Measurement and Geometry: Location and Transformation: Missing Coordinate Polygons

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

Y5 – Measurement and Geometry, Location and Transformation
Use a grid reference system to describe locations. Describe routes using landmarks and directional language (ACMMG113)
Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries (ACMMG114)

Child-Friendly Aim:	**Success Criteria:**	**Resources:**
To identify and plot missing coordinates of polygons on a 2D grid.	I can label the x-axis and y-axis. I know that a coordinate is represented by two numbers in brackets, separated by a comma. I can read a coordinate correctly by going along and then up.	**Lesson Pack**
	Key/New Words: Coordinate, axis, quadrant, polygon.	**Preparation:** **Plotting Shapes Matching Cards** – per pair Differentiated **Missing Coordinate Polygons Activity Sheets** – per child

Prior Learning: It will be helpful if children know how to read and write coordinates accurately.

Learning Sequence

	**Gourmet Cooking:** Using the interactive slides on the **Lesson Presentation**, the children are challenged to collect the ingredients for the chef's recipe by clicking on the correct position on the 2D grid for the coordinate given.	
	**Reading, Writing and Plotting Coordinates:** Use the information and images on the **Lesson Presentation** to rehearse that a coordinate is a way to locate a position on a map or graph by indicating how many units along and how many units up the position is. Recap the features of coordinates and how they are recorded inside brackets, separated by a comma. Emphasise at all times the importance of reading and writing coordinates in the correct order (along then up).	
	**Plotting Shapes:** Using the **Plotting Shapes Matching Cards**, the children work in partners to read the given set of coordinates and match them to the correct shape plotted on the grid.	
	**Missing Coordinate Corners:** Use the information and images on the **Lesson Presentation**, to explain and demonstrate that as well as being able to plot the given set of coordinates we also need to write and plot the position of missing corners of a shape.	
	**Missing Coordinate Polygons:** Children complete the differentiated **Missing Coordinate Polygons Activity Sheets**, to demonstrate they can identify missing coordinates of polygons on a 2D grid. Many of the questions have open ended answers. Can the children identify and plot missing coordinates on a grid?  Identify the missing coordinate of the simple 2D shapes and complete the drawing (6 by 6 grid).  Identify the missing coordinate and complete the drawing of more complex 2D shapes (10 by 10 grid).  Identify the two missing coordinates and complete the drawing of the complex 2D shapes (10 by 10 grid).	
	**Missing Coordinates Quiz:** Using the multiple choice questions shown on the choose which answer describes the missing coordinate of the 2D shape correc discuss and	

Taskit

Loop Cardit: Ask the children to create their own set of loop cards based on missing coordinates and use them as a whole class or group activity.

Gameit: On a large grid, throw two beanbags – challenge the children to plot a third coordinate to create a triangle, or two more coordinates to create a quadrilateral.

Extendit: Extend the learning of coordinates into further geography skills by exploring four-figure grid references on maps.

Mathematics

Measurement and Geometry

Missing Coordinate Polygons

Aim

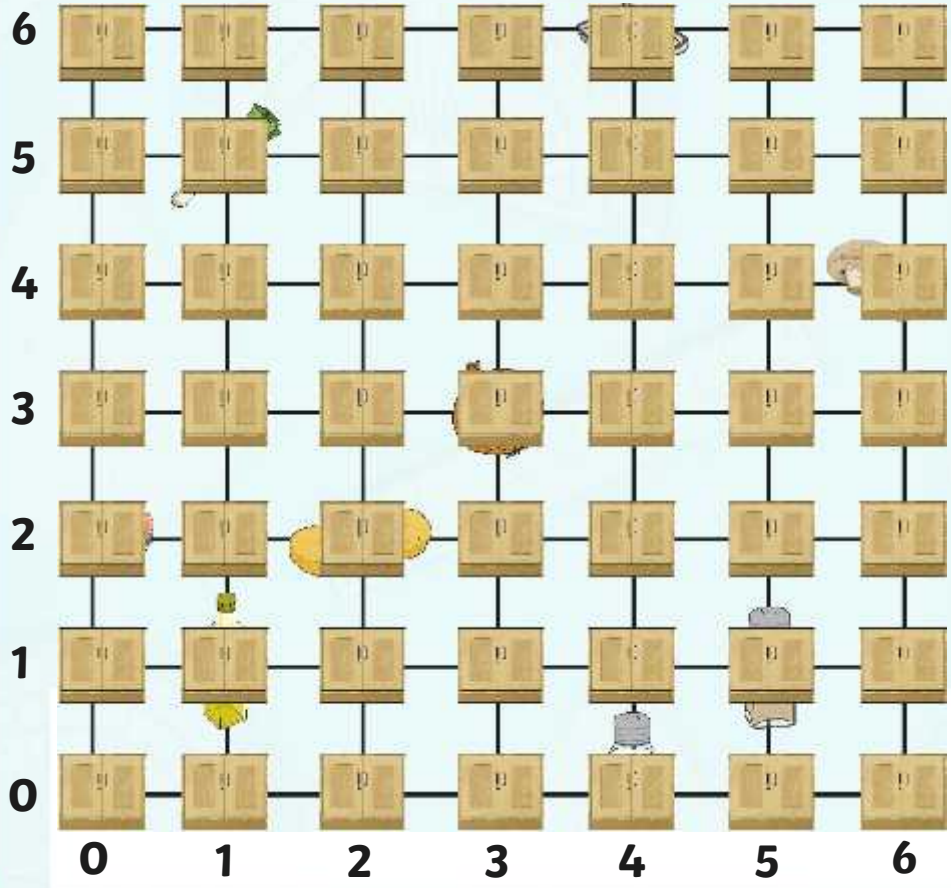
- To identify missing coordinates of polygons on a 2D grid.

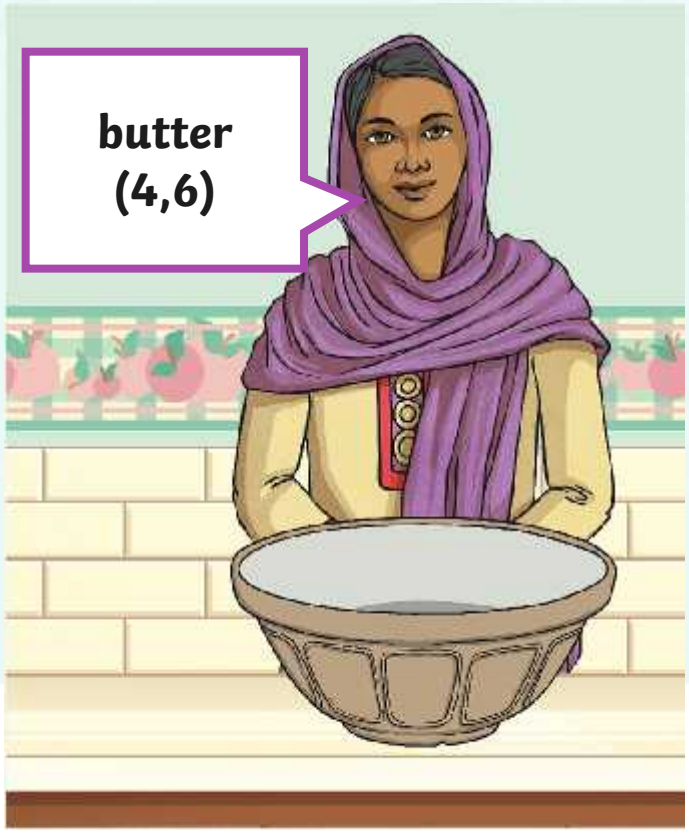
Success Criteria

- I can label the x-axis and y-axis.
- I know that a coordinate is represented by two numbers in brackets, separated by a comma.
- I can read a coordinate correctly by going along and then up.

Gourmet Cooking

Collect the ingredients to help the chef prepare her gourmet food by reading and plotting the coordinates correctly.





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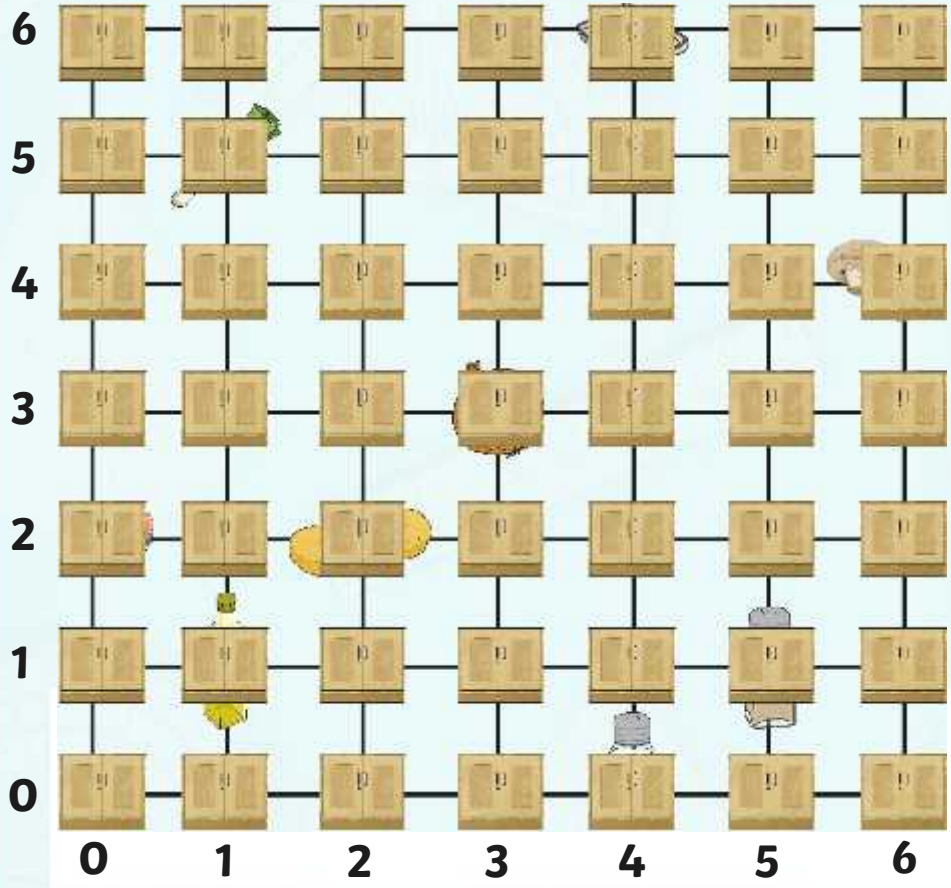

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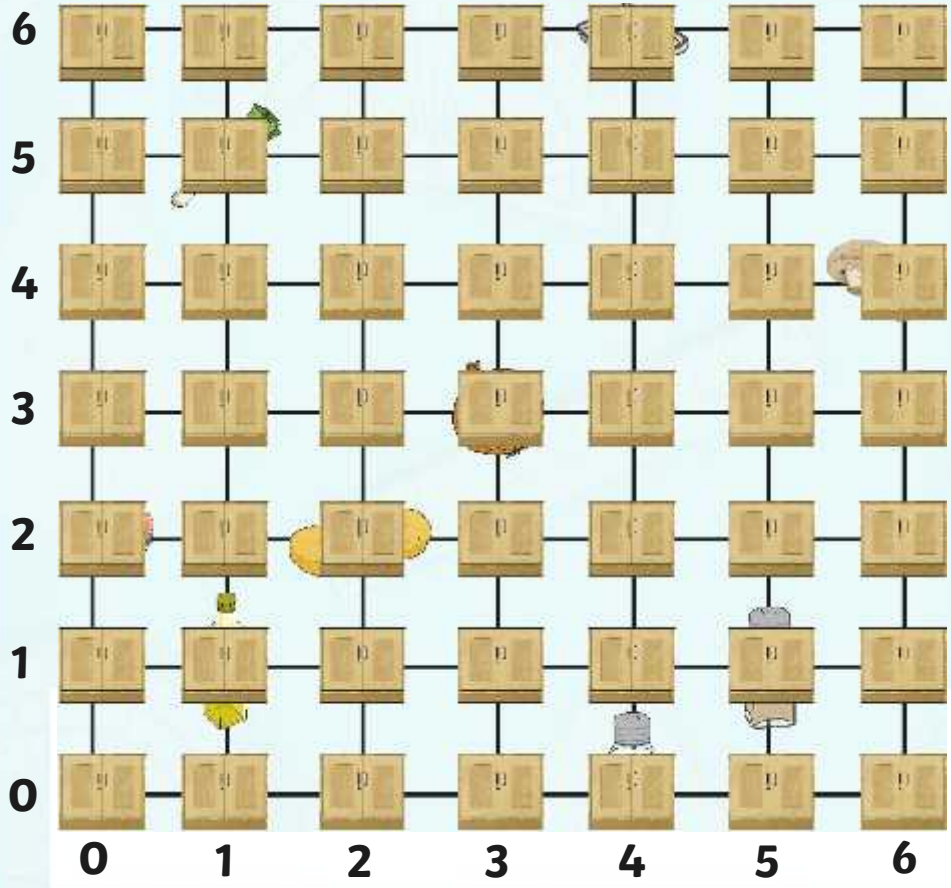

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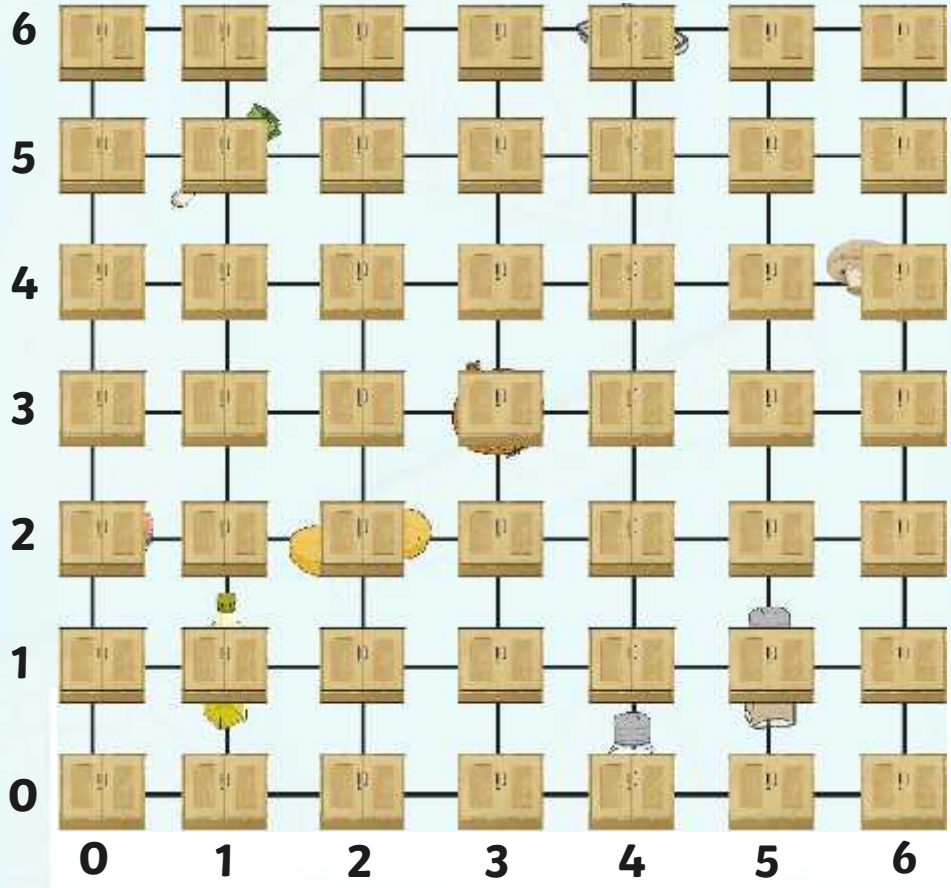

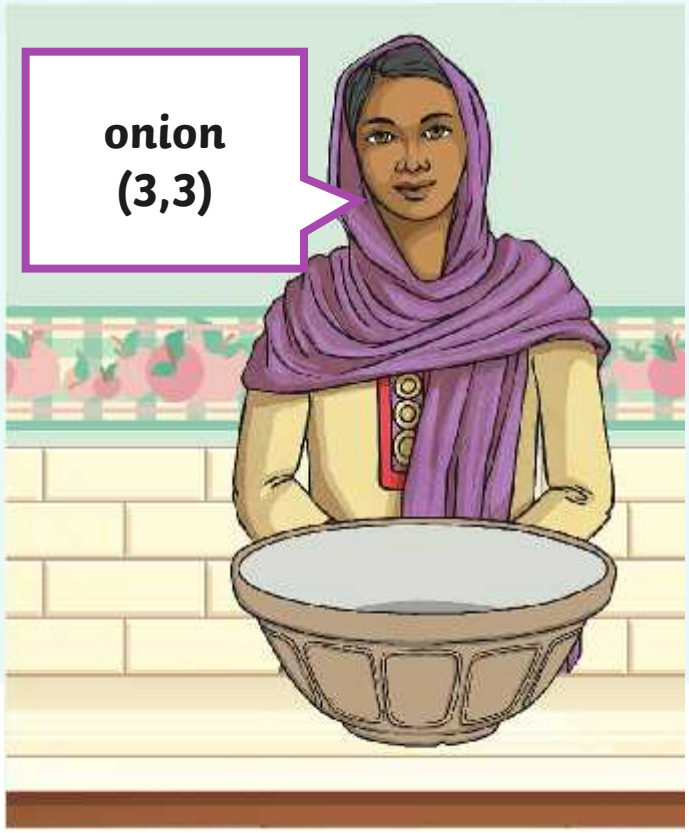

Gourmet Cooking

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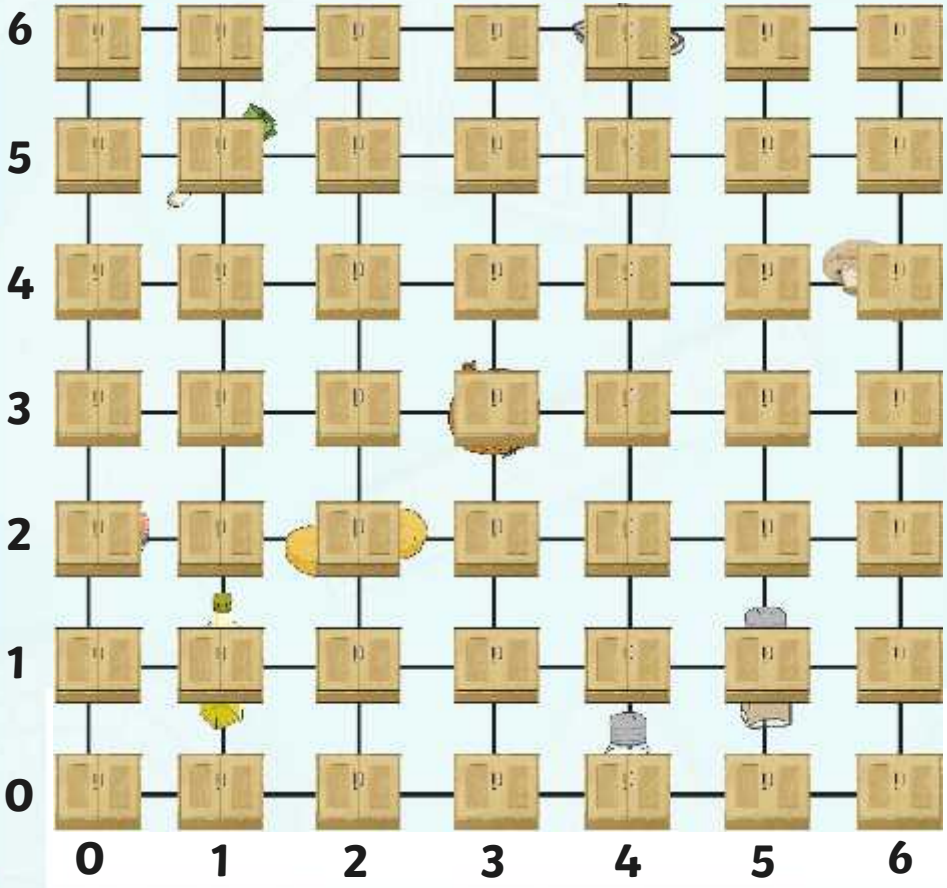

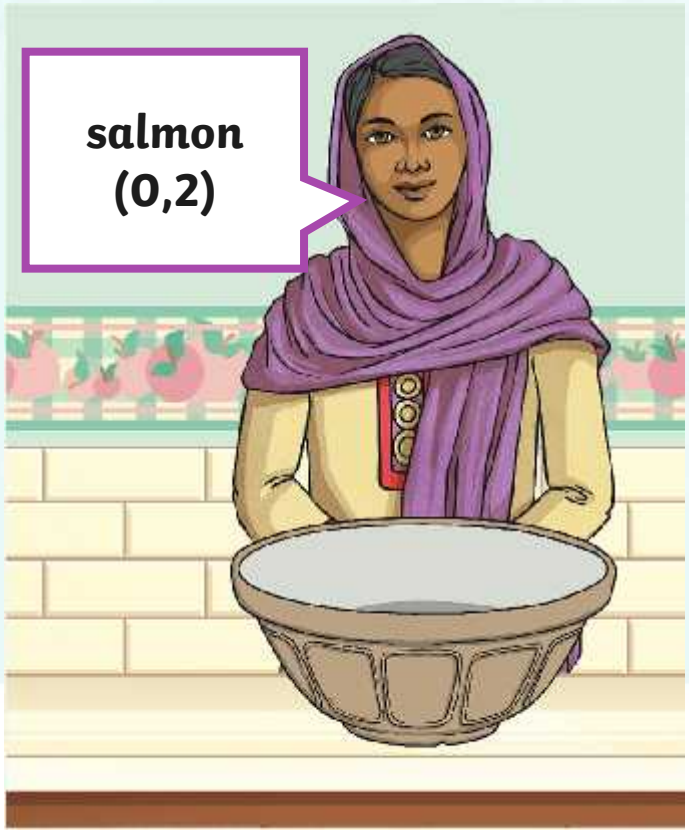

Gourmet Cooking

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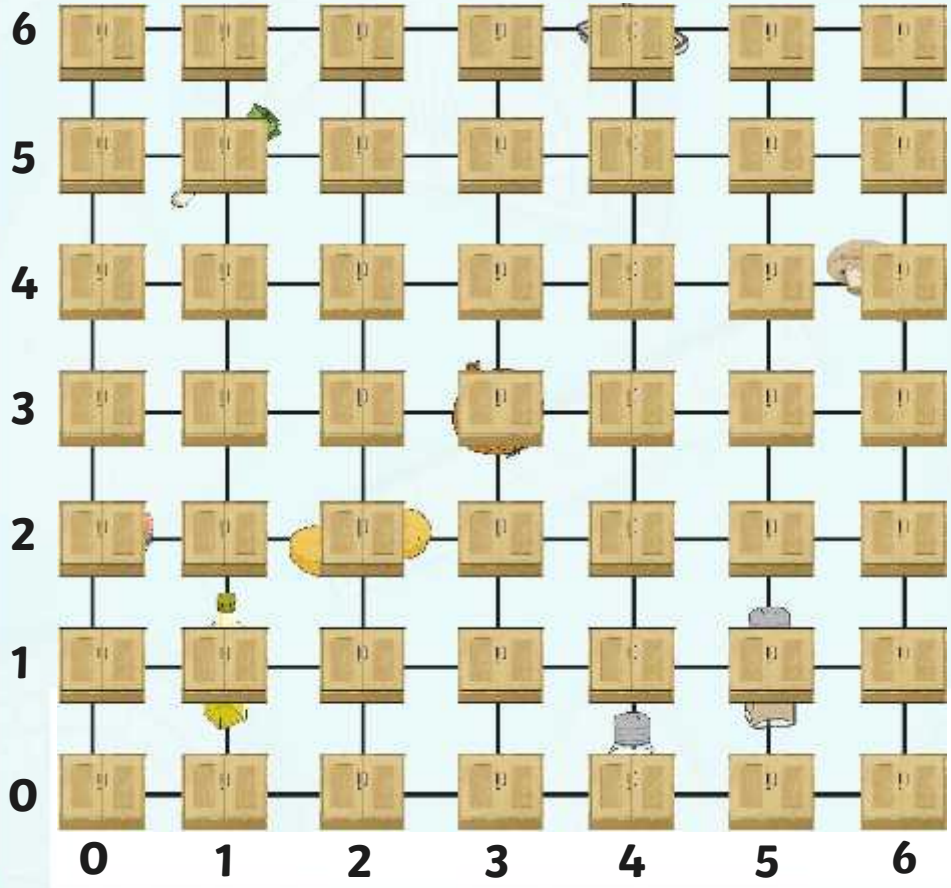

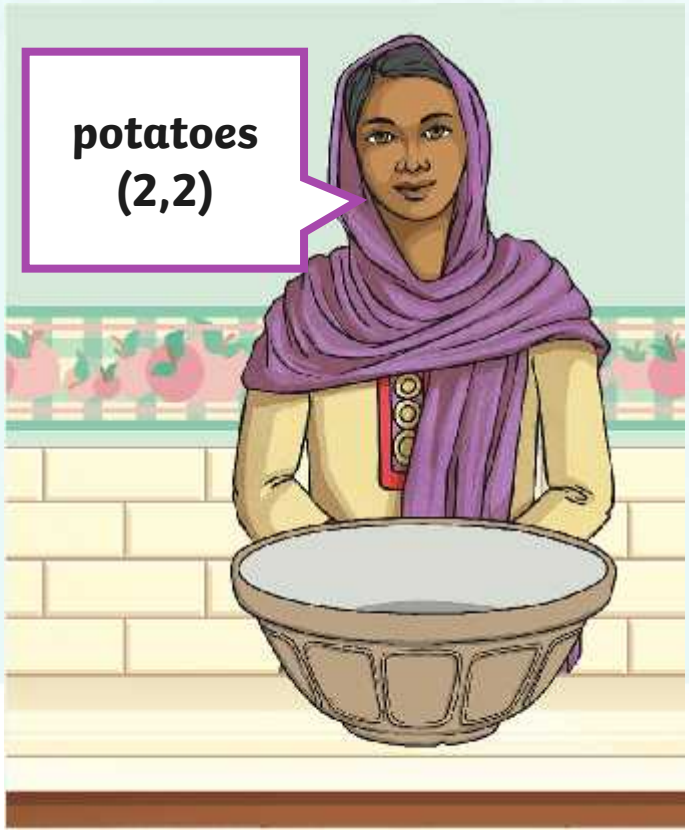

Gourmet Cooking

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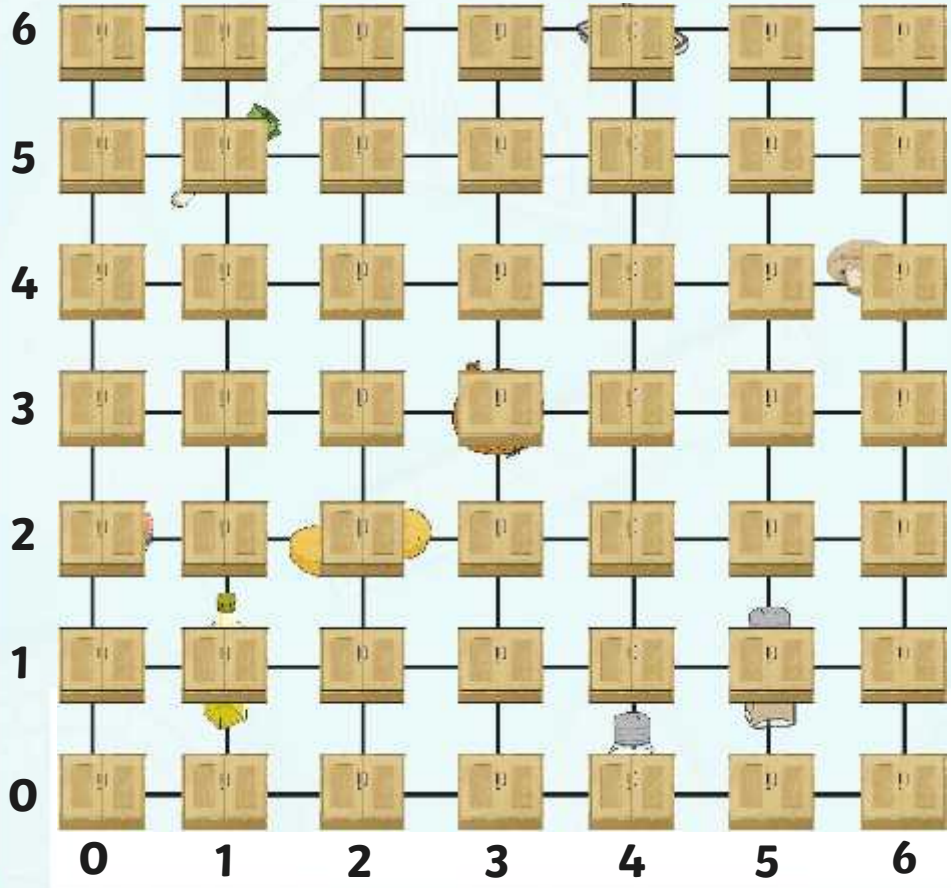

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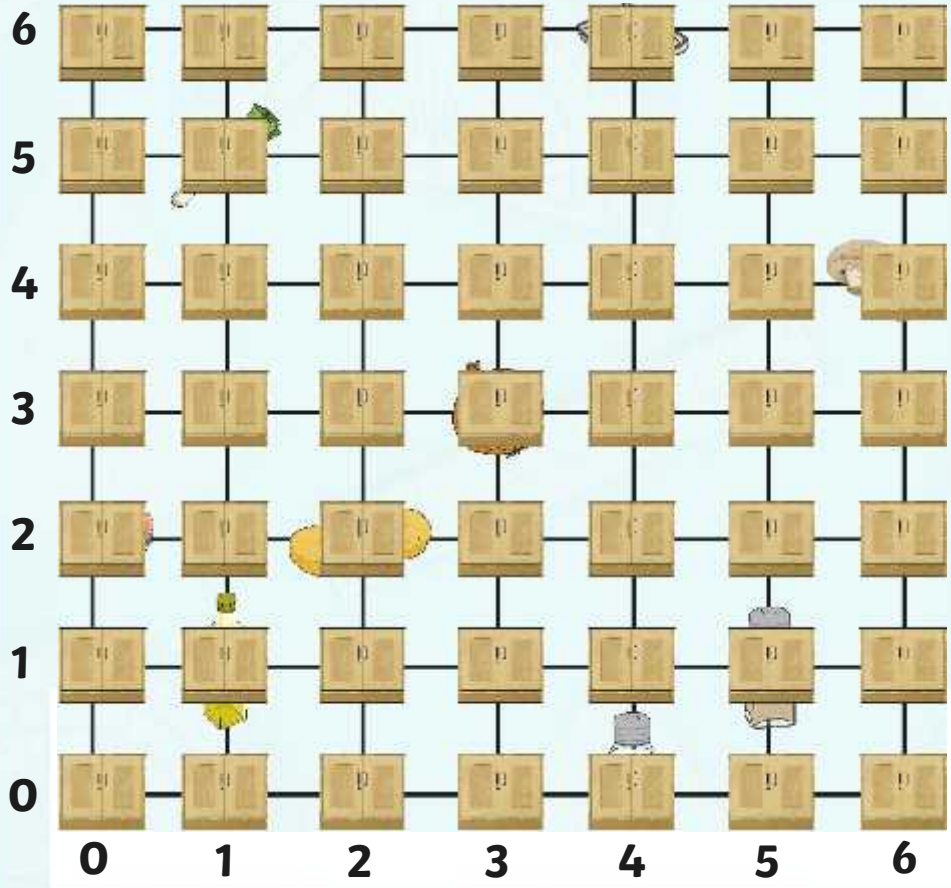

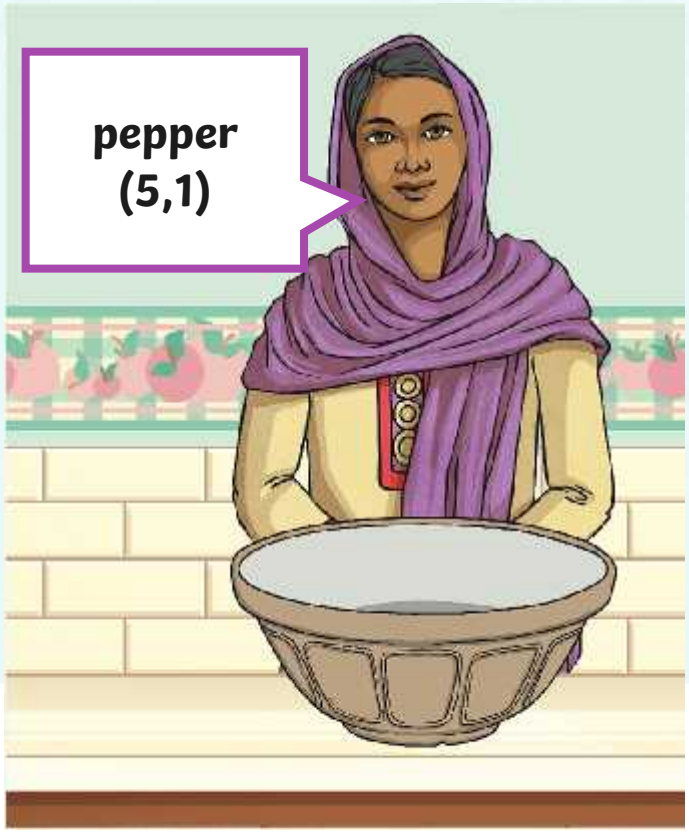

Gourmet Cooking

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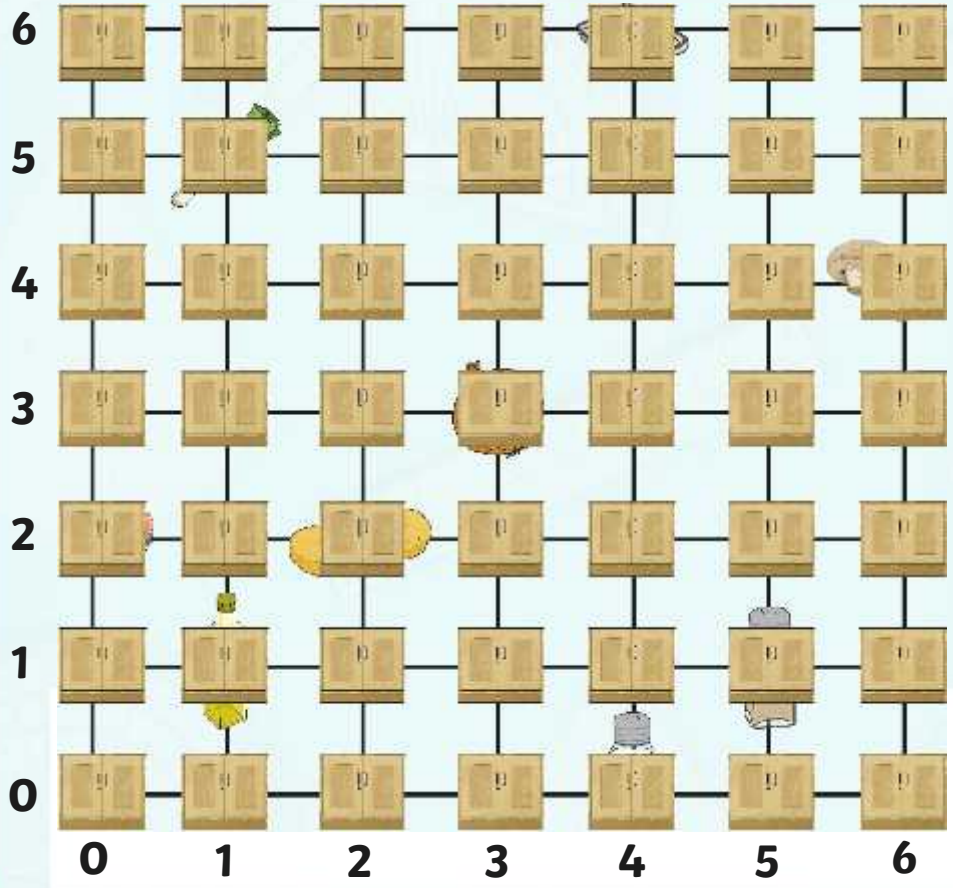
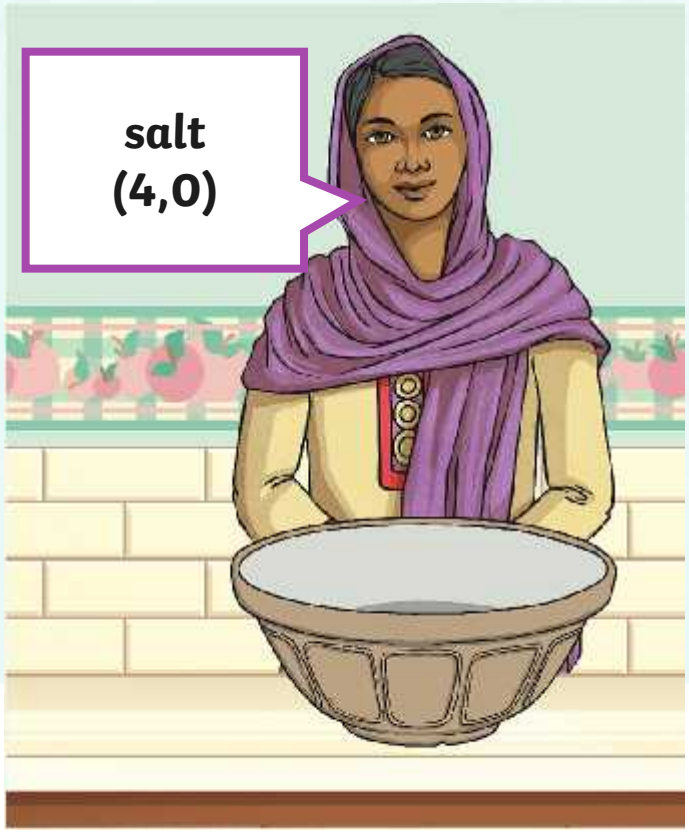
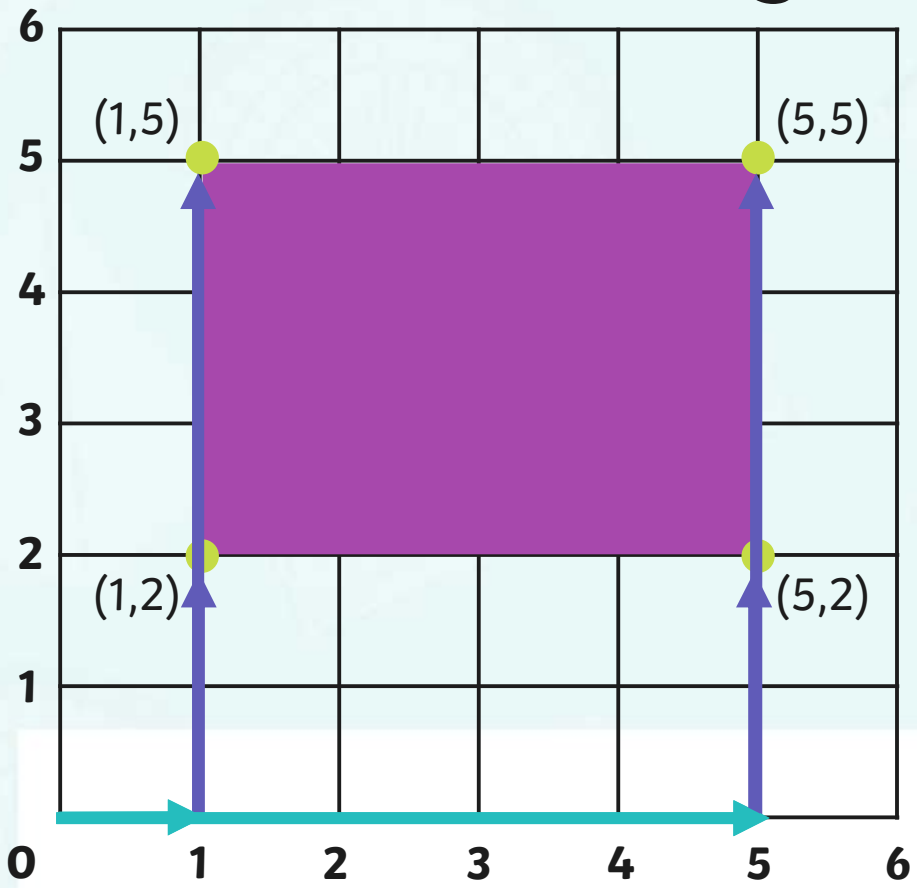





Thank you for helping me to collect the ingredients. I have made a delicious meal for my family!

Reading, Writing and Plotting Coordinates



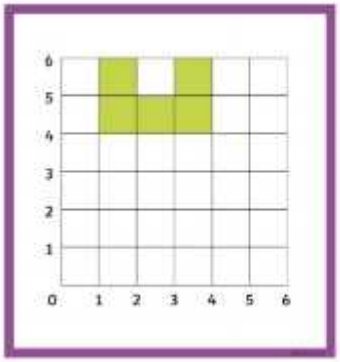
Coordinates are a useful way to locate a position on a grid.

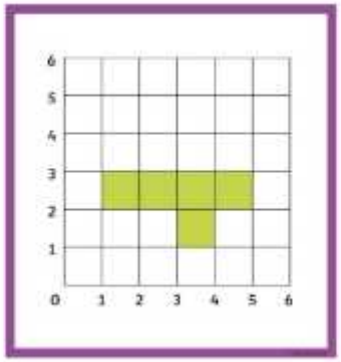
We can give the position of the four corners of this rectangle using this coordinate grid.

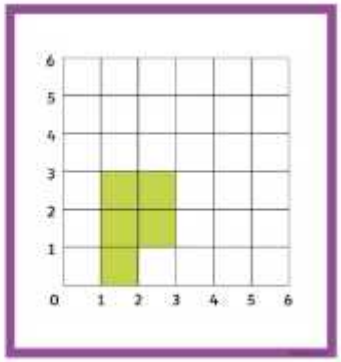
We read and write coordinates by reading the number on the **x-axis** then the number on the **y-axis**.

Plotting Shapes

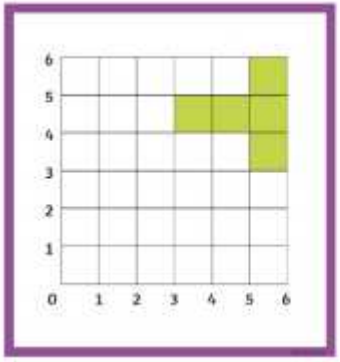
Work with your partners to plot the coordinate corners of the four different sized squares.

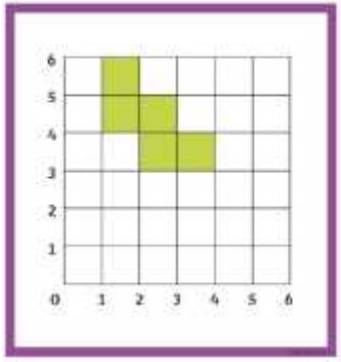


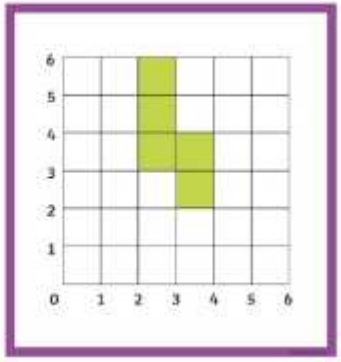




(1,4) (3,5)
(4,4) (2,5)
(4,6) (2,6)
(3,6) (1,6)

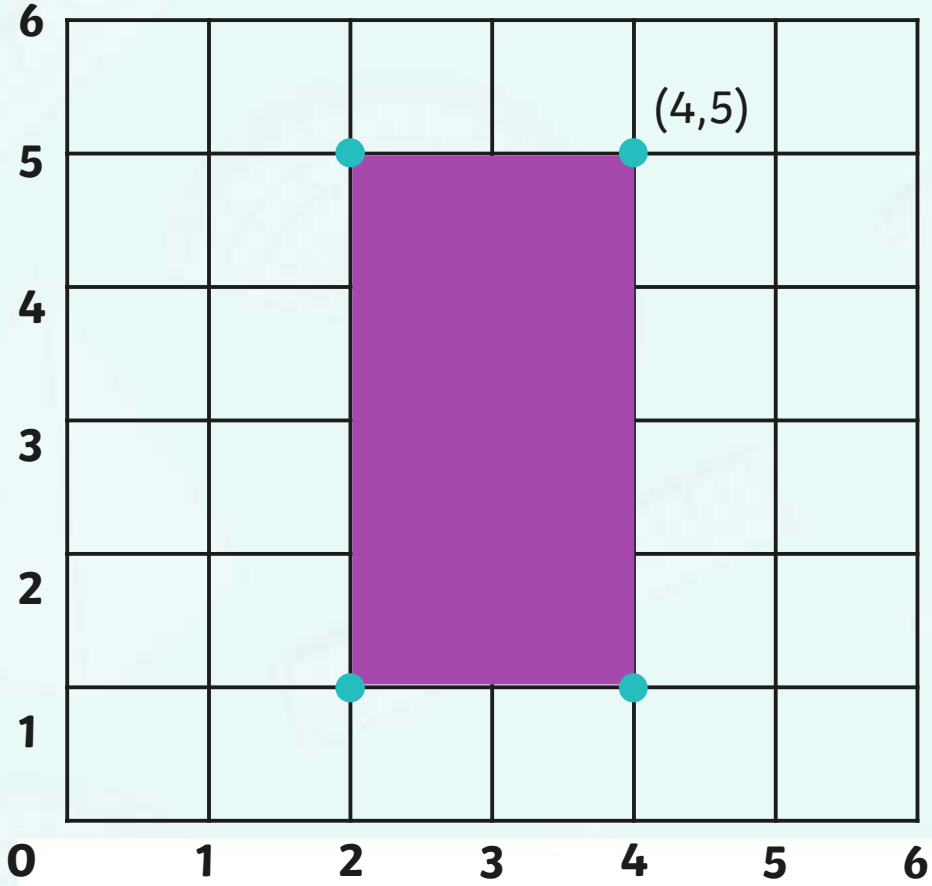






(3,4) (6,6)
(5,4) (5,6)
(5,3) (5,5)
(6,3) (3,5)

Missing Coordinate Corners

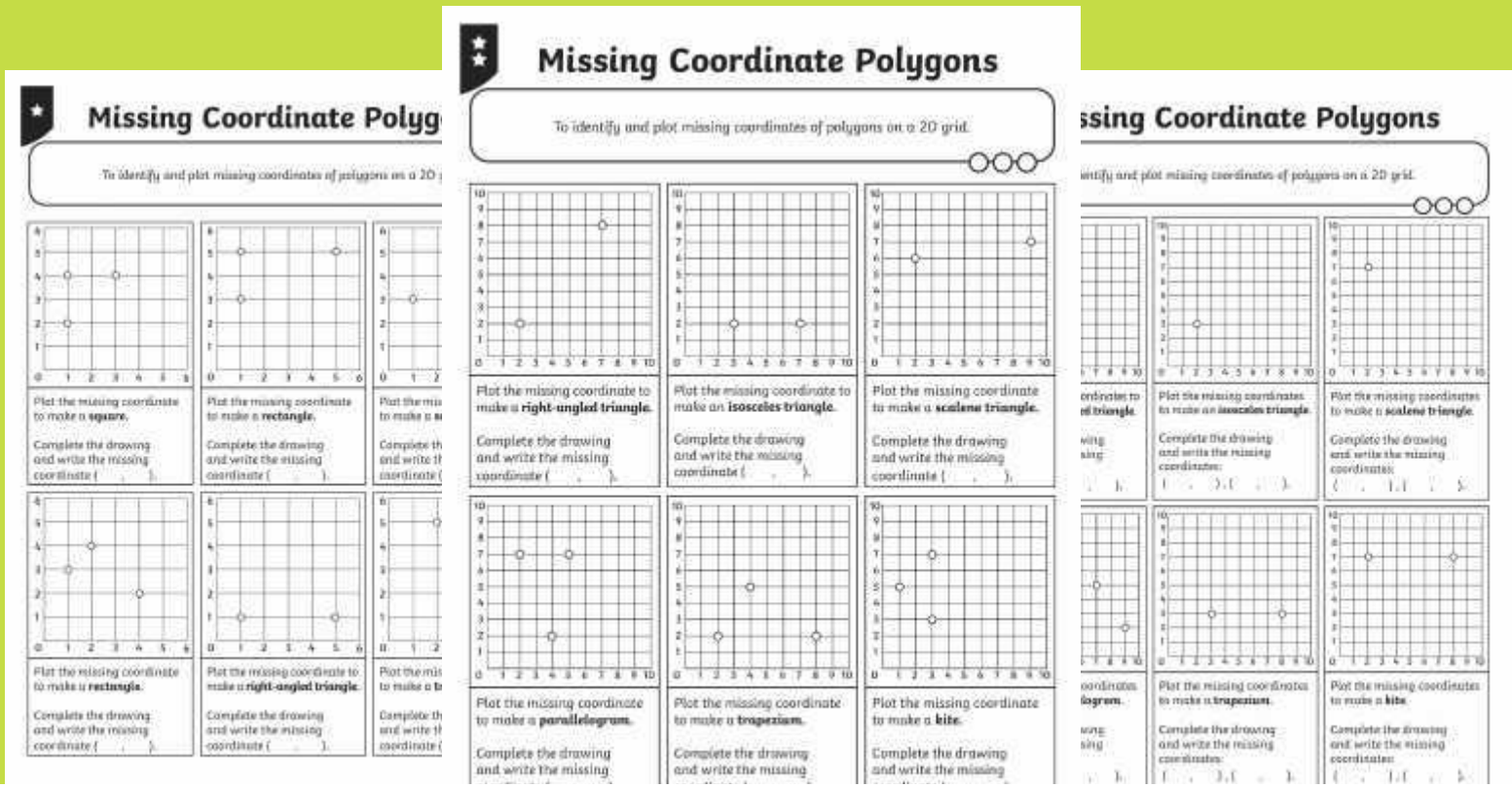


Three of the four corners of a **rectangle** have been plotted on the grid.

We have to plot the missing coordinate in order to finish drawing the rectangle.

Show Answer

Missing Coordinate Polygons



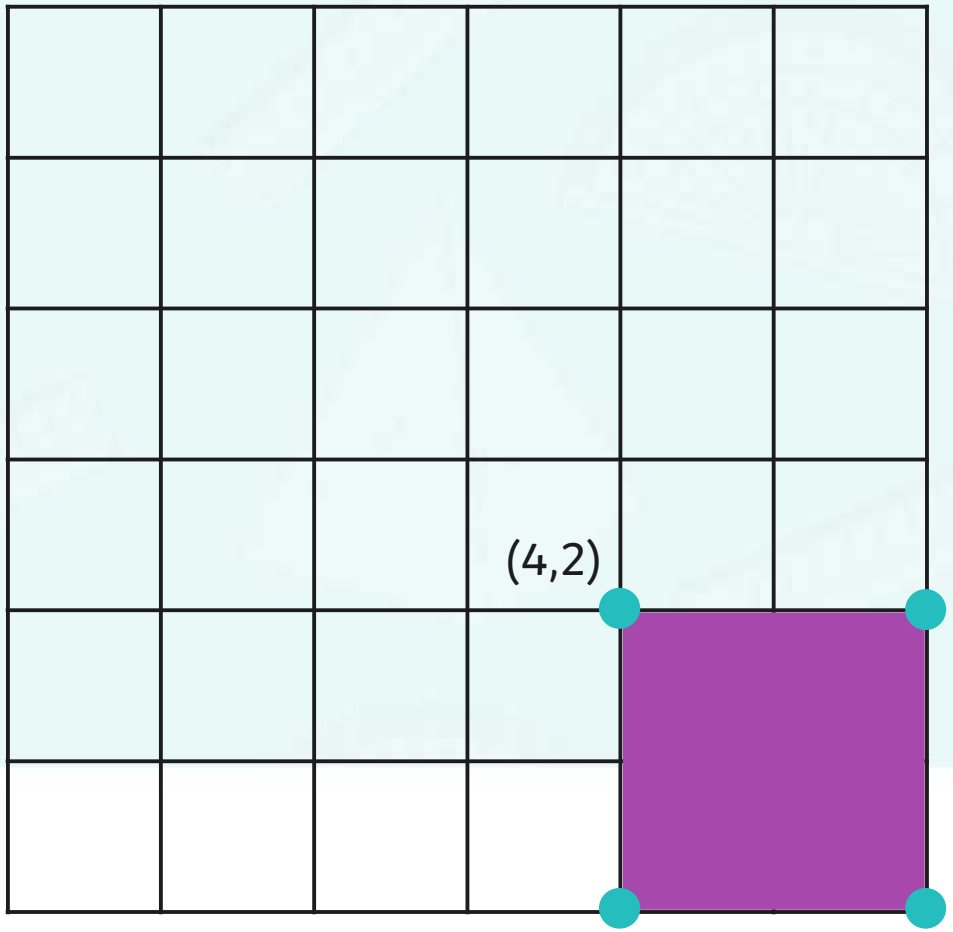
Missing Coordinates Quiz

Which coordinate will complete the square?

(4,2)

(2,4)

(4,3)



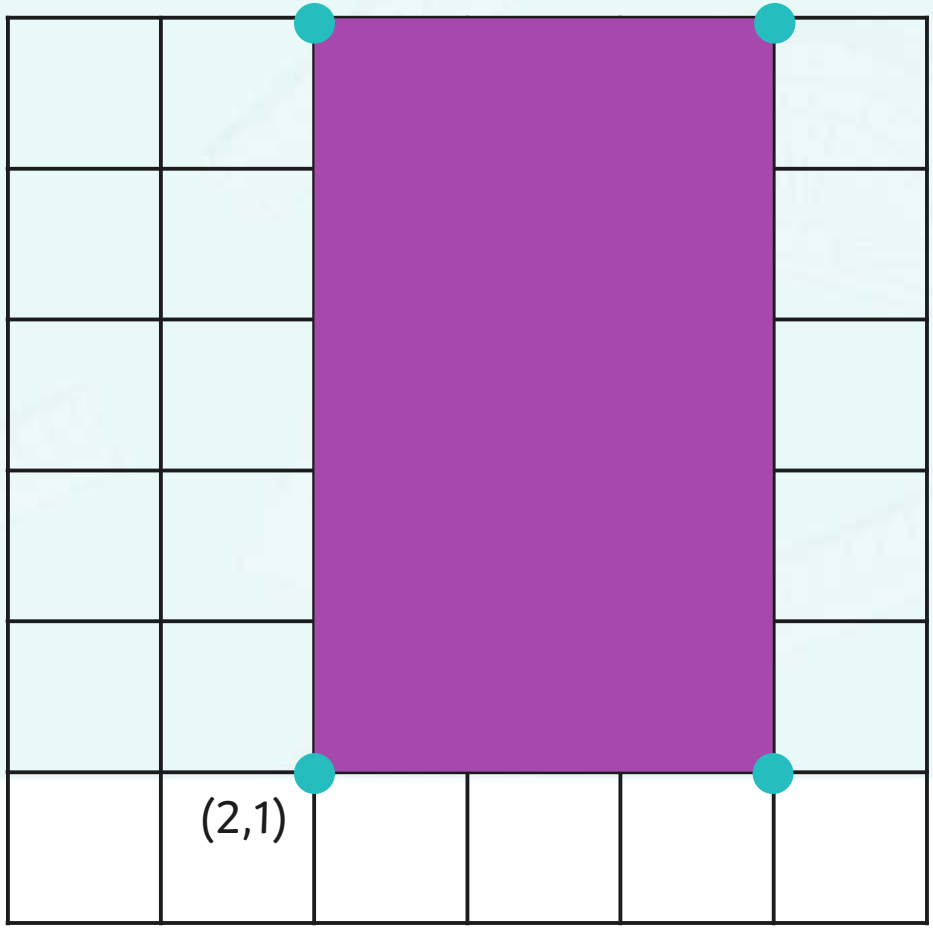
Missing Coordinates Quiz

Which coordinate will complete the rectangle?

(2,2)

(1,2)

(2,1)



Missing Coordinates Quiz

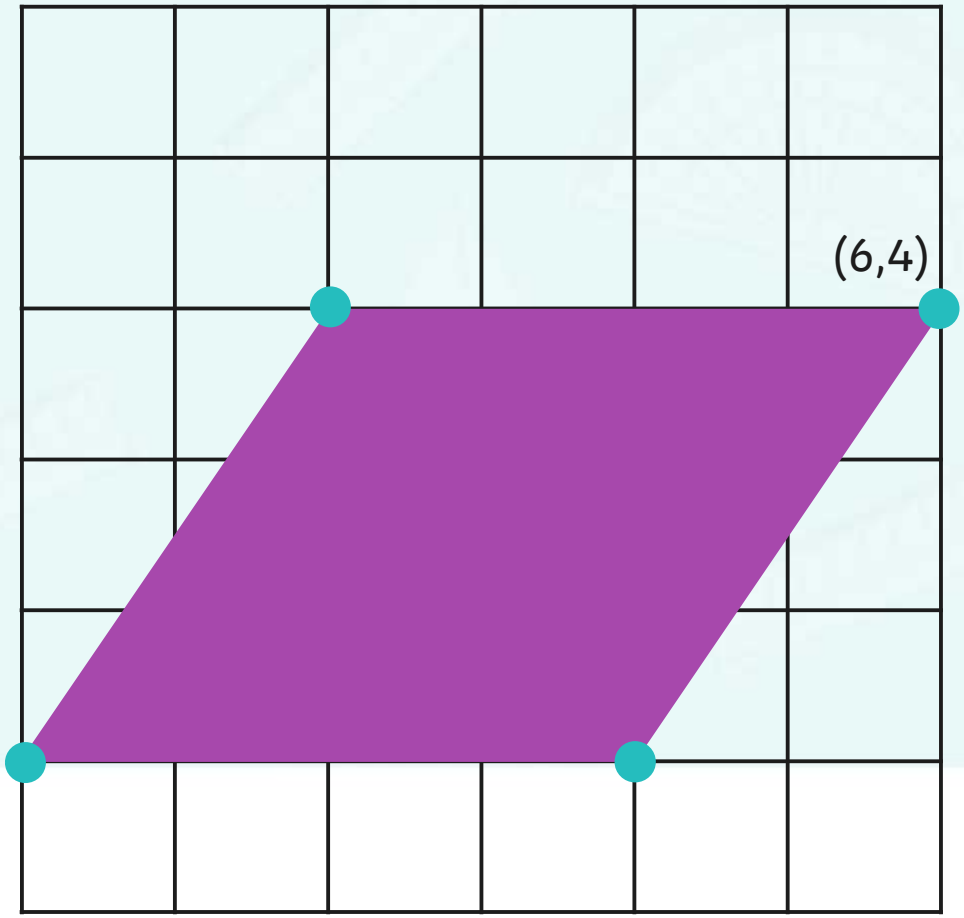
Whole Class

Which coordinate will complete the parallelogram?

(6,6)

(6,4)

(4,6)

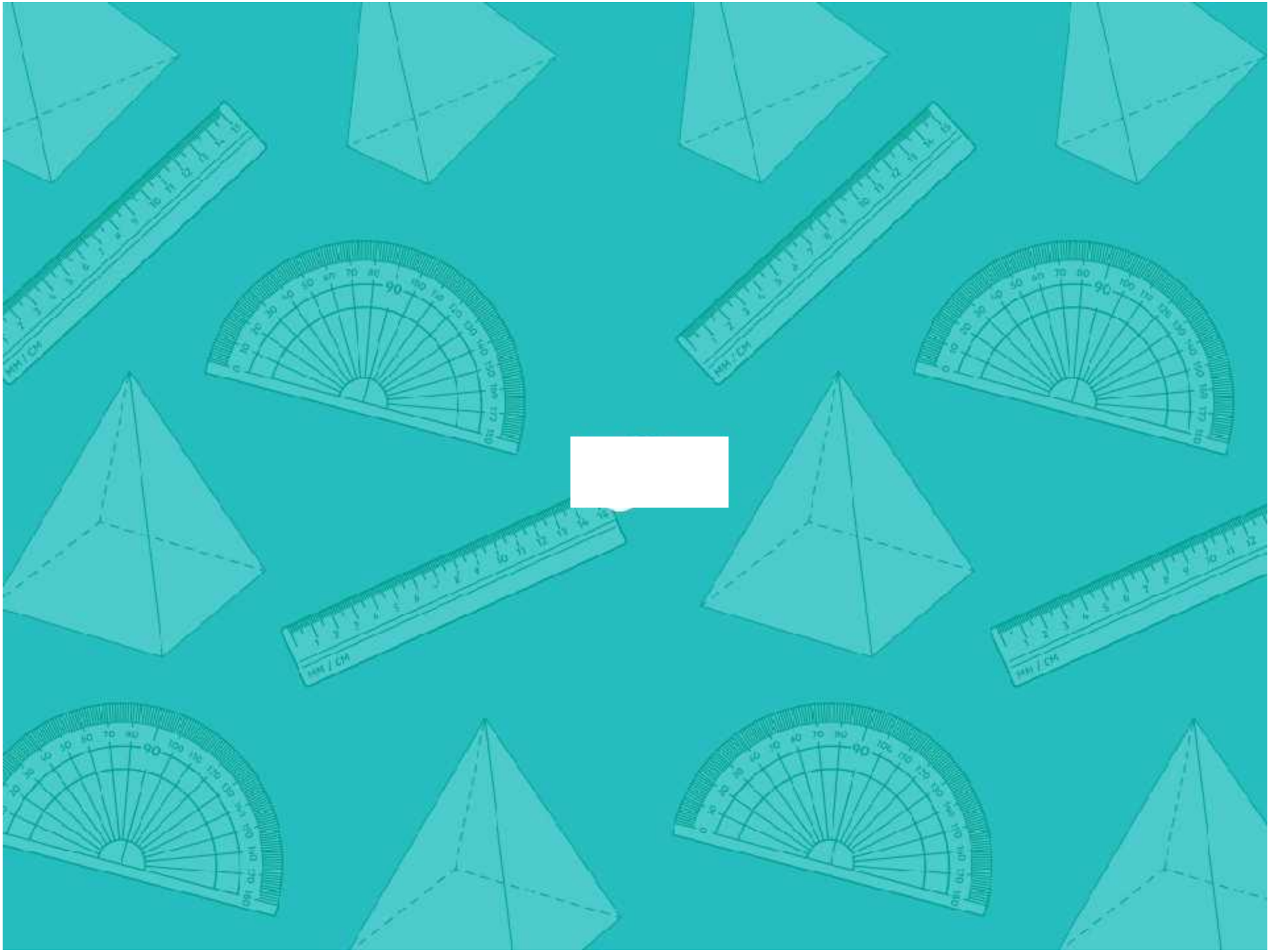


Aim

- To identify missing coordinates of polygons on a 2D grid.

Success Criteria

- I can label the x-axis and y-axis.
- I know that a coordinate is represented by two numbers in brackets, separated by a comma.
- I can read a coordinate correctly by going along and then up.



Aim: To identify and plot missing coordinates of polygons on a 2D grid.				**Date:**					
				Delivered By:			**Support:**		
Success Criteria	**Me**	**Friend**	**Teacher**	**T**	**PPA**	**S**	**I**	**AL**	**GP**
I can label the x-axis and y-axis.				**Notes/Evidence**					
I know that a coordinate is represented by two numbers in brackets, separated by a comma.									
I can read a coordinate correctly by going along and then up.									

Next Steps

- _____
- _____

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

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Missing Coordinate Polygons

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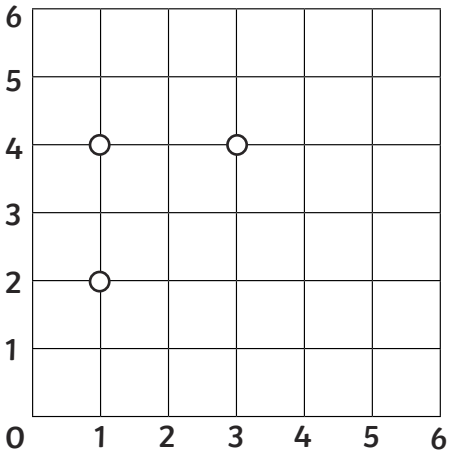
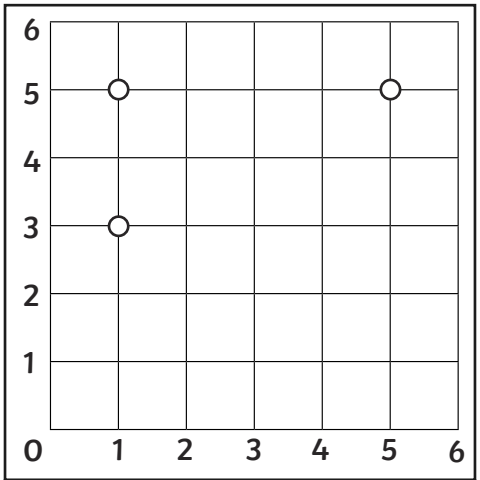


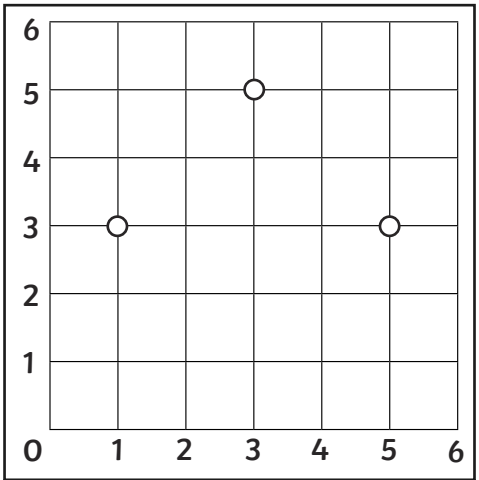
Plot the missing coordinate to make a **square.**

Complete the drawing and write the missing coordinate (,).



Plot the missing coordinate to make a **rectangle.**

Complete the drawing and write the missing coordinate (,).



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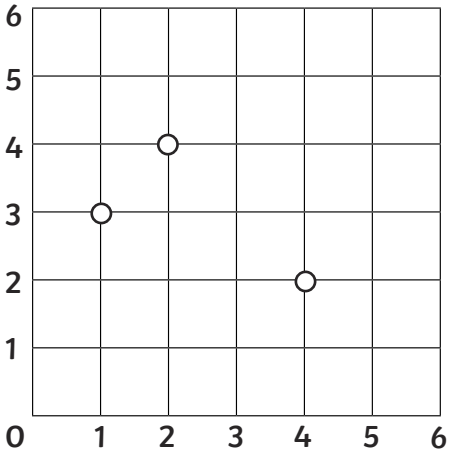
Complete the drawing and write the missing coordinate (,).



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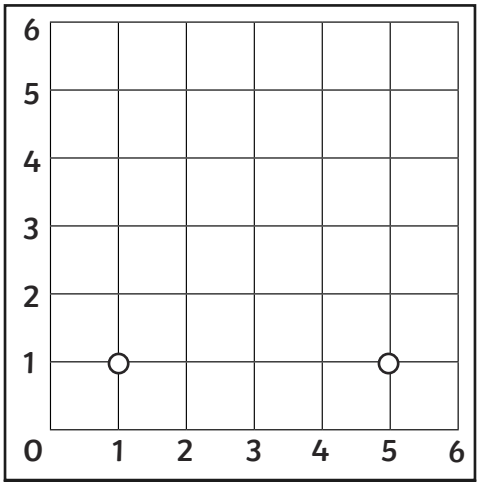
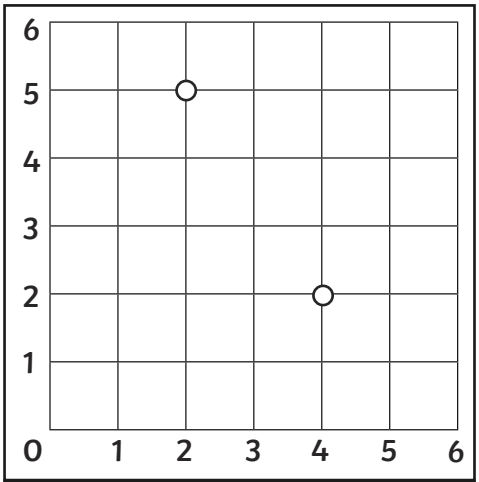
Complete the drawing and write the missing coordinate (,).



Plot the missing coordinate to make a **right-angled triangle.**

Complete the drawing and write the missing coordinate (,).

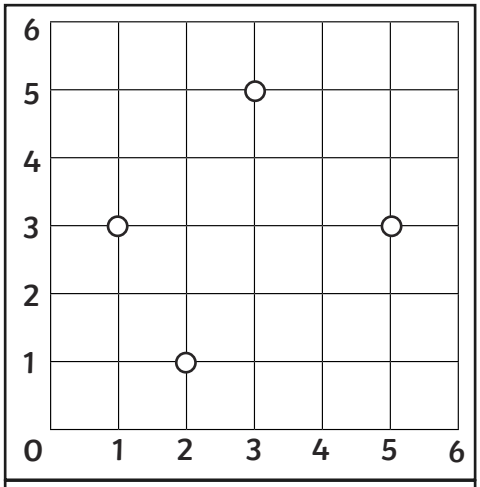


Plot the missing coordinate to make a **triangle.**

Complete the drawing and write the missing coordinate (,).

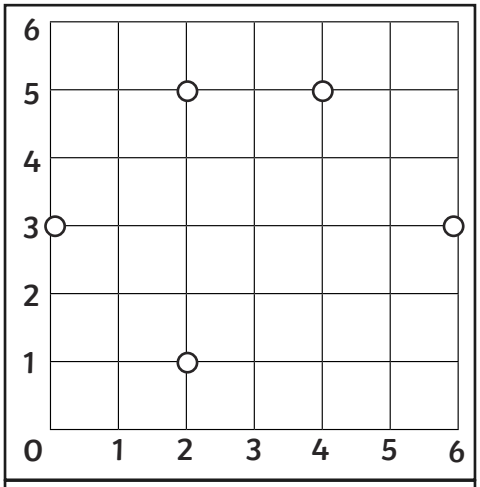
Missing Coordinate Polygons

To identify and plot missing coordinates of polygons on a 2D grid.



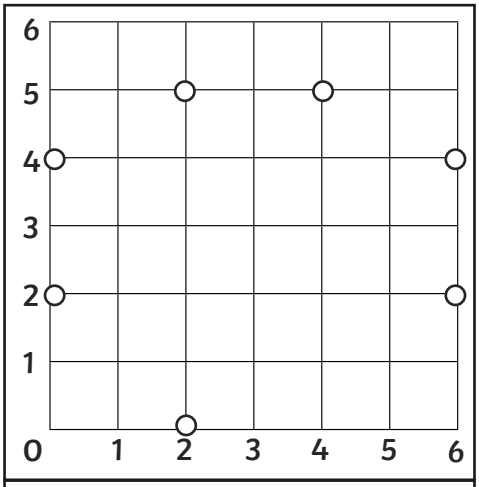
Plot the missing coordinate to make a **pentagon.**

Complete the drawing and write the missing coordinate (,).



Plot the missing coordinate to make a **hexagon.**

Complete the drawing and write the missing coordinate (,).



Plot the missing coordinate to make an **octagon.**

Complete the drawing and write the missing coordinate (,).

Missing Coordinate Polygons

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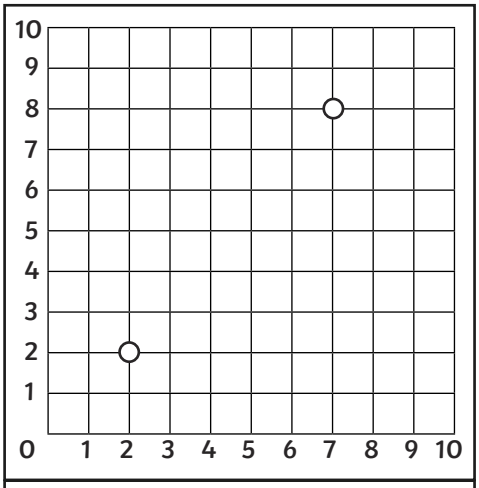
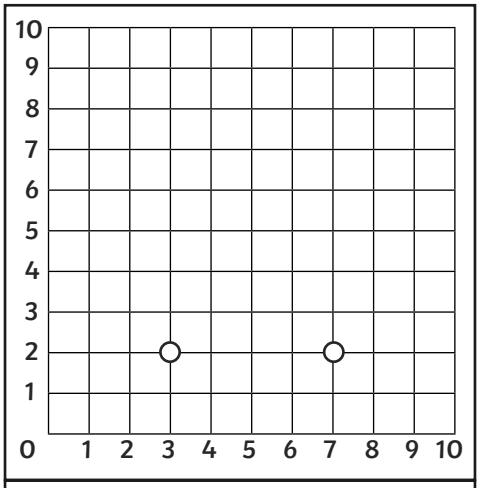


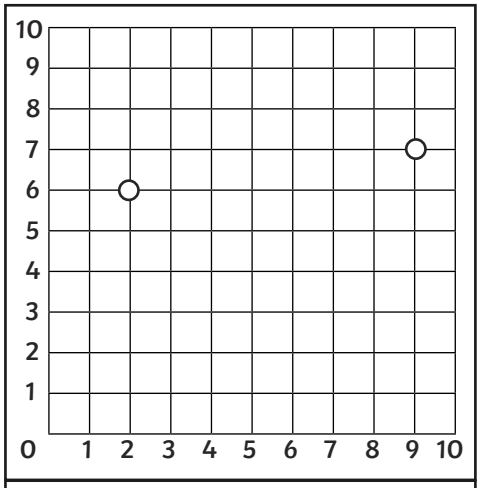
Plot the missing coordinate to make a **right-angled triangle.**

Complete the drawing and write the missing coordinate (,).



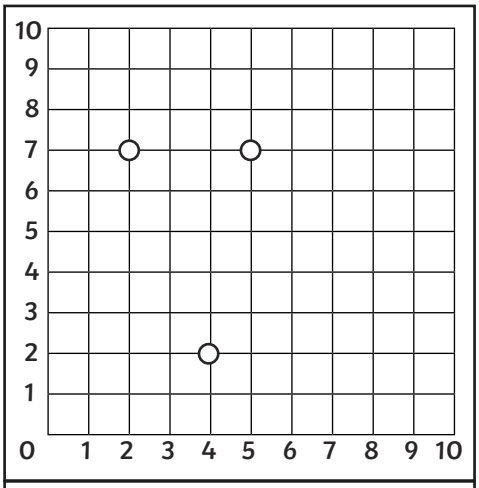
Plot the missing coordinate to make an **isosceles triangle.**

Complete the drawing and write the missing coordinate (,).



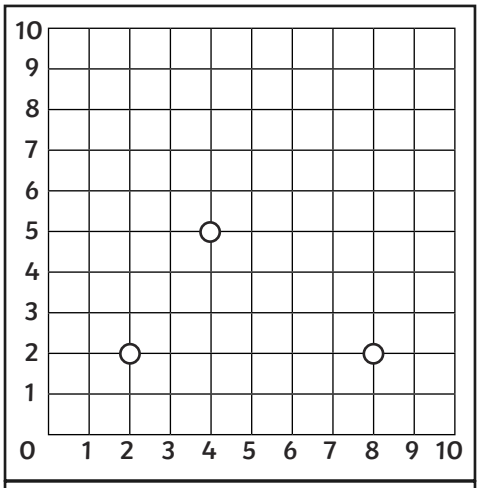
Plot the missing coordinate to make a **scalene triangle.**

Complete the drawing and write the missing coordinate (,).



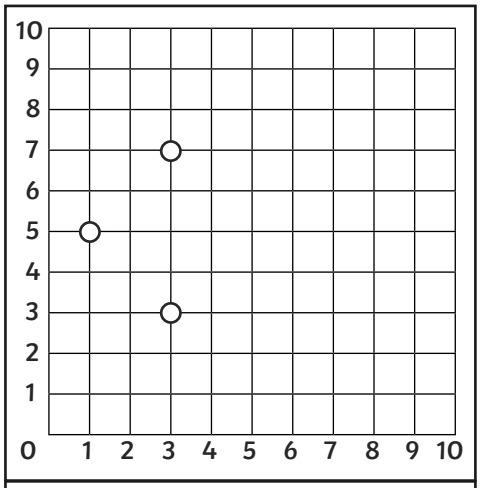
Plot the missing coordinate to make a **parallelogram.**

Complete the drawing and write the missing coordinate (,).



Plot the missing coordinate to make a **trapezium.**

Complete the drawing and write the missing coordinate (,).

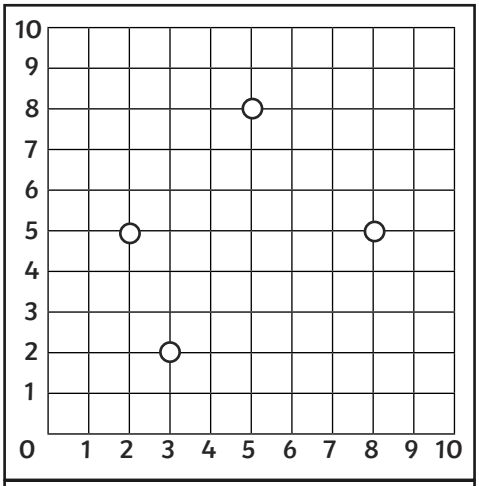


Plot the missing coordinate to make a **kite.**

Complete the drawing and write the missing coordinate (,).

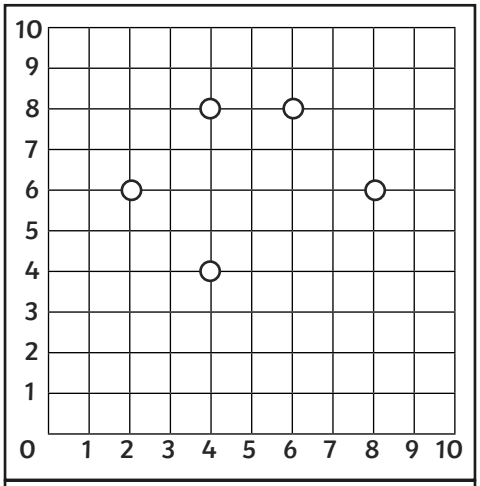
Missing Coordinate Polygons

To identify and plot missing coordinates of polygons on a 2D grid.



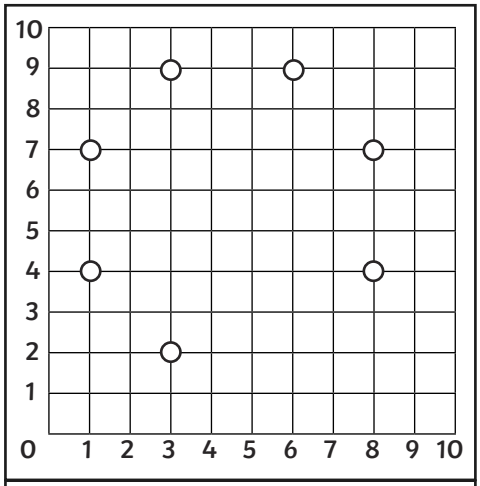
Plot the missing coordinate to make a **pentagon.**

Complete the drawing and write the missing coordinate (,).



Plot the missing coordinate to make a **hexagon.**

Complete the drawing and write the missing coordinate (,).

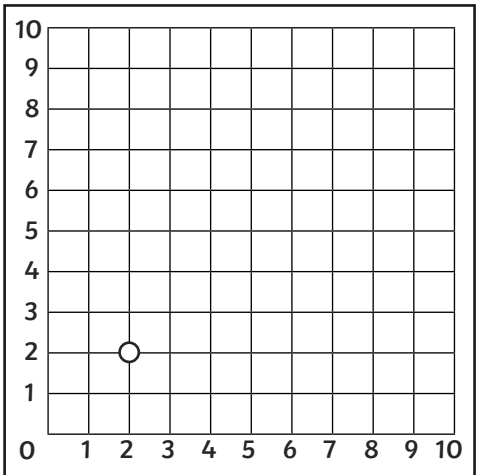


Plot the missing coordinate to make an **octagon.**

Complete the drawing and write the missing coordinate (,).

Missing Coordinate Polygons

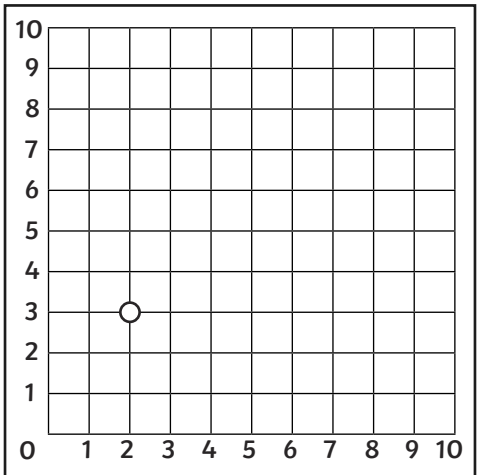
To identify and plot missing coordinates of polygons on a 2D grid.



Plot the missing coordinates to make a **right-angled triangle**.

Complete the drawing and write the missing coordinates:

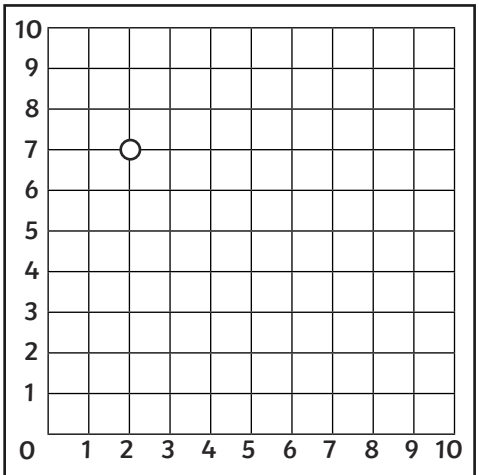
(,) , (,).



Plot the missing coordinates to make an **isosceles triangle**.

Complete the drawing and write the missing coordinates:

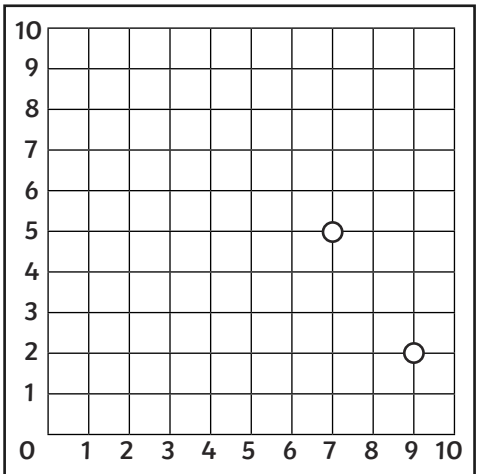
(,) , (,).



Plot the missing coordinates to make a **scalene triangle**.

Complete the drawing and write the missing coordinates:

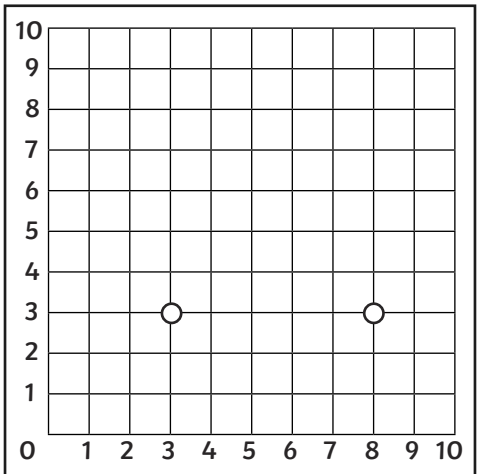
(,) , (,).



Plot the missing coordinates to make a **parallelogram**.

Complete the drawing and write the missing coordinates:

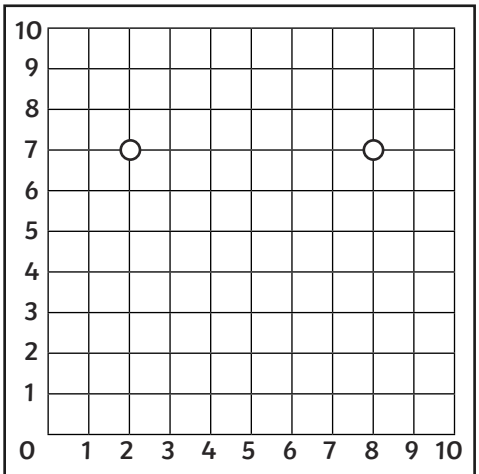
(,) , (,).



Plot the missing coordinates to make a **trapezium**.

Complete the drawing and write the missing coordinates:

(,) , (,).



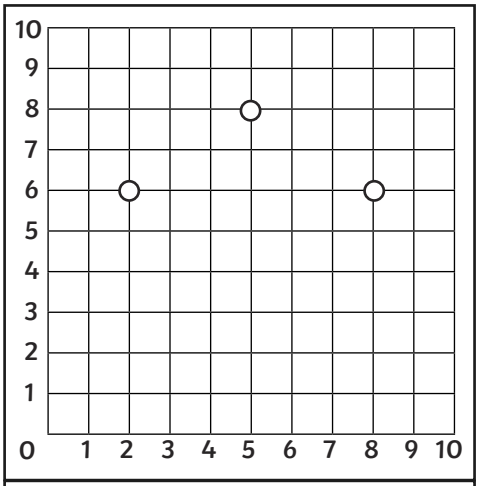
Plot the missing coordinates to make a **kite**.

Complete the drawing and write the missing coordinates:

(,) , (,).

Missing Coordinate Polygons

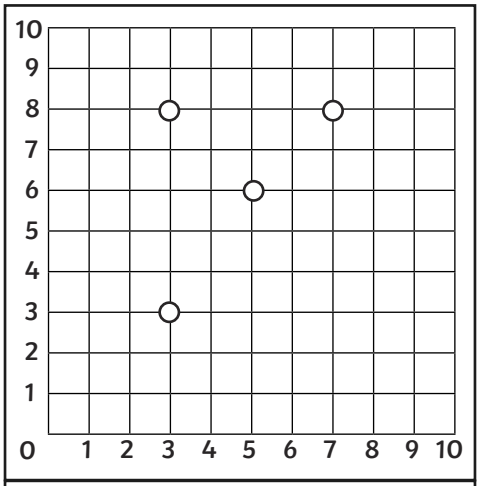
To identify and plot missing coordinates of polygons on a 2D grid.



Plot the missing coordinates to make a **pentagon**.

Complete the drawing and write the missing coordinates:

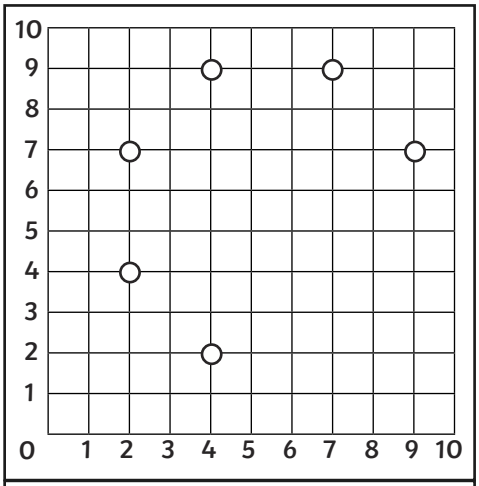
(,) , (,).



Plot the missing coordinates to make a **hexagon**.

Complete the drawing and write the missing coordinates:

(,) , (,).



Plot the missing coordinates to make an **octagon**.

Complete the drawing and write the missing coordinates:

(,) , (,).

Missing Coordinate Polygons **Answers**

1. (3,2)

2. (5,3)

3. (3,1)

4. (3,1)

5. Various answers. Accept any coordinate that produces a triangle which contains one right-angle (90-degree angle).

6. Various answers. Accept any coordinate that produces a 3-sided polygon with straight sides.

7. Various answers. Accept any coordinate which produces a 5-sided polygon with straight sides.

8. Various answers. Accept any coordinate which produces a 6-sided polygon with straight sides.

9. Various answers. Accept any coordinate which produces an 8-sided polygon with straight sides.

Missing Coordinate Polygons **Answers**

1. (2,8) or (7,2)

2. (5,1) (5,0) (5,3) (5,4) (5,5) (5,7) (5,8) (5,9) (5,10)

3. Various answers. Accept any coordinate which produces a triangle where no sides are equal.

4. (7,2) or (1,2)

5. Various answers. Accept any coordinate which produces a 4-sided shape with straight sides and one pair of parallel sides.

6. (4,5) (6,5) (7,5) (8,5) (9,5) (10,5)

7. Various answers. Accept any coordinate which produces a 5-sided polygon with straight sides.

8. Various answers. Accept any coordinate which produces a 6-sided polygon with straight sides.

9. Various answers. Accept any coordinate which produces an 8-sided polygon with straight sides.

Missing Coordinate Polygons **Answers**

1. Various answers. Accept any two coordinates which produce a triangle which contains one right angle (90-degree angle).

2. Various answers. Accept any two coordinates which produce a triangle with two equal sides.

3. Various answers. Accept any two coordinates which produce a triangle where no sides are equal.

4. Various answers. Accept any two coordinates which produce a 4-sided shape where opposite sides are parallel and opposite sides are equal in length.

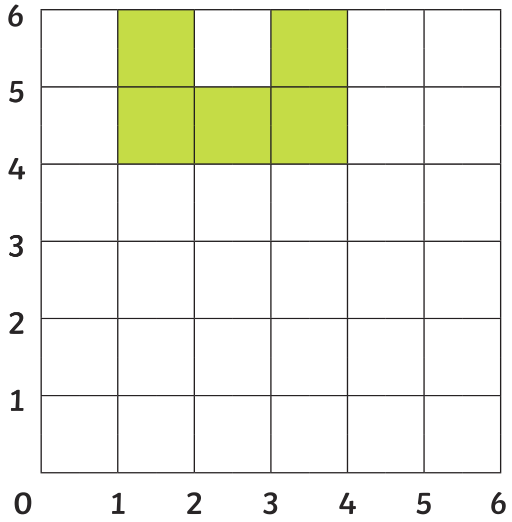
5. Various answers. Accept any two coordinates which produce a 4-sided shape with straight sides and one pair of parallel sides.

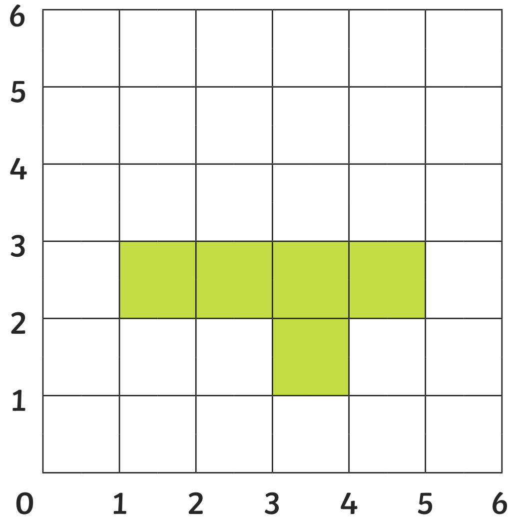
6. Various answers. Accept any two coordinates which produce a 4-sided shape with straight sides which has two pairs of sides. Each pair must be made of two adjacent sides which are the same length.

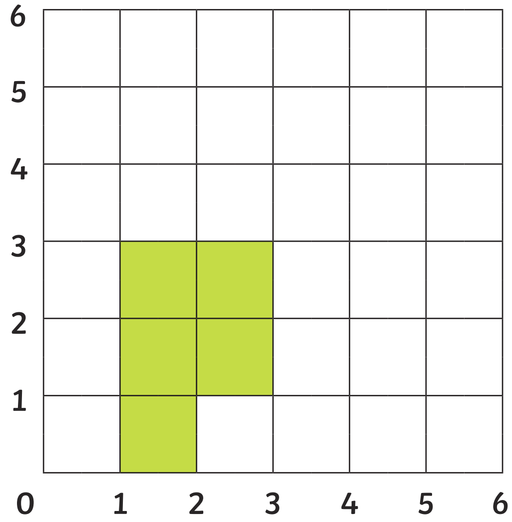
7. Various answers. Accept any two coordinates which produce a 5-sided polygon with straight sides.

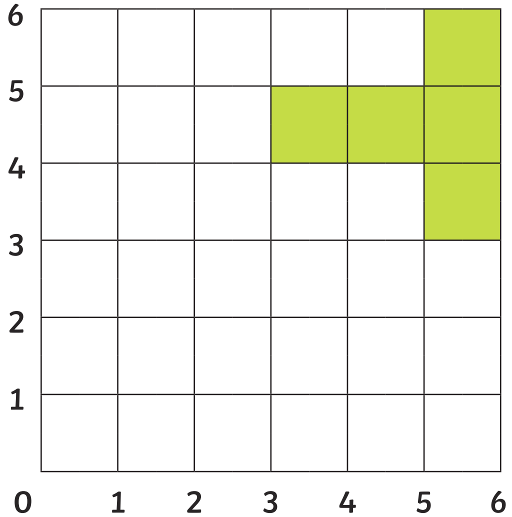
8. Various answers. Accept any two coordinates which produce a 6-sided polygon with straight sides.

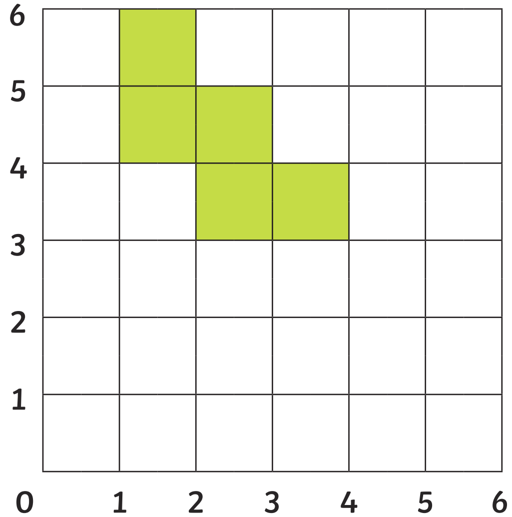
9. Various answers. Accept any two coordinates which produce an 8-sided polygon with straight sides.

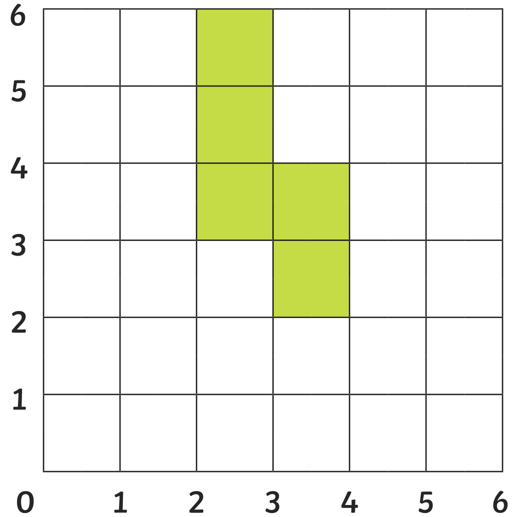


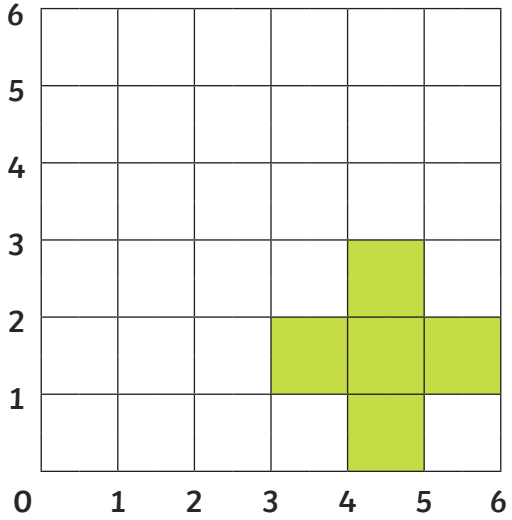


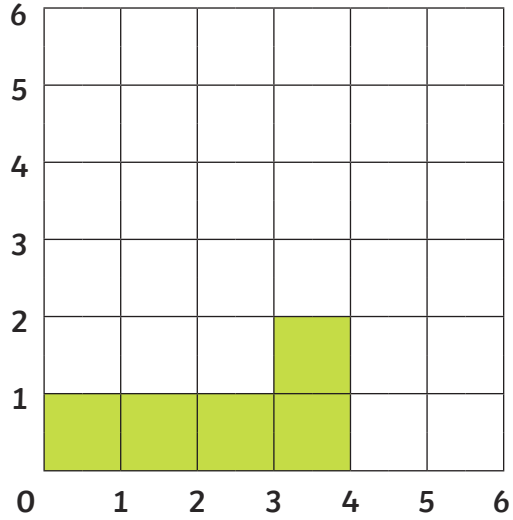












(1,4) (3,5)
(4,4) (2,5)
(4,6) (2,6)
(3,6) (1,6)

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

(1,0) (3,1)
(2,0) (3,3)
(2,1) (1,3)

(3,4) (6,6)
(5,4) (5,6)
(5,3) (5,5)
(6,3) (3,5)

(1,4)
(2,4)
(2,3)
(4,3)
(4,4)

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

(2,3)
(3,3)
(3,2)
(4,2)

(4,4)
(3,4)
(3,6)
(2,6)

(4,0)
(5,0)
(5,1)
(6,1)
(6,2)
(5,2)

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

(0,0)
(4,0)
(4,2)

(3,2)
(3,1)
(0,1)

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

Measurement and Geometry | Missing Coordinate Polygons

To identify and plot missing coordinates of polygons on a 2D grid.		
I can label the x-axis and y-axis.		
I know that a coordinate is represented by two numbers in brackets, separated by a comma.		
I can read a coordinate correctly by going along and then up.		

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