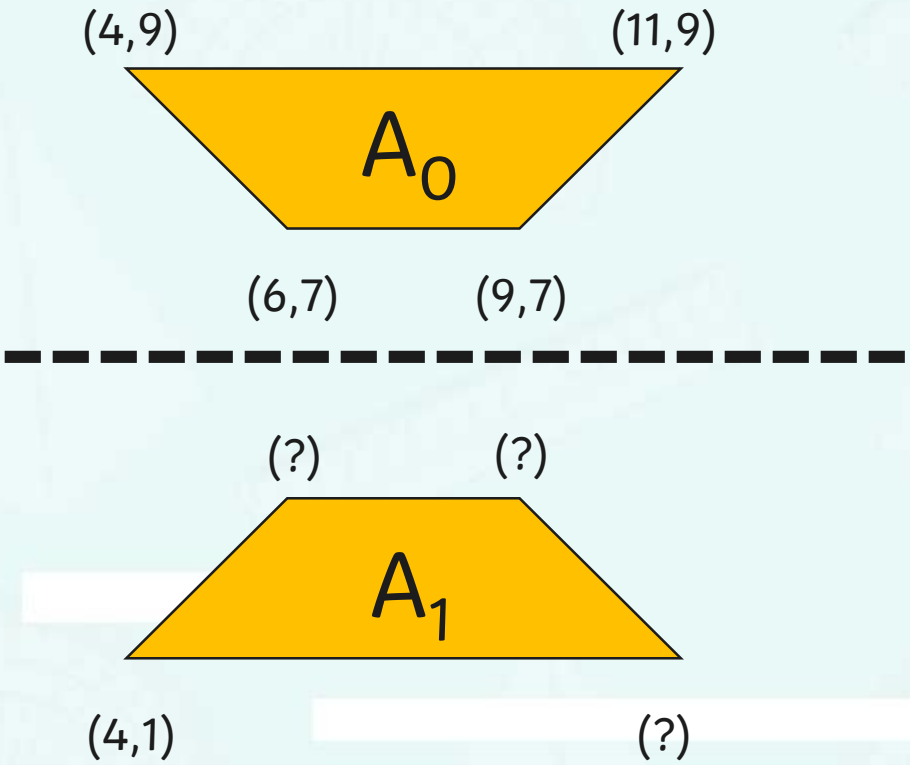


2. This information helps us identify that the second number of the missing coordinate is

4.

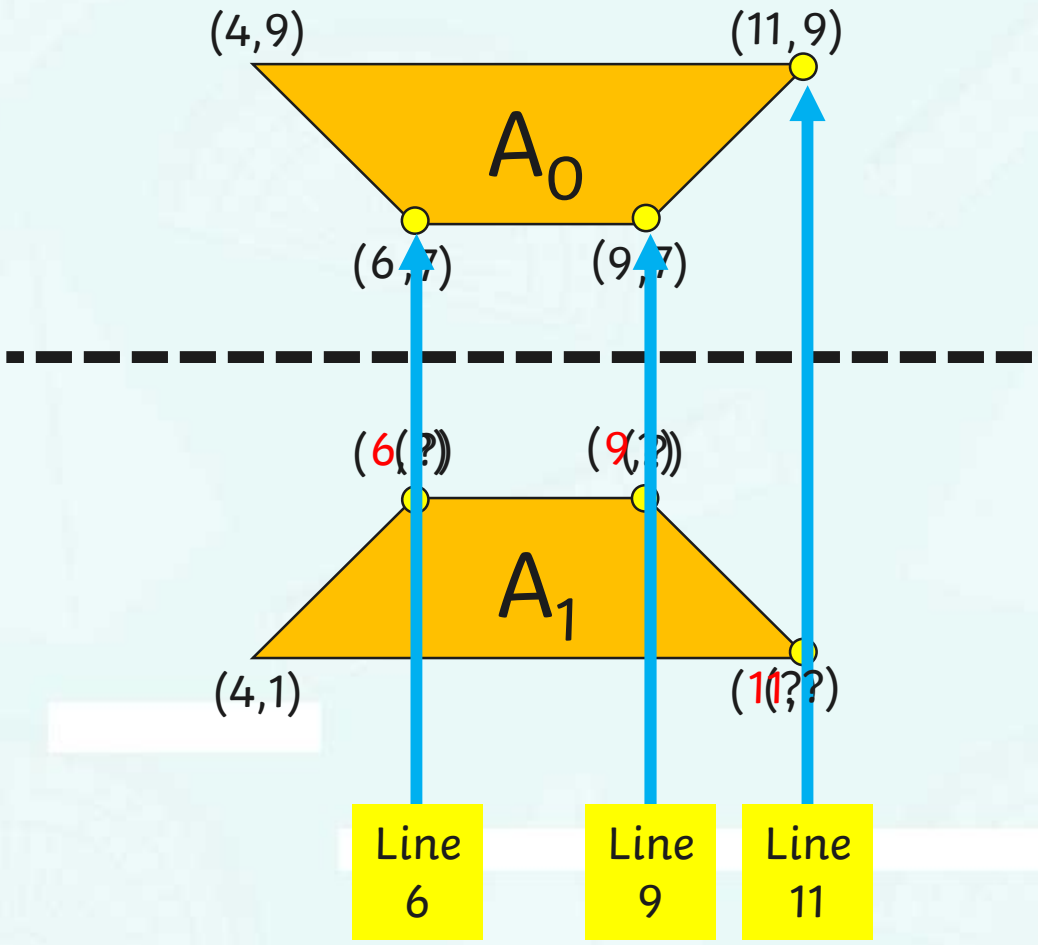
Reflection Without a Grid

Click on shape A to see it reflected to a new position.



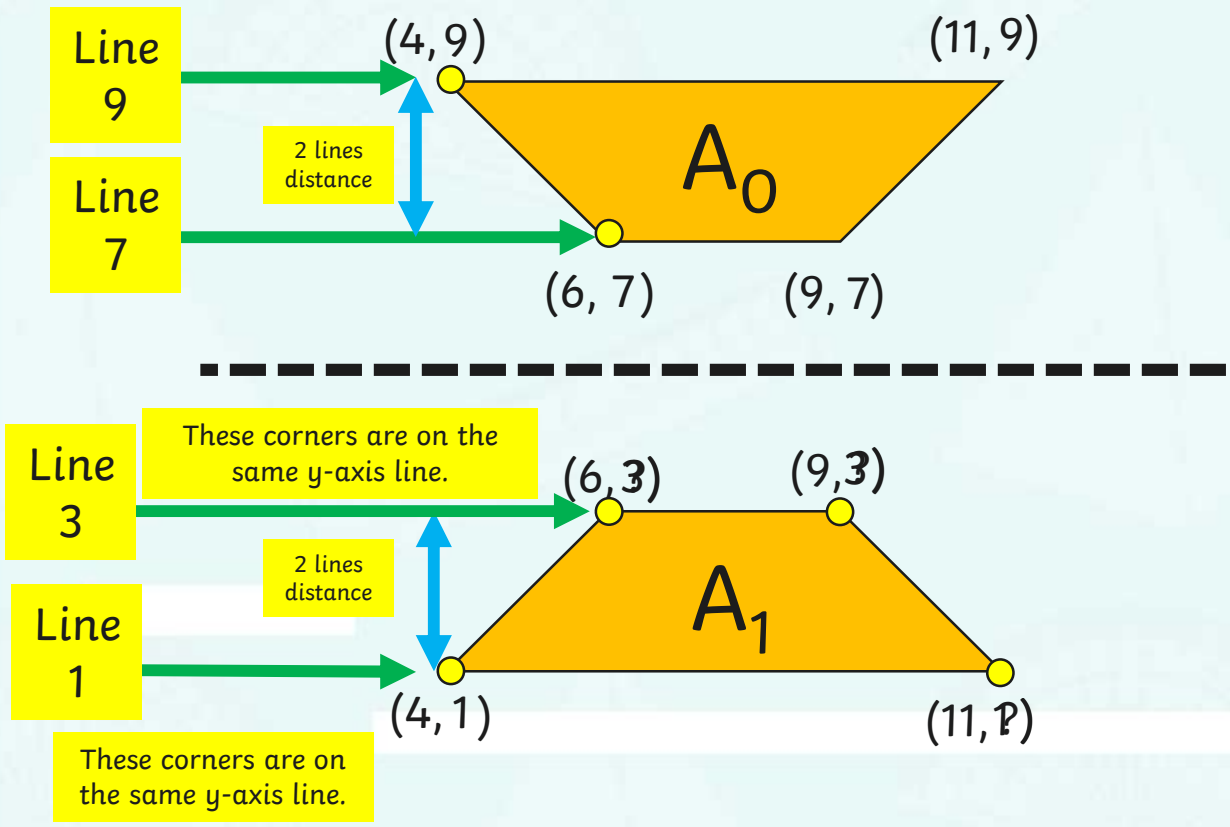
We have been given the coordinate positions of all the corners of the original shape but only **one** of the reflected shape. Let's use this information to identify the missing corner coordinates.

Reflection Without a Grid



2. Now we know the first numbers of the missing coordinates.

Reflection Without a Grid

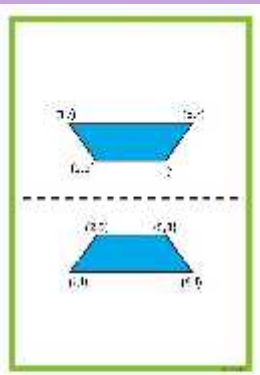


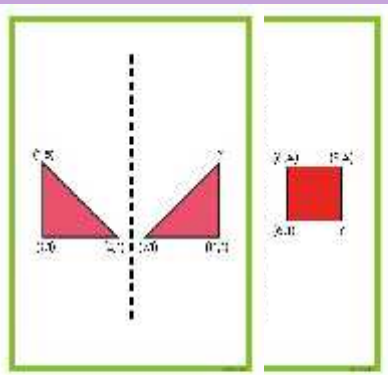
1. Next, we need to identify

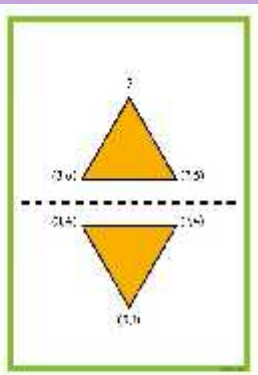
2. Now we can apply this to the reflected shape.

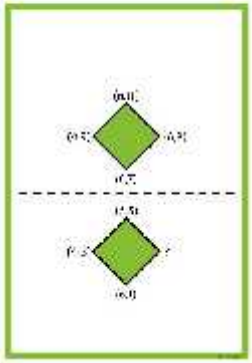
[illegible] coordinates.

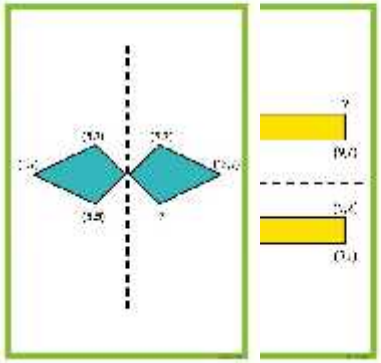
Shape Reflections Matching Game

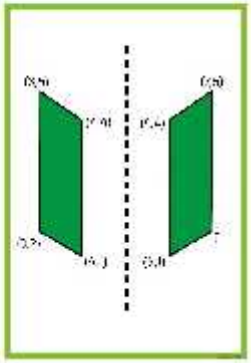












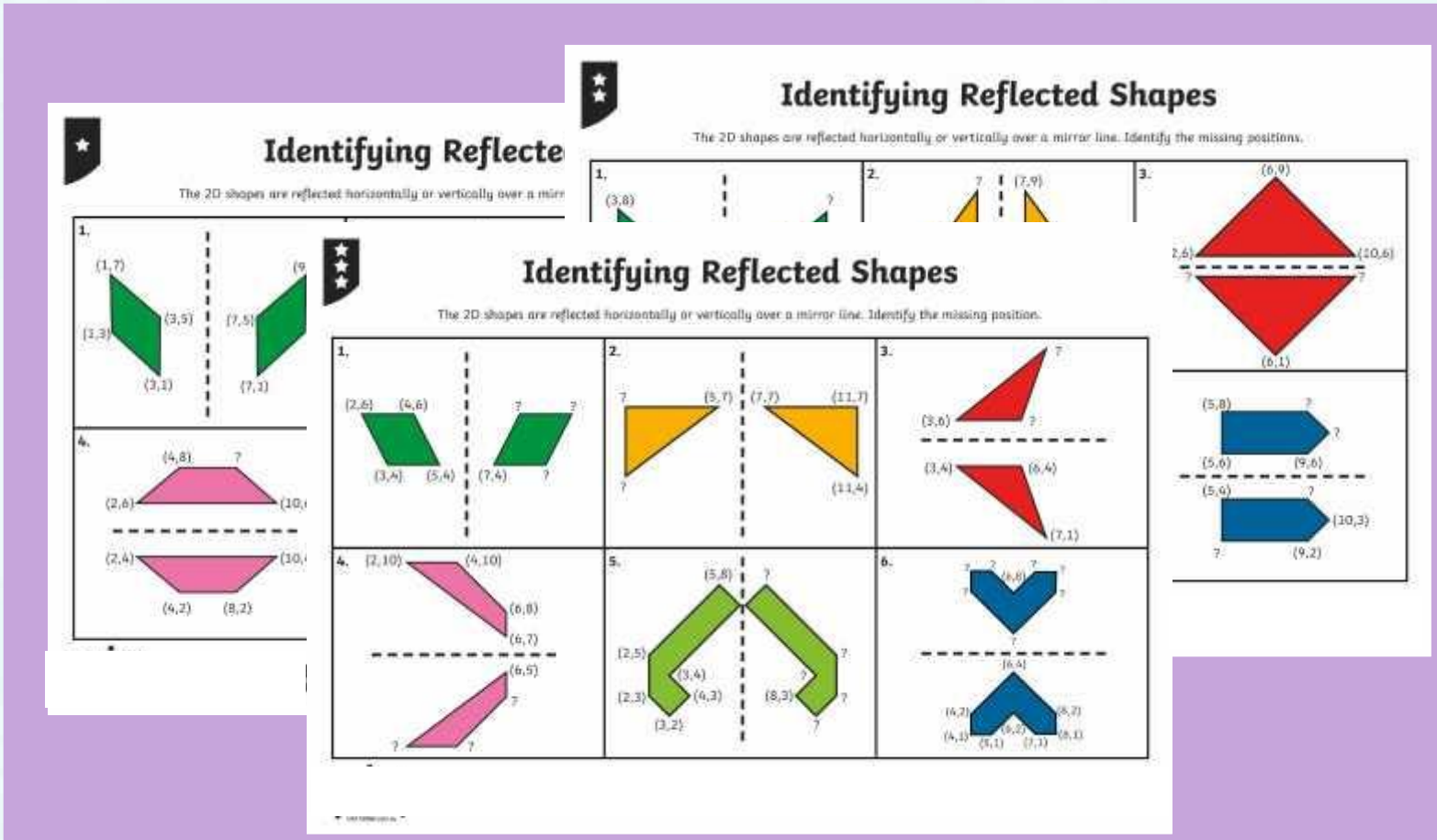
(5,9)

(11,5)

(7,2)

(8,3)

Identifying Reflected Shapes



Mixed-Up Reflections

Click on the shape to see it reflected and then **click on the speech bubble** of the child who has identified the missing coordinate correctly.

How has the other child got mixed up?

I think the missing coordinate is (2,10).

(?)

A_1

(4,8)

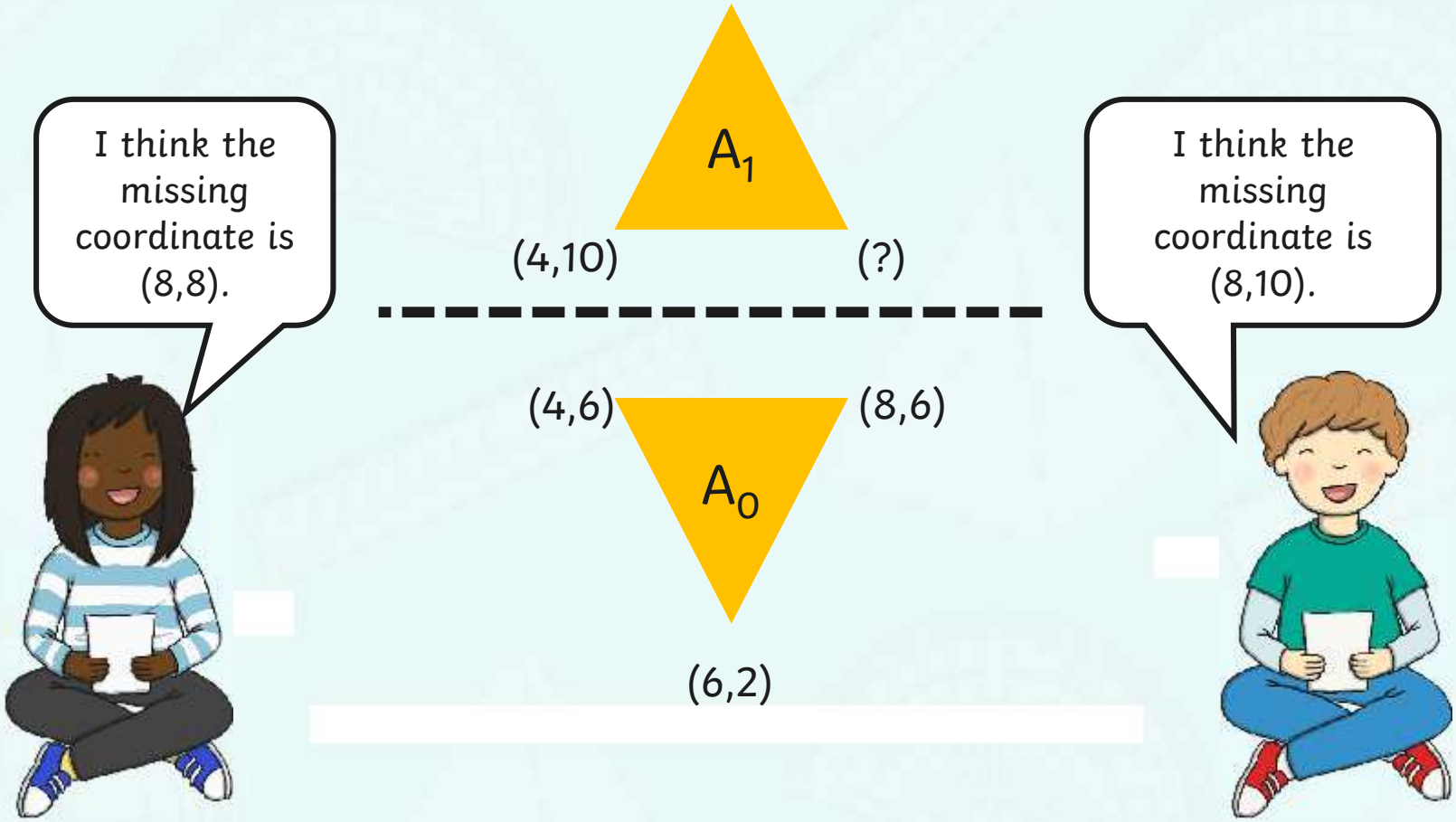
(8,10) (10,10)

A_0

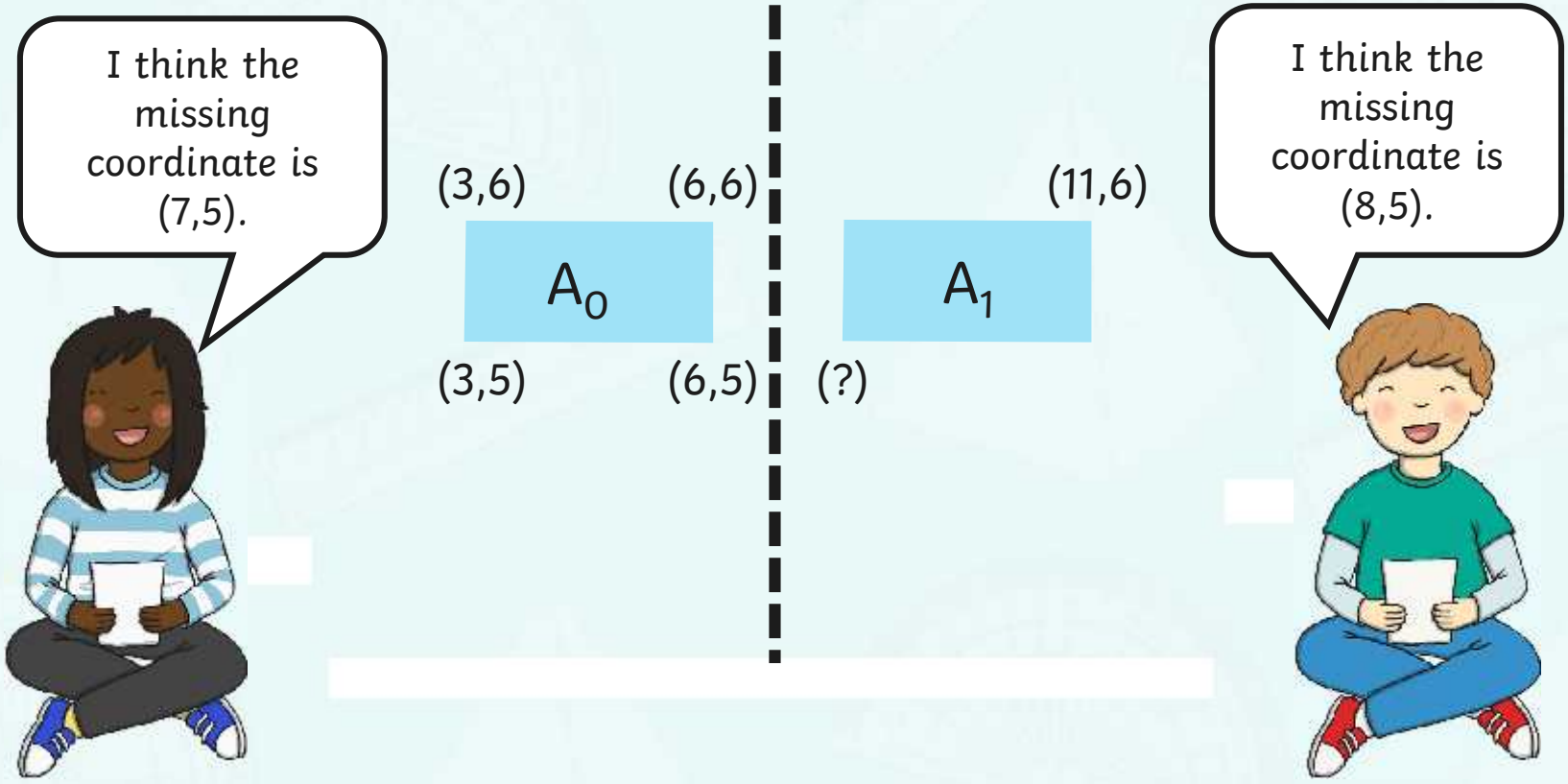
(8,8) (10,8)

I think the missing coordinate is (2,8).

Mixed-Up Reflections



Mixed-Up Reflections



Mixed-Up Reflections

(7,8)

(6,7) A_0 (8,7)

(7,6)

(6,3) A_1

(?)

I think the missing coordinate is (7,2).

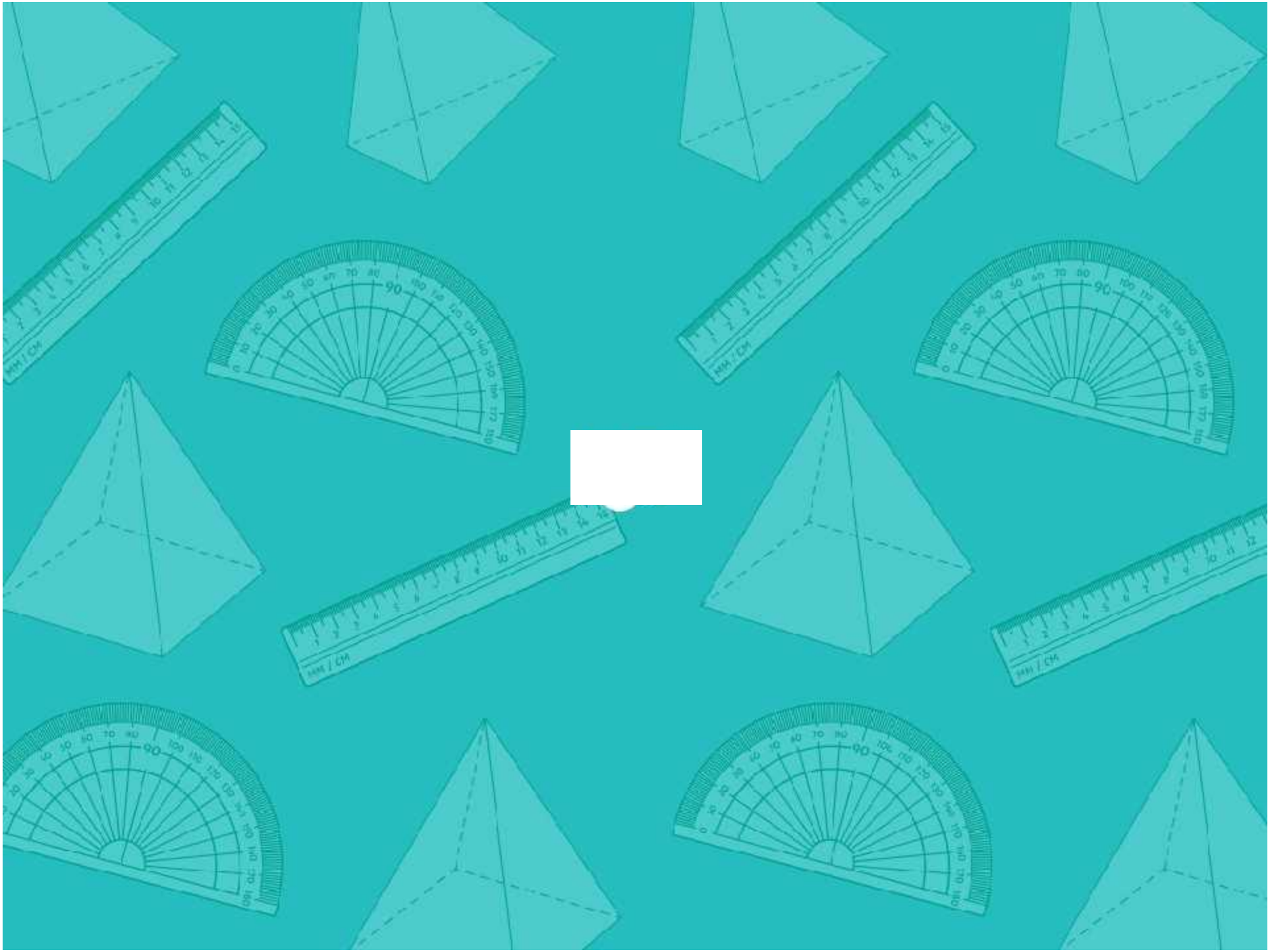
I think the missing coordinate is (7,3).

Aim

- I can identify the position of a shape following a reflection.

Success Criteria

- I can read, write and plot coordinates in the first quadrant.
- I know that when reflected, a shape does not change shape and each point is the same distance from the mirror line.



Measurement and Geometry: Location and Transformation: Identifying Reflected Shapes

Australian Curriculum
This lesson plan could be used to support the teaching and learning of the following Content Description from the Australian Curriculum.

Y5 – Measurement and Geometry
Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries (ACMMG114)

Child-Friendly Aim:	**Success Criteria:**	**Resources:**
I can identify the position of a shape following a reflection.	I can read, write and plot coordinates in the first quadrant. I know that when reflected, a shape is flipped over the mirror line, does not change shape and each point is the same distance from the mirror line.	**Lesson Pack**
	Key/New Words: Coordinate, translation, reflection.	**Preparation:** **Reflections Pairs Cards** – one per pair Differentiated **Identifying Reflected Shapes Activity Sheet** – one per child

Prior Learning:	It will be helpful if children have had practise at drawing symmetrical patterns and recognising line symmetry in a variety of diagrams.

Learning Sequence

	**Holiday Suitcase Coordinates:** Using the interactive slides on the **Lesson 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 first quadrant.	
	**Reflection Without a Grid:** Use the information and images on the **Lesson Presentation** to demonstrate how to work out the position of a 2D shape after a reflection where there is no background grid for reference.	
	**Shape Reflections Matching Game:** Spread the **Shape Reflections Matching Cards** face down on the table. The children work in a group to take it in turns to turn over two cards to try to match a missing coordinate to a reflected 2D shape. If they make a match they keep the cards, if not they turn them back over. The winner is the player who collects the most pairs.	
	**Identifying Reflected Shapes:** Children complete the differentiated **Identifying Reflected Shapes Activity Sheet**, to demonstrate they can identify the position of a shape following a reflection.  Identify the one missing coordinate position of a reflected 2D shape.  Identify the two missing coordinate positions of a reflected 2D shape.  Identify all the missing coordinate positions of a reflected 2D shape.	
	**Mixed Up Reflections:** As a class, look at the discussion cartoons displayed on the and discuss which answer is correct and why.	

Masterit

Jigsawit: Create pictures that use reflective symmetry and cut into pieces for a friend to reassemble.

Sculptureit: Explore the work of artists such as Andy Goldsworthy and create nature sculptures which involve reflective symmetry.

Mirrorit: Explore taking mirrors into the natural environment and capturing reflections by taking photos or drawing sketches.

Aim: I can identify the position of a shape following a reflection.				**Date:**					
				Delivered By:			**Support:**		
Success Criteria	**Me**	**Friend**	**Teacher**	**T**	**PPA**	**S**	**I**	**AL**	**GP**
I can read, write and plot coordinates in the first quadrant.				**Notes/Evidence**					
I know that when reflected, a shape is flipped over the mirror line, does not change shape and each point is the same distance from the mirror line.									

Next Steps

- _____
- _____

T	Teacher	**I**	Independent
PPA	Planning, Preparation and Assessment	**AL**	Adult Led
S	Supply	**GP**	Guided Practice

Aim: I can identify the position of a shape following a reflection.				**Date:**					
				Delivered By:			**Support:**		
Success Criteria	**Me**	**Friend**	**Teacher**	**T**	**PPA**	**S**	**I**	**AL**	**GP**
I can read, write and plot coordinates in the first quadrant.				**Notes/Evidence**					
I know that when reflected, a shape is flipped over the mirror line, does not change shape and each point is the same distance from the mirror line.									

Next Steps

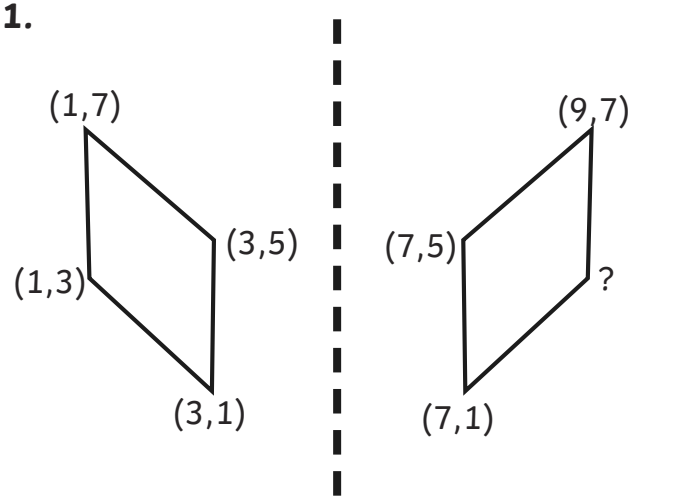
- _____
- _____

T	Teacher	**I**	Independent
PPA	Planning, Preparation and Assessment	**AL**	Adult Led
S	Supply	**GP**	Guided Practice

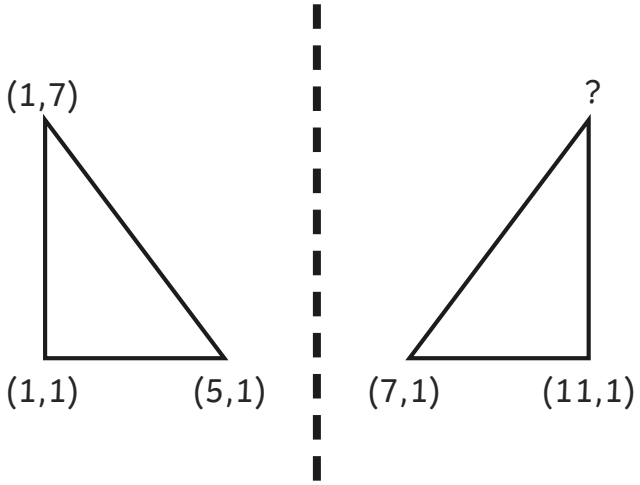
Identifying Reflected Shapes

The 2D shapes are reflected horizontally or vertically over a mirror line. Identify the missing position.

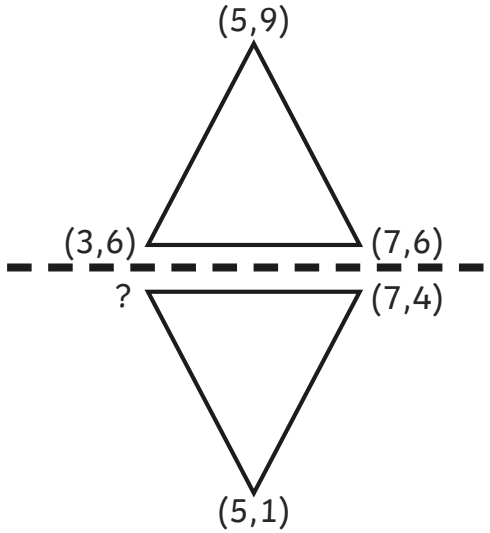
1.



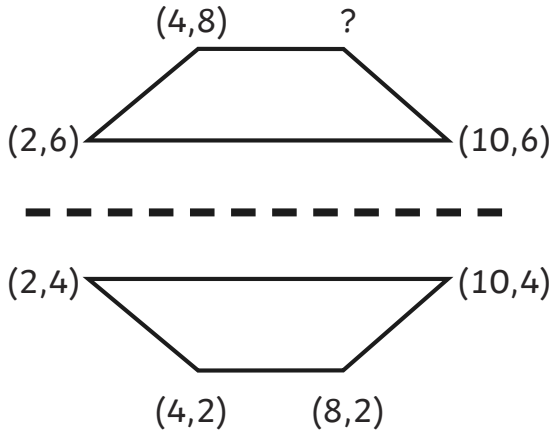
2.



3.



4.



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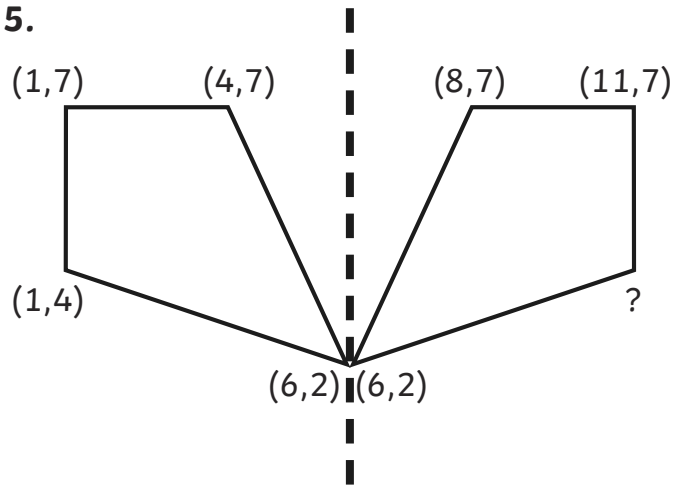

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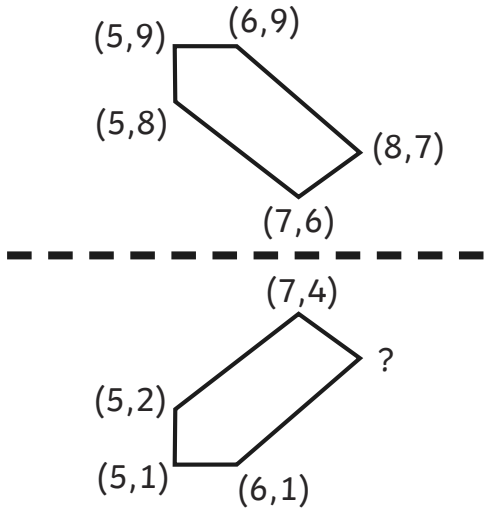
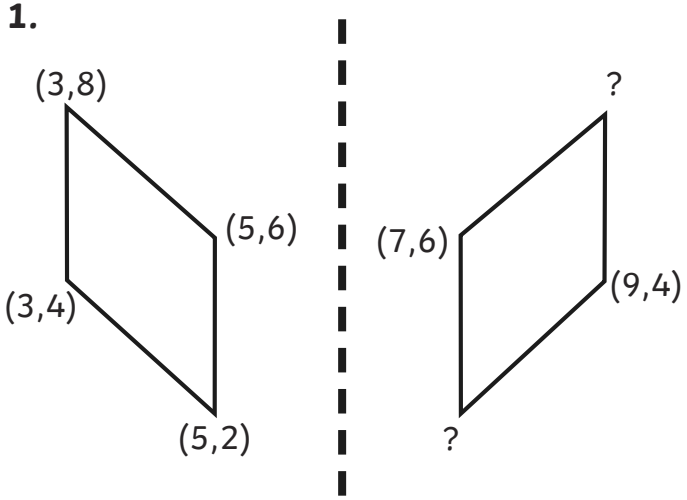


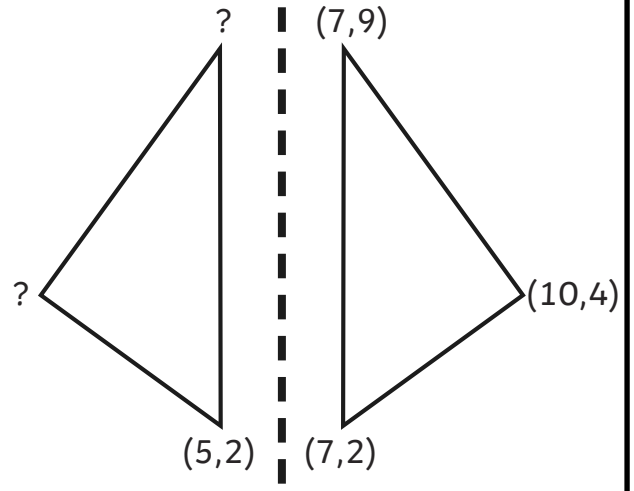
Identifying Reflected Shapes

The 2D shapes are reflected horizontally or vertically over a mirror line. Identify the missing positions.

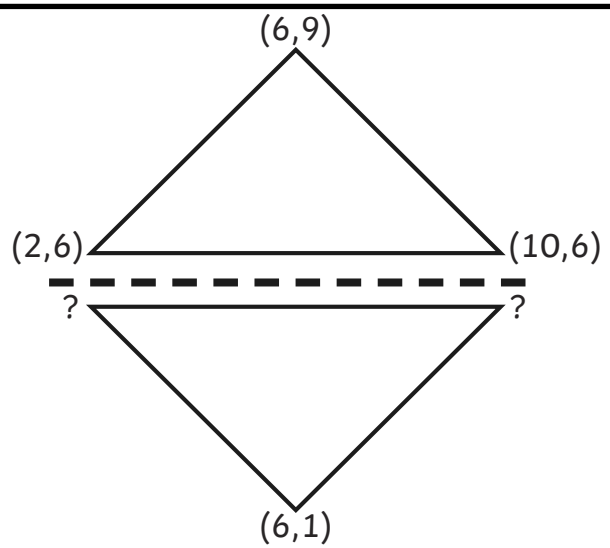
1.



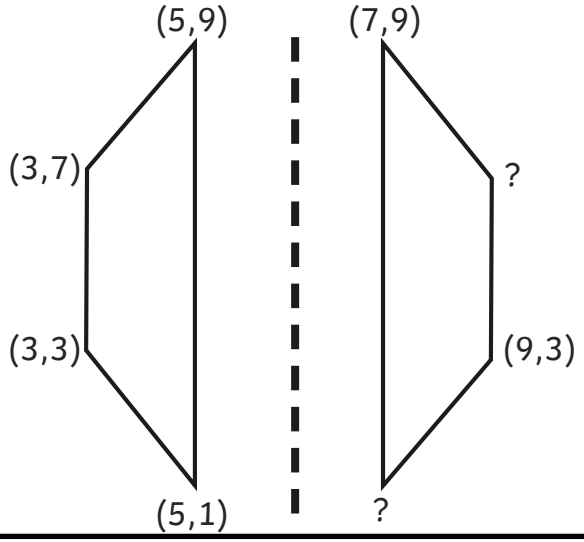
2.



3.



4.



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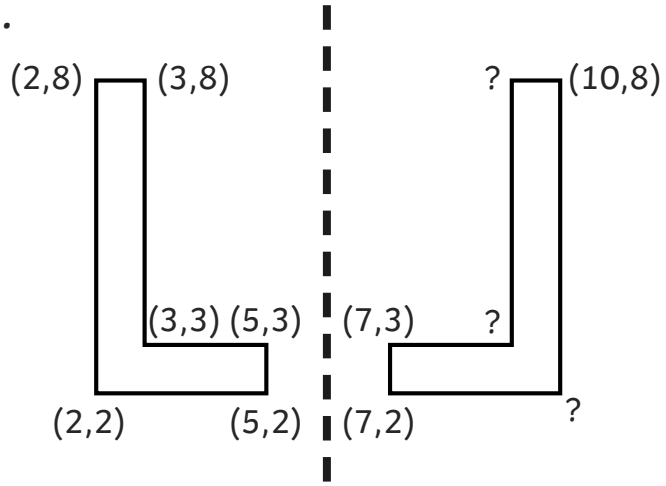

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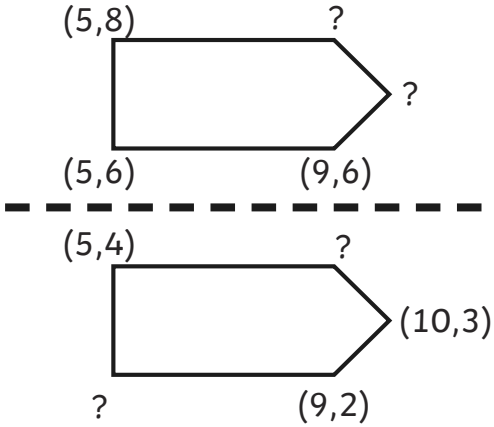

Identifying Reflected Shapes

The 2D shapes are reflected horizontally or vertically over a mirror line. Identify the missing position.

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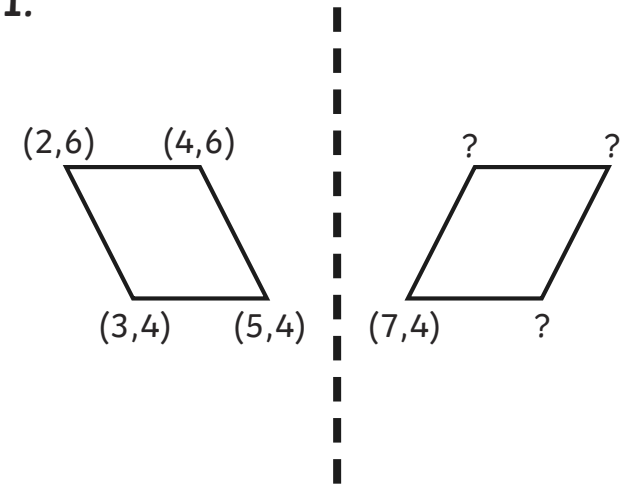
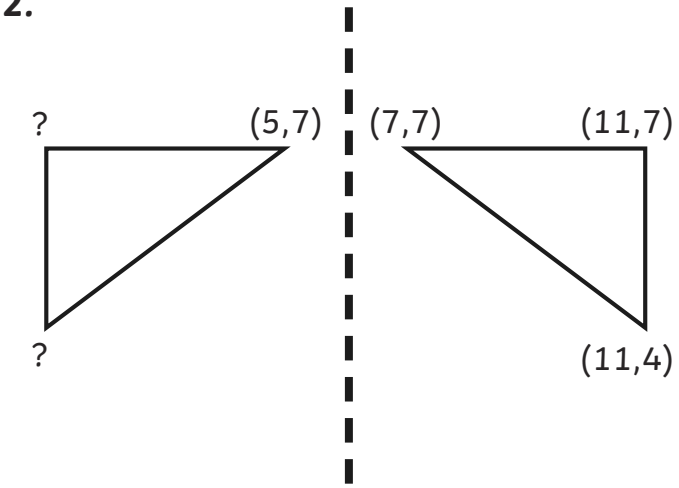
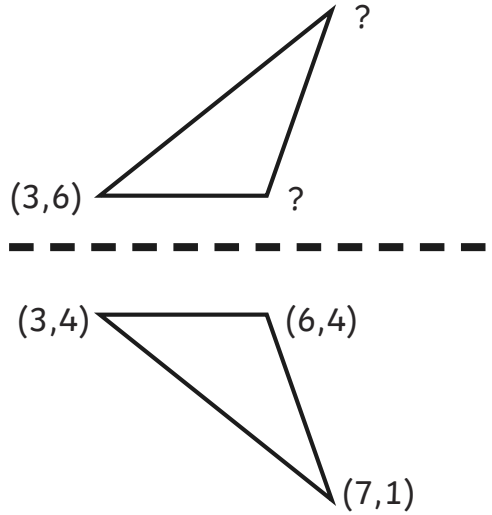


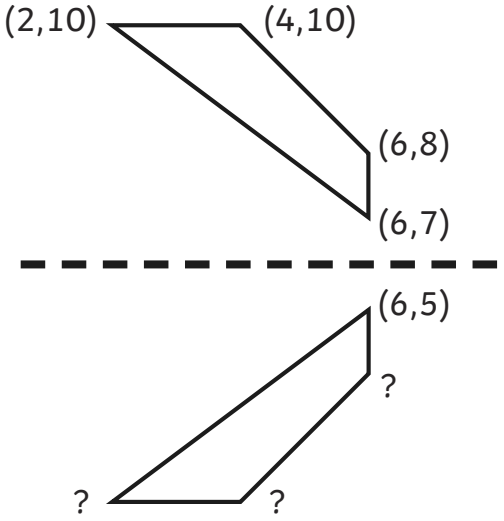
2.



3.



4.



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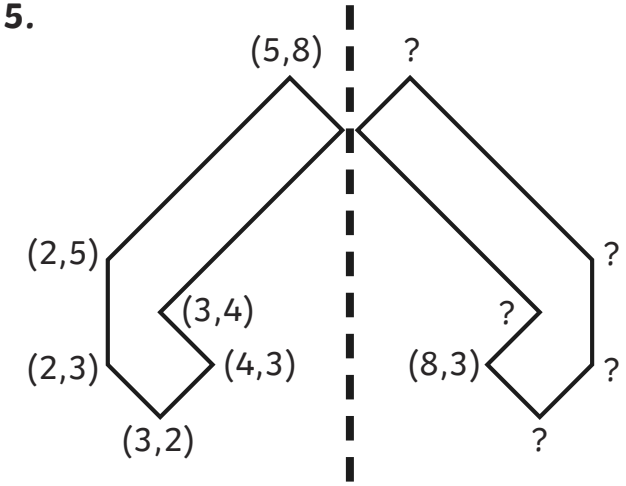

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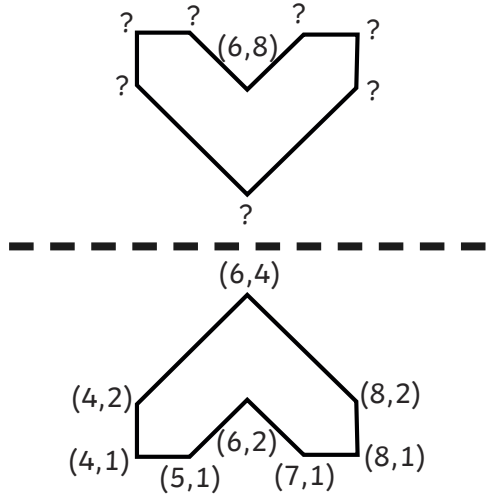


Identifying Reflected Shapes Answers

*

1. (9,3)
2. (11,7)
3. (3,4)
4. (8,8)
5. (11,4)
6. (8,3)

**

1. (7,2), (9,8)
2. (2,4), (5,9)
3. (2,4), (10,4)
4. (7,1), (9,7)
5. (10,2), (9,8), (9,3)
6. (5,2), (9,4), (9,8), (10,7)

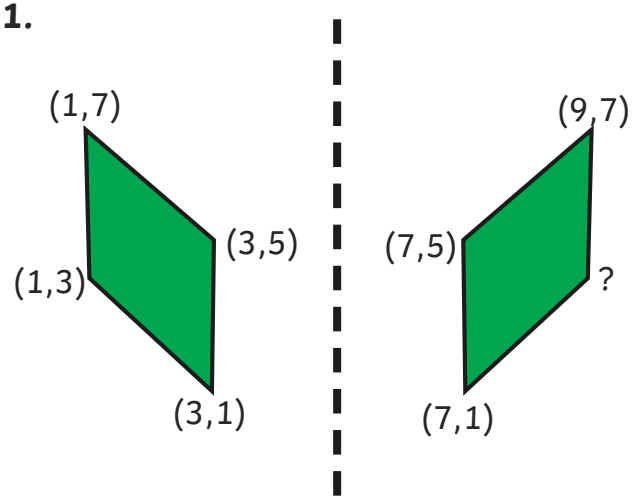
***

1. (8,6), (9,4), (10,6)
2. (1,7), (1,4)
3. (6,6), (7,9)
4. (6,4), (4,2), (2,2)
5. (7,8), (9,4), (9,2), (10,3), (10,5)
6. (6,6), (4,8), (4,9), (5,9), (7,9), (8,9), (8,8)

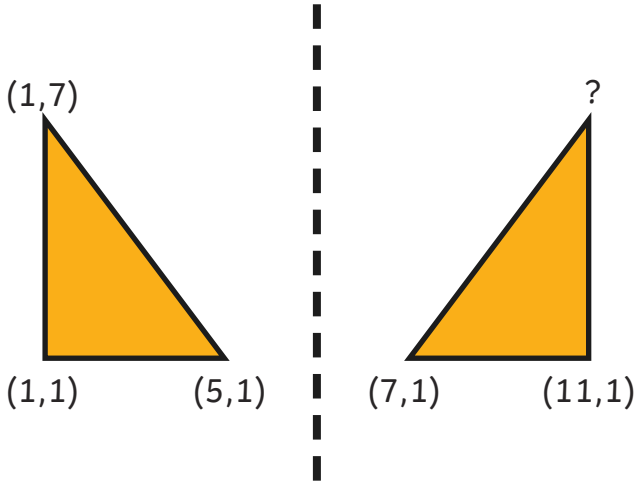
Identifying Reflected Shapes

The 2D shapes are reflected horizontally or vertically over a mirror line. Identify the missing position.

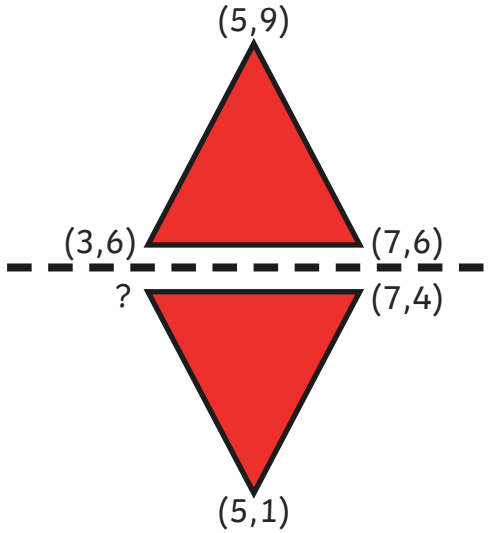
1.



2.



3.



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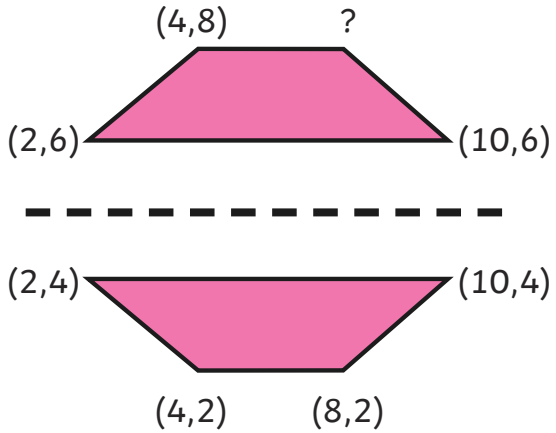
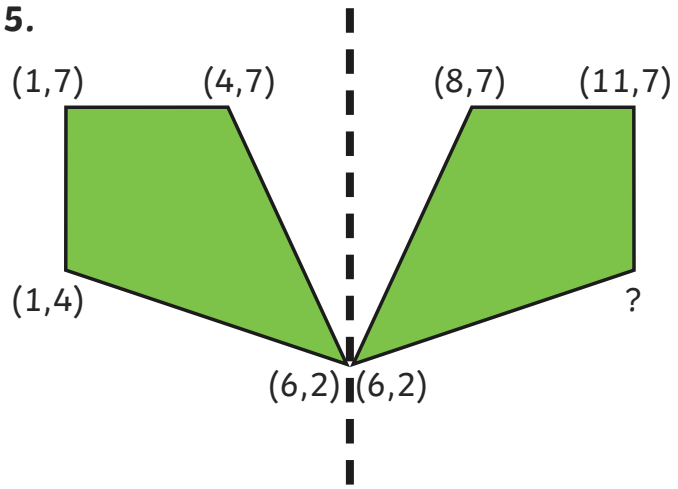


5.



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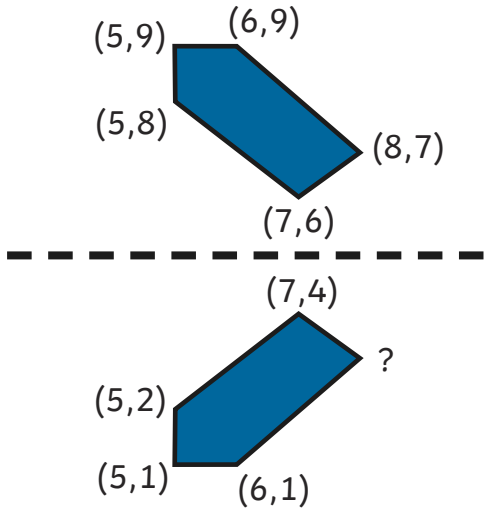
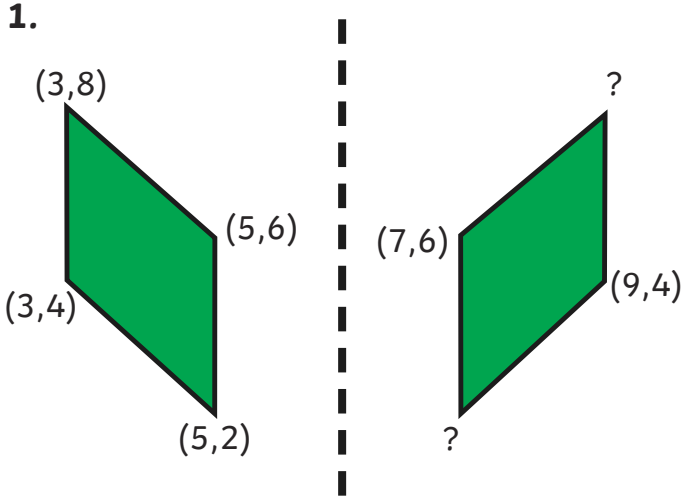


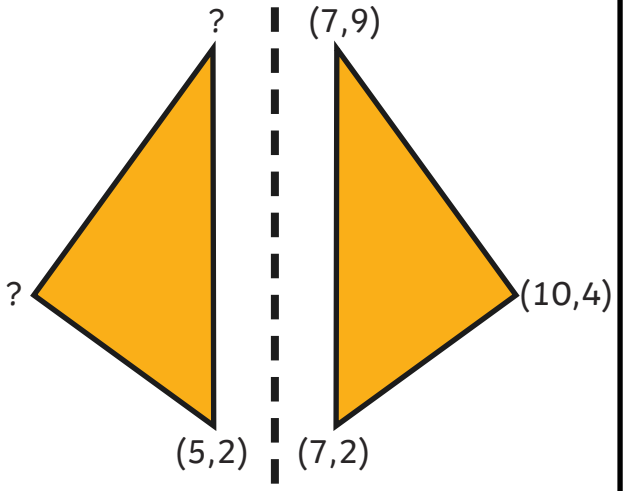
Identifying Reflected Shapes

The 2D shapes are reflected horizontally or vertically over a mirror line. Identify the missing positions.

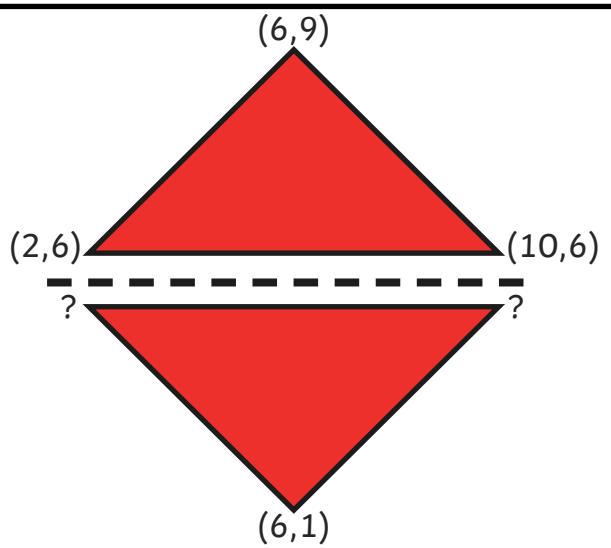
1.



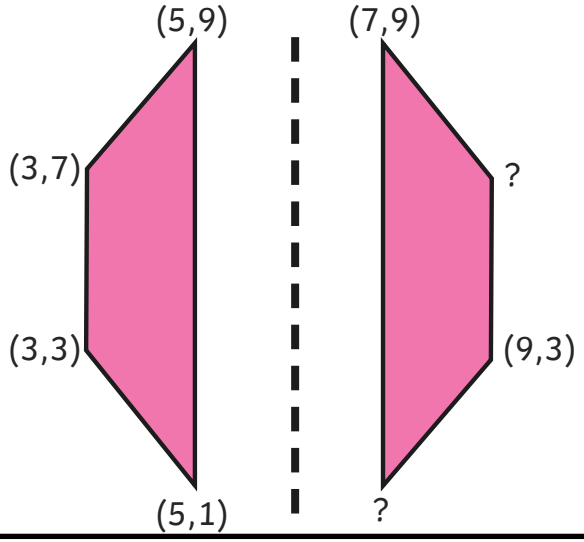
2.



3.



4.



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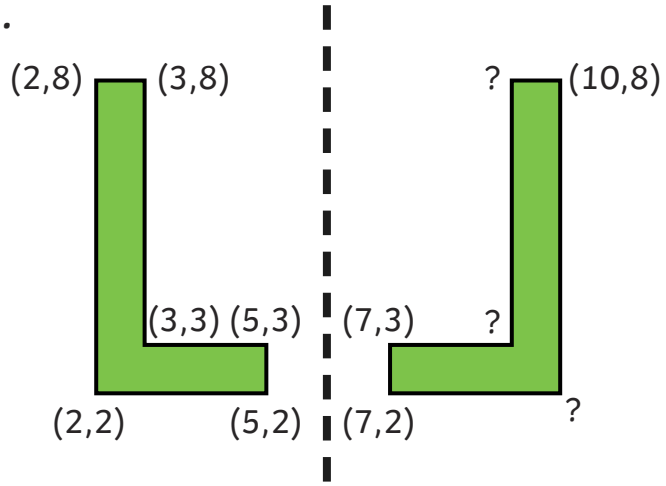
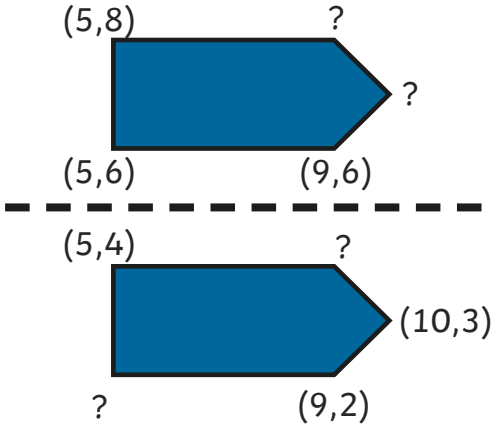


6.



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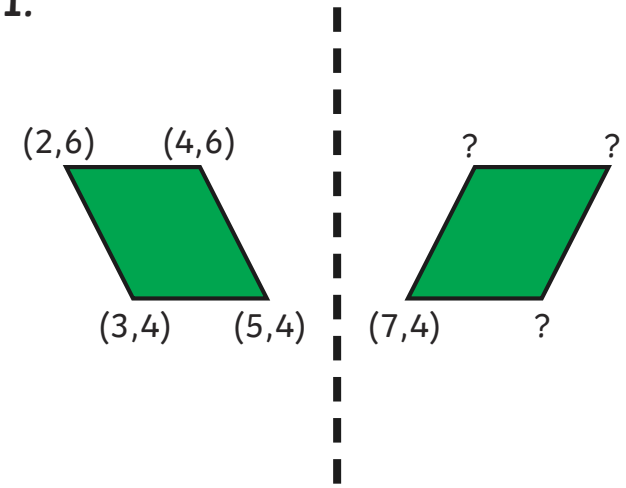
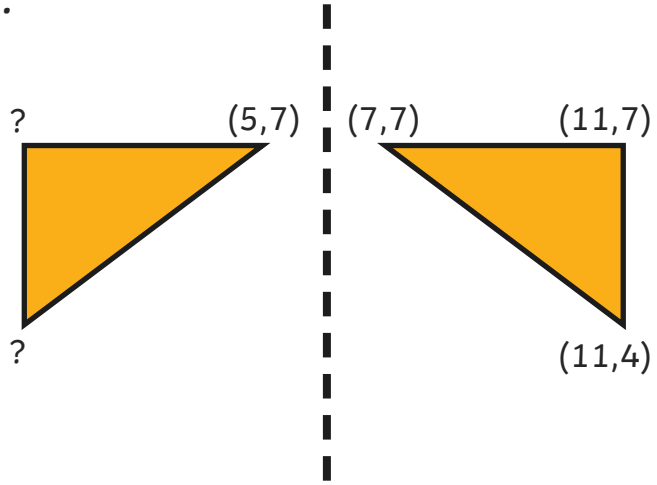


2.



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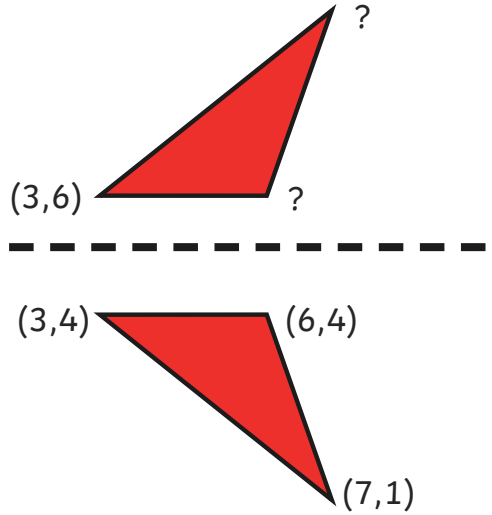
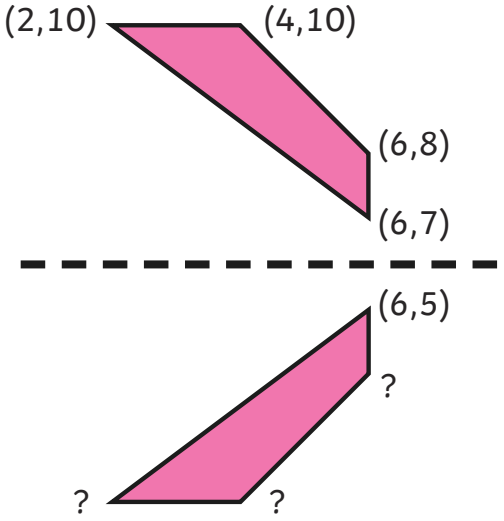
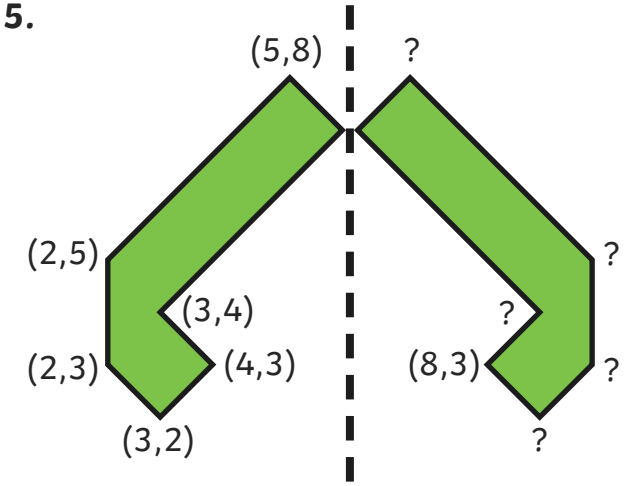


4.



5.



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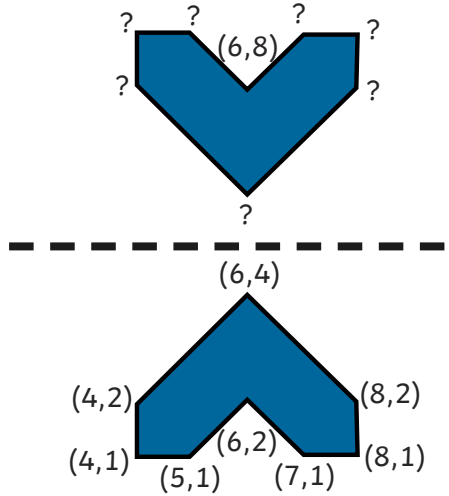


Identifying Reflected Shapes Answers

*

1. (9,3)
2. (11,7)
3. (3,4)
4. (8,8)
5. (11,4)
6. (8,3)

**

1. (7,2), (9,8)
2. (2,4), (5,9)
3. (2,4), (10,4)
4. (7,1), (9,7)
5. (10,2), (9,8), (9,3)
6. (5,2), (9,4), (9,8), (10,7)

***

1. (8,6), (9,4), (10,6)
2. (1,7), (1,4)
3. (6,6), (7,9)
4. (6,4), (4,2), (2,2)
5. (7,8), (9,4), (9,2), (10,3), (10,5)
6. (6,6), (4,8), (4,9), (5,9), (7,9), (8,9), (8,8)

(9,8)

(11,5)

(5,5)

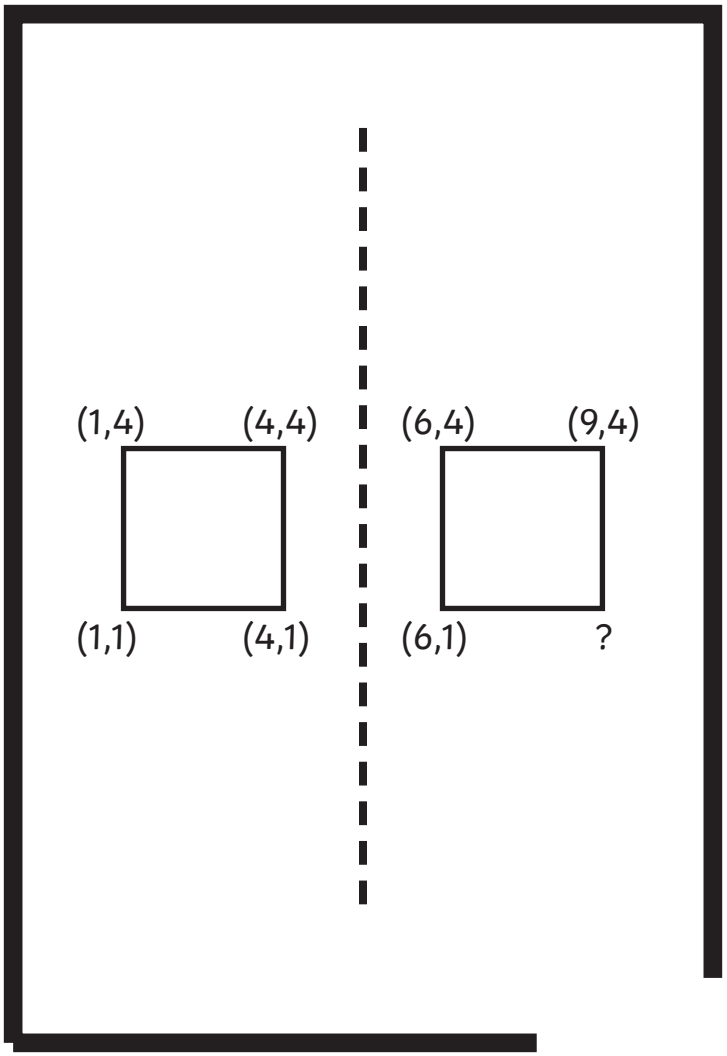
(8,3)

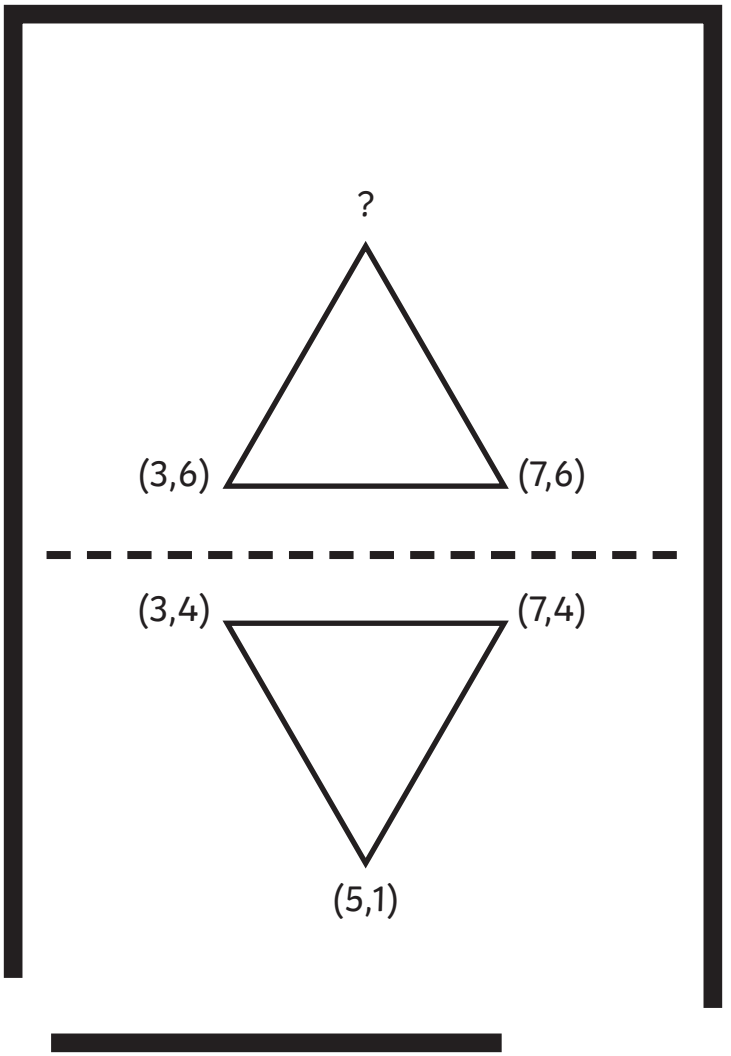
(9,1)

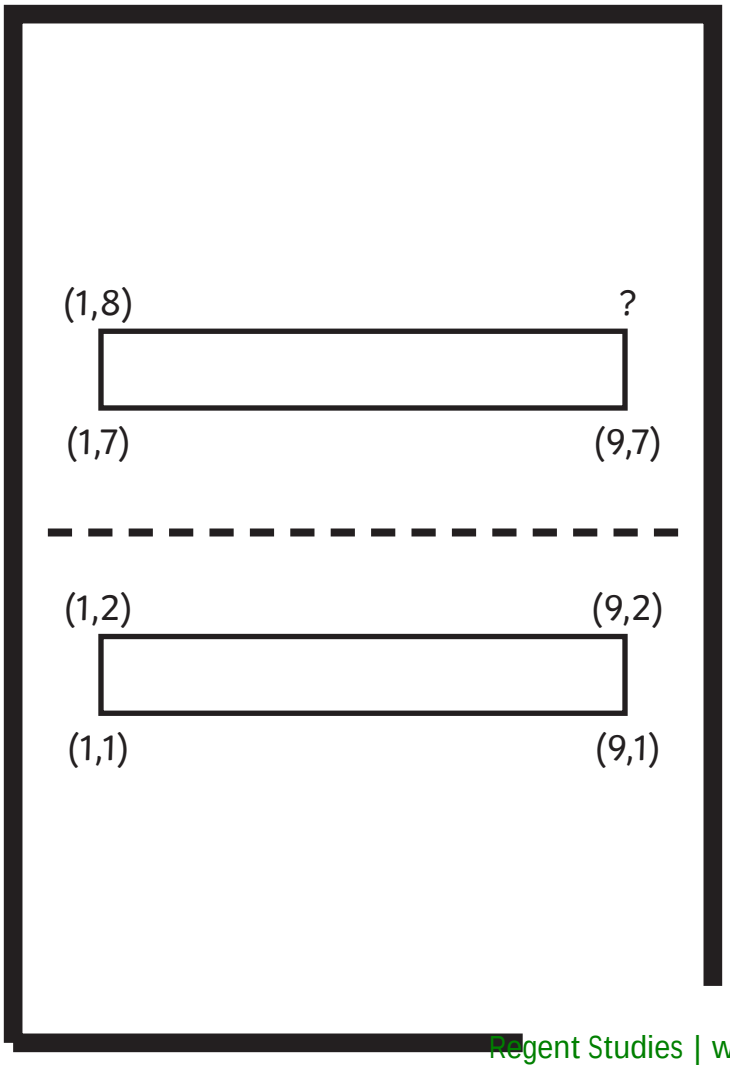
(5,9)

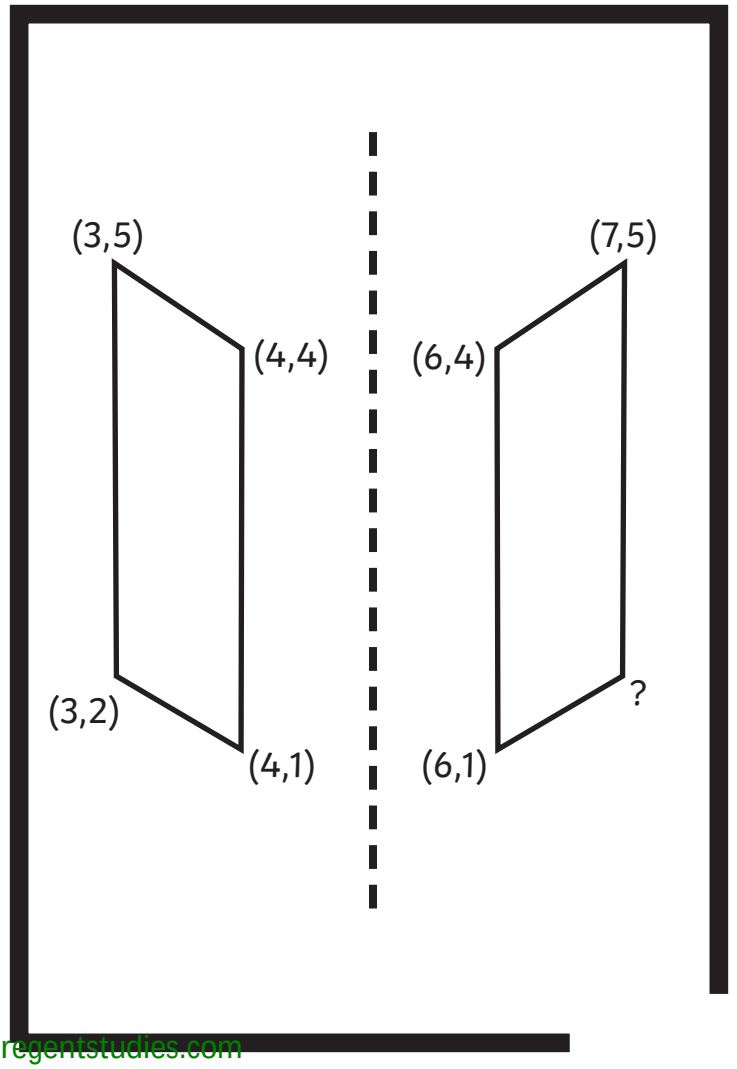
(9,5)

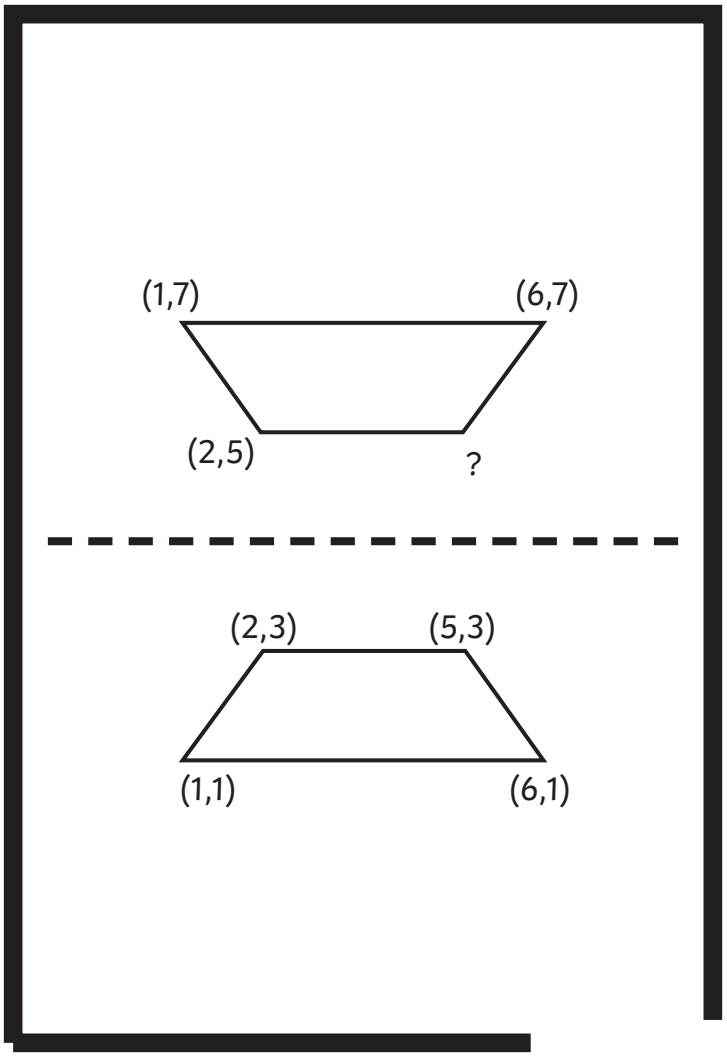
(7,2)

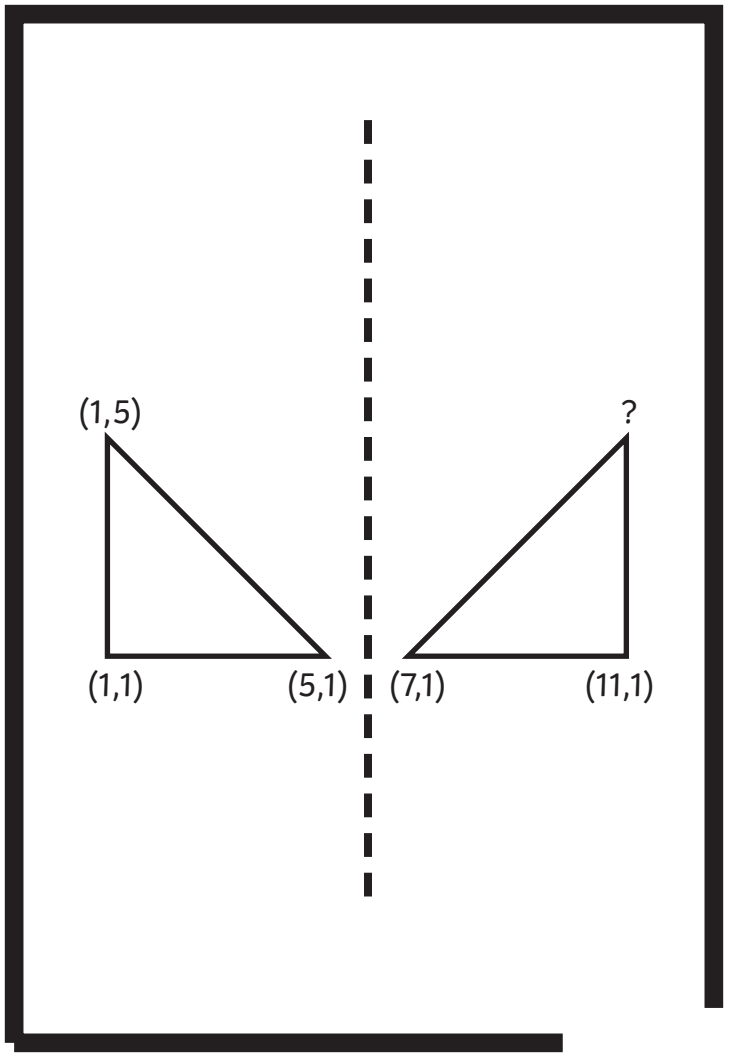

(1,4)
(4,4)
(6,4)
(9,4)
(1,1)
(4,1)
(6,1)
?

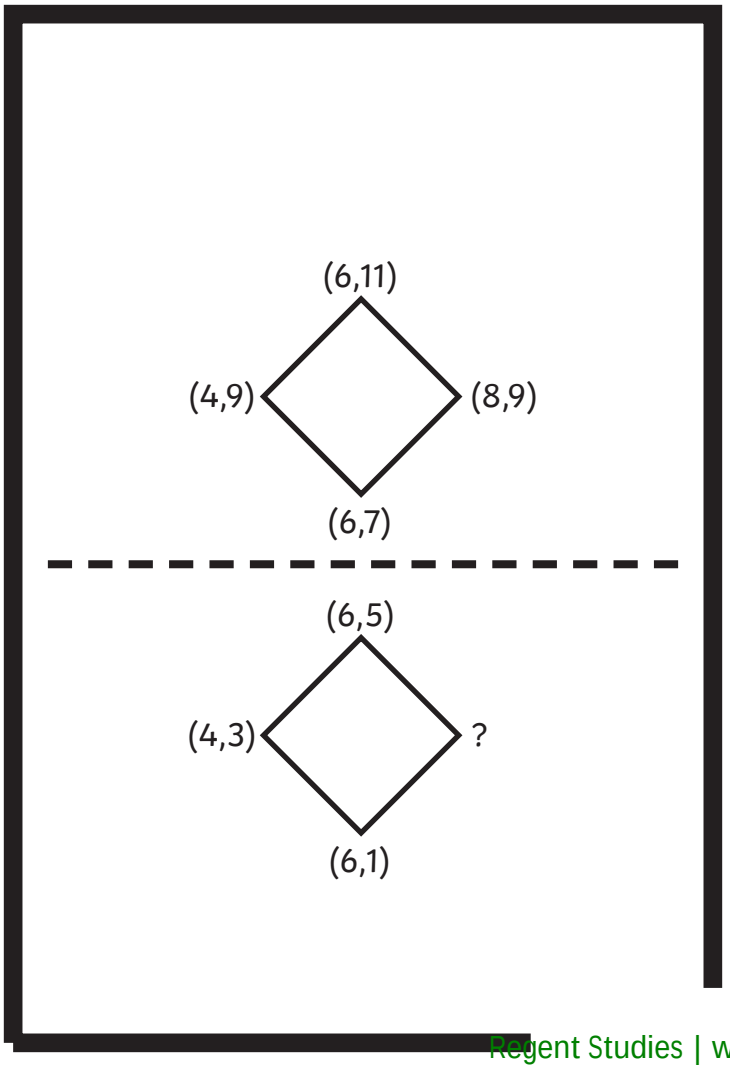

?
(3,6)
(7,6)
(3,4)
(7,4)
(5,1)

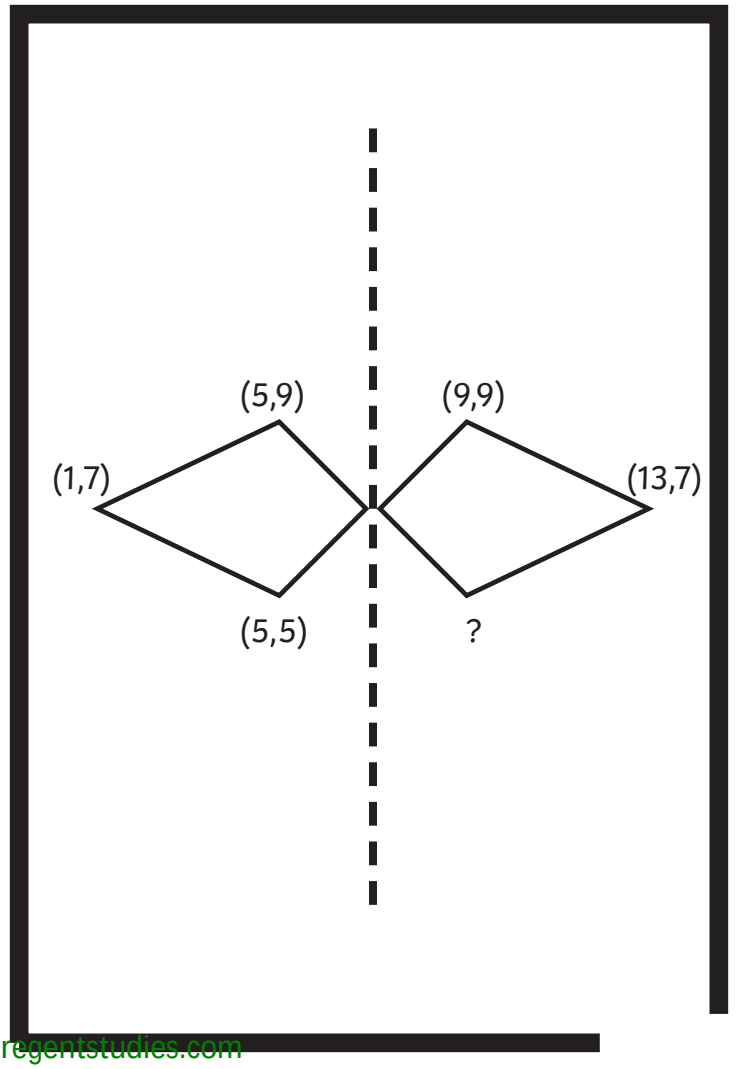

(1,8)
?
(1,7)
(9,7)
(1,2)
(9,2)
(1,1)
(9,1)


(3,5)
(7,5)
(4,4)
(6,4)
(3,2)
?
(4,1)
(6,1)


(1,7)
(6,7)
(2,5)
?
(2,3)
(5,3)
(1,1)
(6,1)


(1,5)
?
(1,1)
(5,1)
(7,1)
(11,1)


(6,11)
(4,9)
(8,9)
(6,7)
(6,5)
(4,3)
?
(6,1)


(5,9)
(9,9)
(1,7)
(13,7)
(5,5)
?

(9,8)

(11,5)

(5,5)

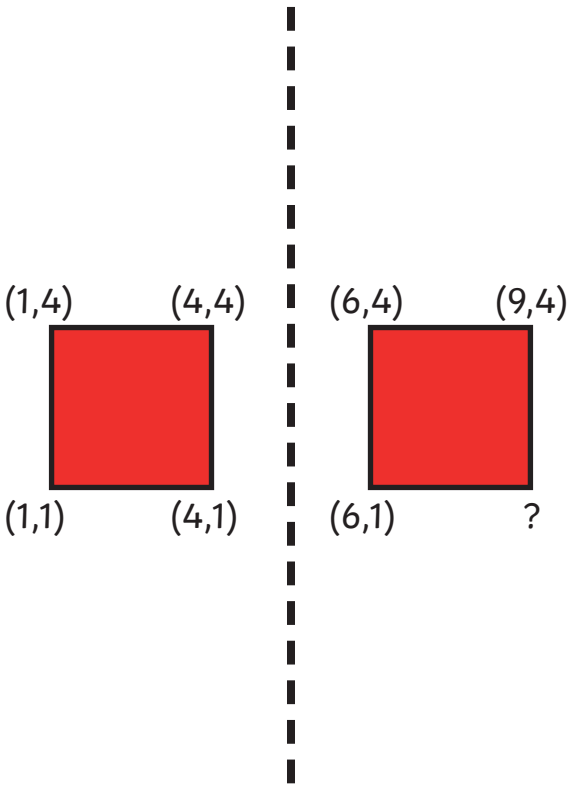
(8,3)

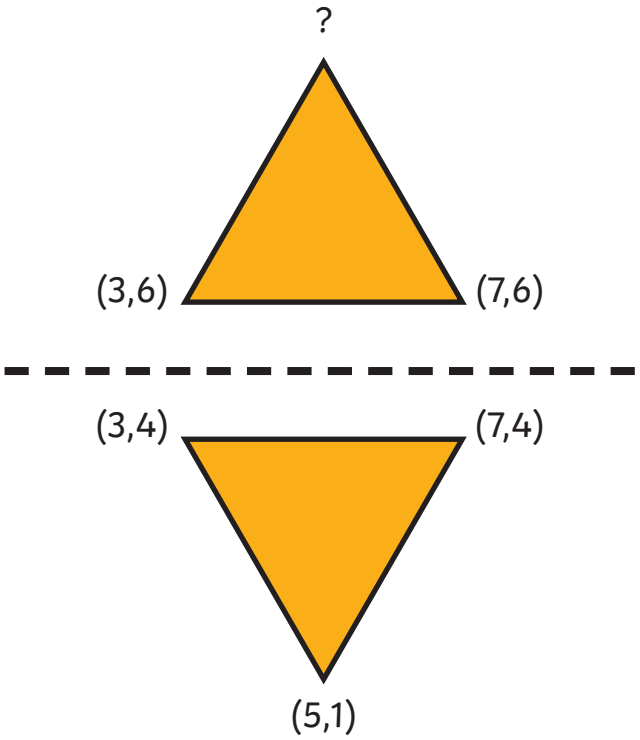
(9,1)

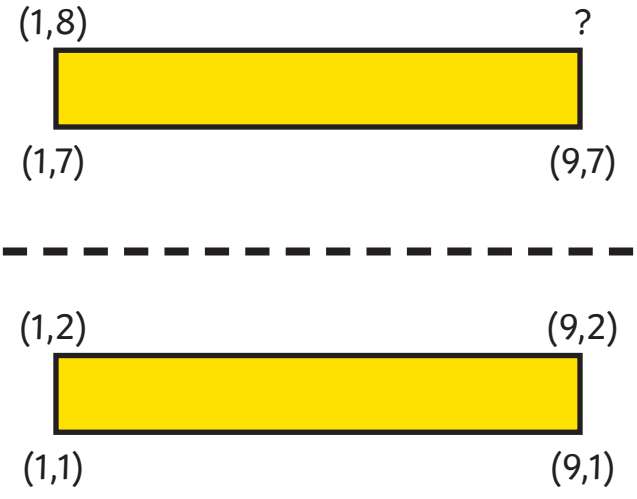
(5,9)

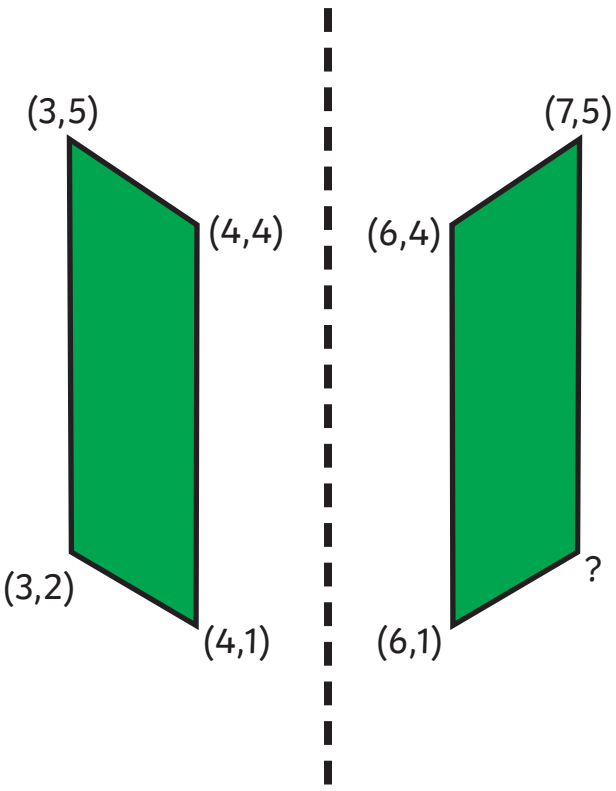
(9,5)

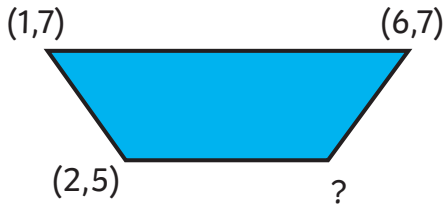
(7,2)

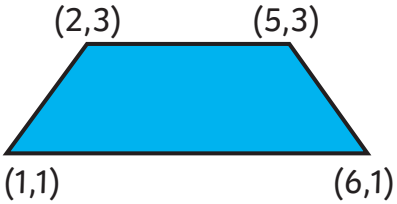

(1,4)
(4,4)
(6,4)
(9,4)
(1,1)
(4,1)
(6,1)
?

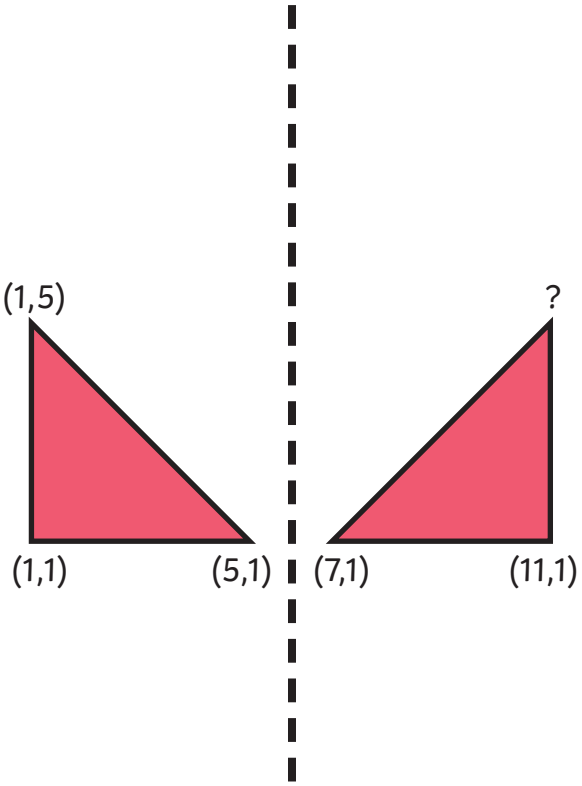

?
(3,6)
(7,6)
(3,4)
(7,4)
(5,1)

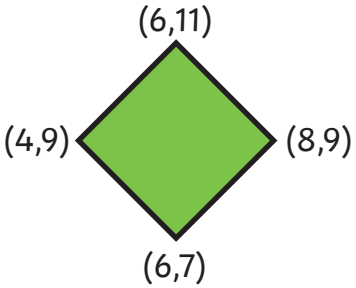

(1,8)
?
(1,7)
(9,7)
(1,2)
(9,2)
(1,1)
(9,1)

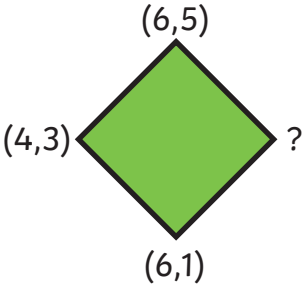

(3,5)
(7,5)
(4,4)
(6,4)
(3,2)
?
(4,1)
(6,1)

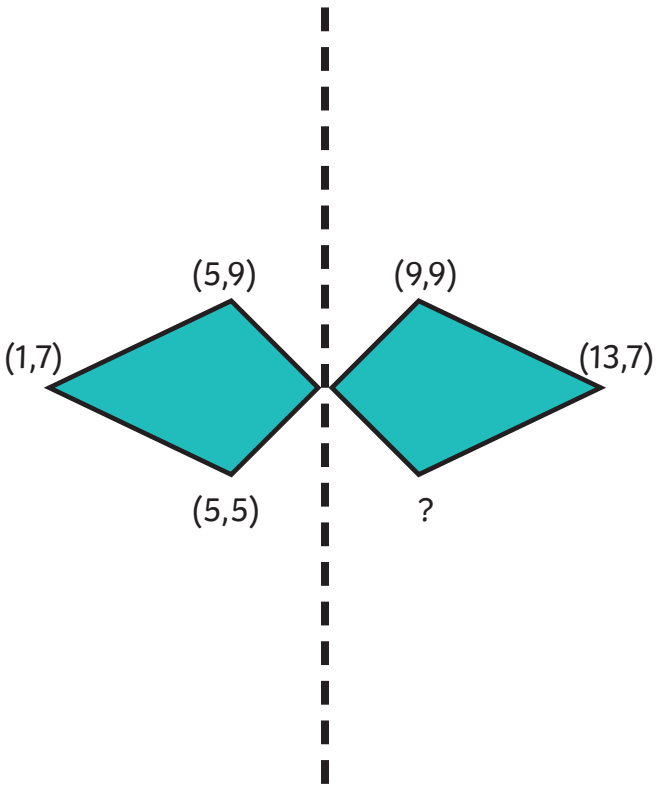

(1,7)
(6,7)
(2,5)
?


(2,3)
(5,3)
(1,1)
(6,1)


(1,5)
?
(1,1)
(5,1)
(7,1)
(11,1)


(6,11)
(4,9)
(8,9)
(6,7)


(6,5)
(4,3)
?
(6,1)


(5,9)
(9,9)
(1,7)
(13,7)
(5,5)
?

Avery Template: Name Badge Label, 8 per sheet | **Compatible Products**: 15395, 25395, 42395, 45395, 48395, 5395, 8395, 88395, 85395.

Measurement and Geometry | Identifying Reflected Shapes

I can identify the position of a shape following a reflection.		
I can read, write and plot coordinates in the first quadrant.		
I know that when reflected, a shape is flipped over the mirror line, does not change shape and each point is the same distance from the mirror line.		

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