





















Position and Direction: Missing Coordinate Polygons

Aim: Plot specified points and draw sides to complete a given polygon. I can identify and plot 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.	Resources: 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

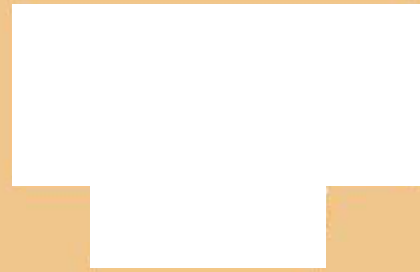
	Gourmet Cooking: Using the interactive slides on the Lesson Presentation , the children are challenged to collect the ingredients for the chef's recipe by clicking on the correct position on the 2D grid for the coordinate given.	
	Reading, Writing and Plotting Coordinates: Use the information and images 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.	
	 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).	
	Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. 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.	
	 Children read, write and plot coordinates to draw 2D shapes on a coordinate grid.	
	 Children answer reasoning questions involving reading, writing and plotting coordinates to draw 2D shapes on a coordinate grid.	
	 Children explore possible ways to plot coordinates to draw three right-angled triangles of different sizes which have a shared vertex.	
	Missing Coordinates Quiz: Using the multiple choice questions shown on the Lesson Pack , children choose which answer describes the missing coordinate of the 2D shape correctly.	discuss and 

Exploreit

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.



Maths

Position and Direction

Missing Coordinate Polygons



Aim

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

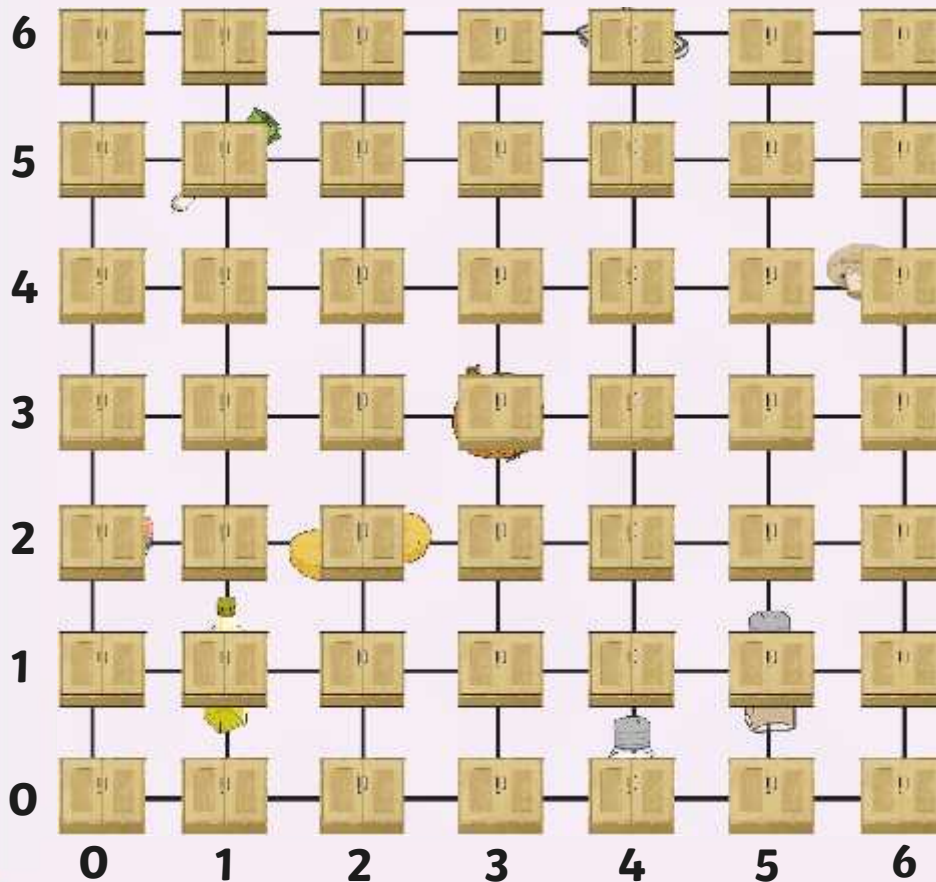
Success Criteria

- 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.

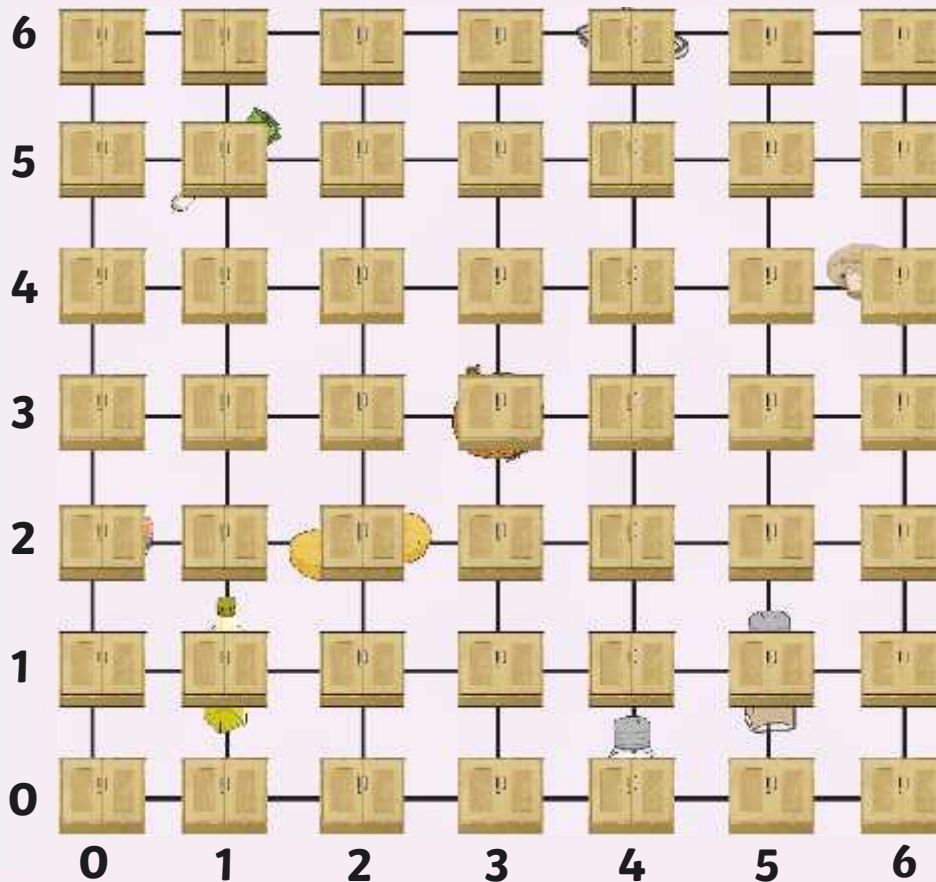


Butter
(4,6)

Gourmet Cooking



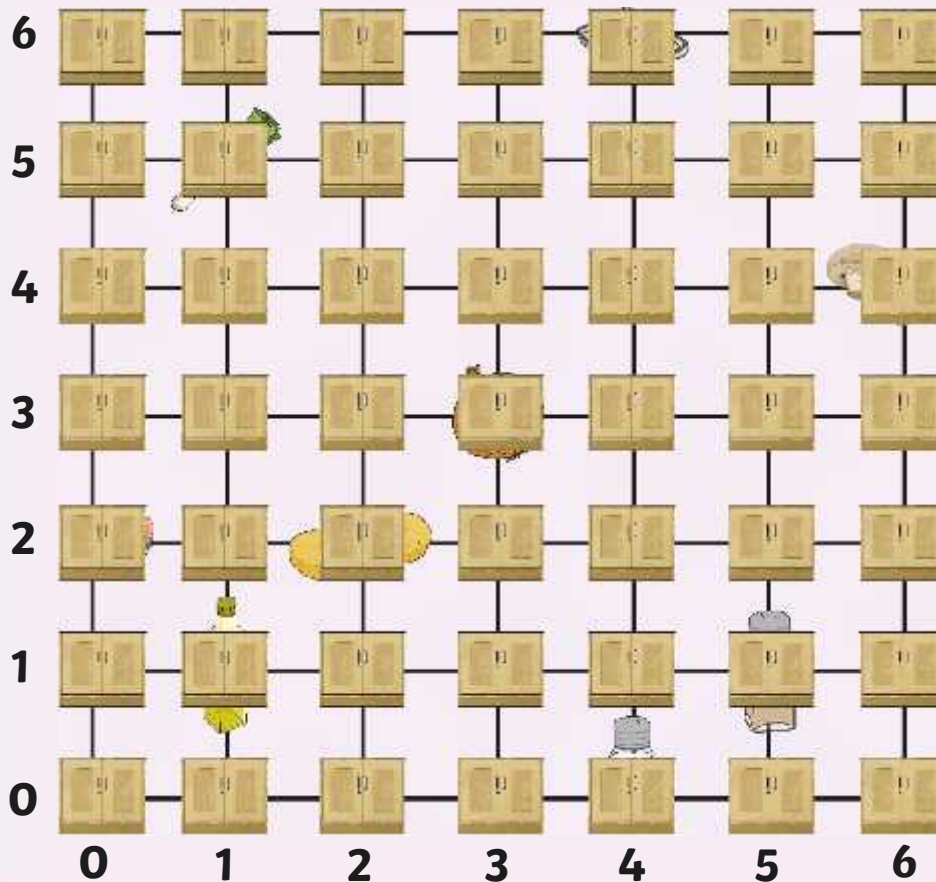
Collect the ingredients to help the chef prepare her gourmet food by reading and plotting the coordinates correctly.



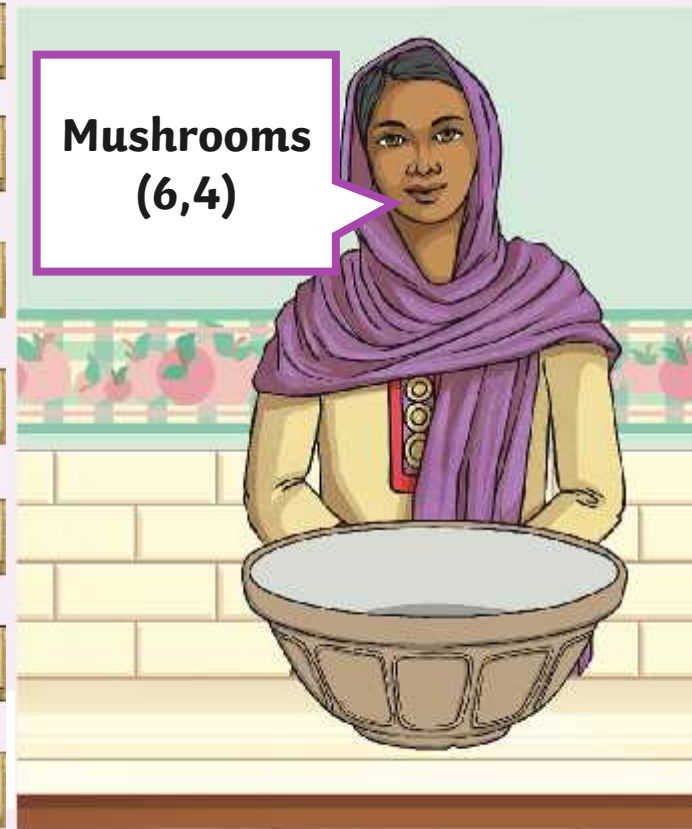
Gourmet Cooking



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



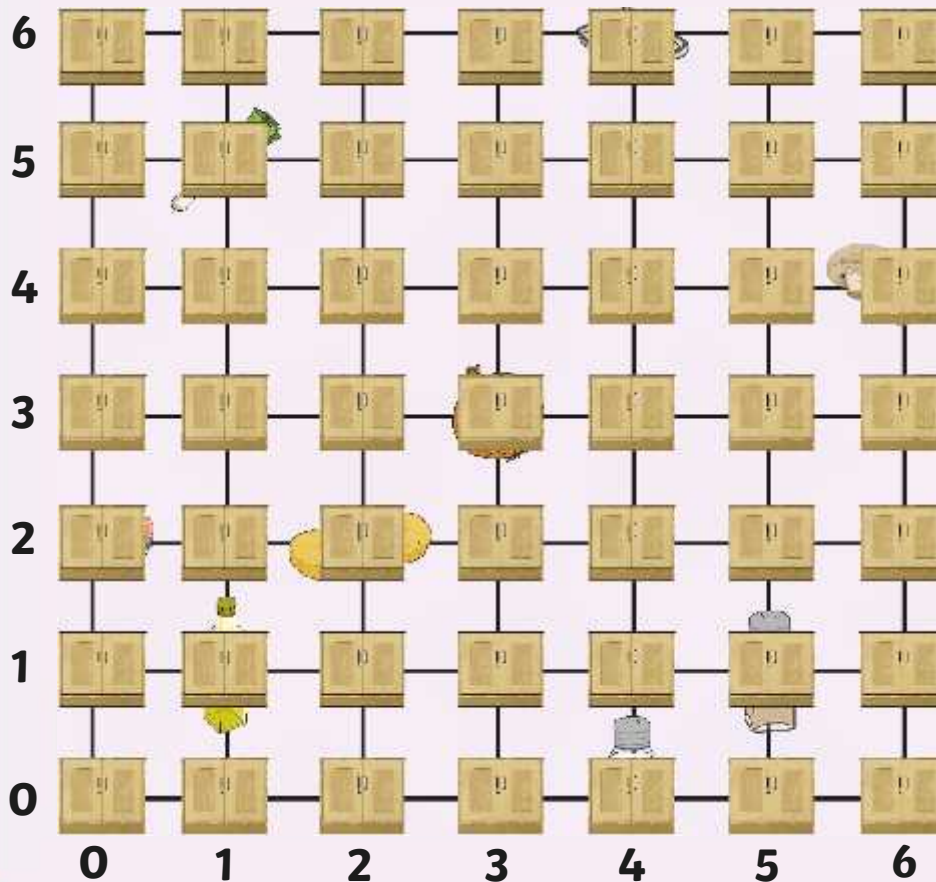
Mushrooms
(6,4)



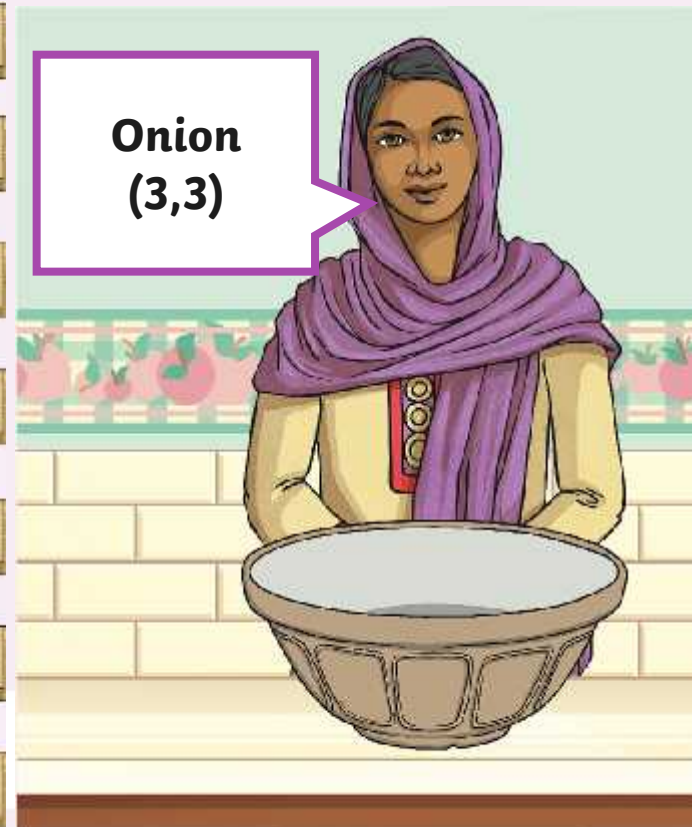
Gourmet Cooking



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



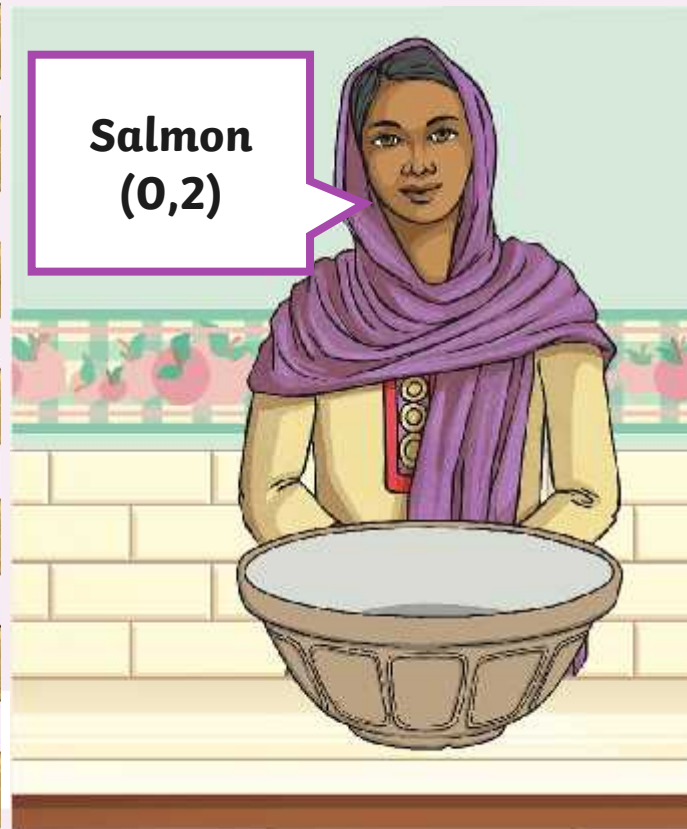
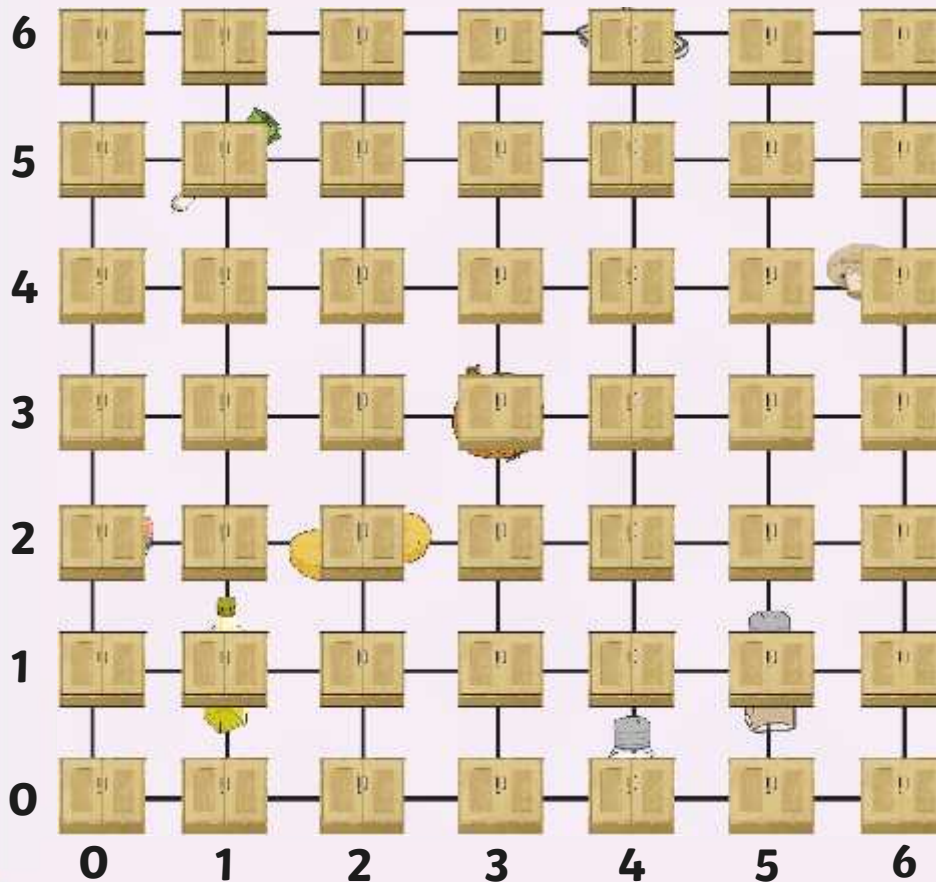
Onion
(3,3)



Gourmet Cooking



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

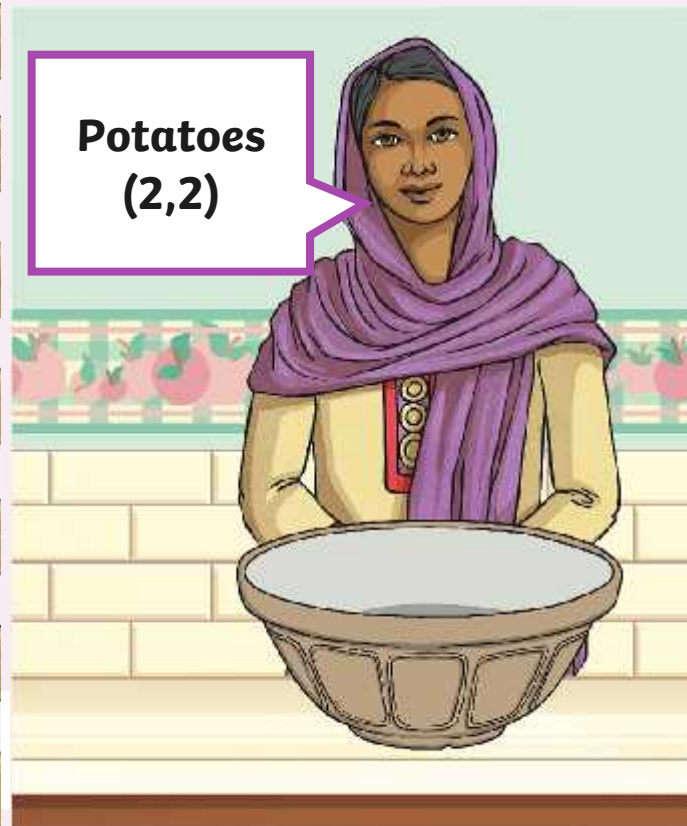
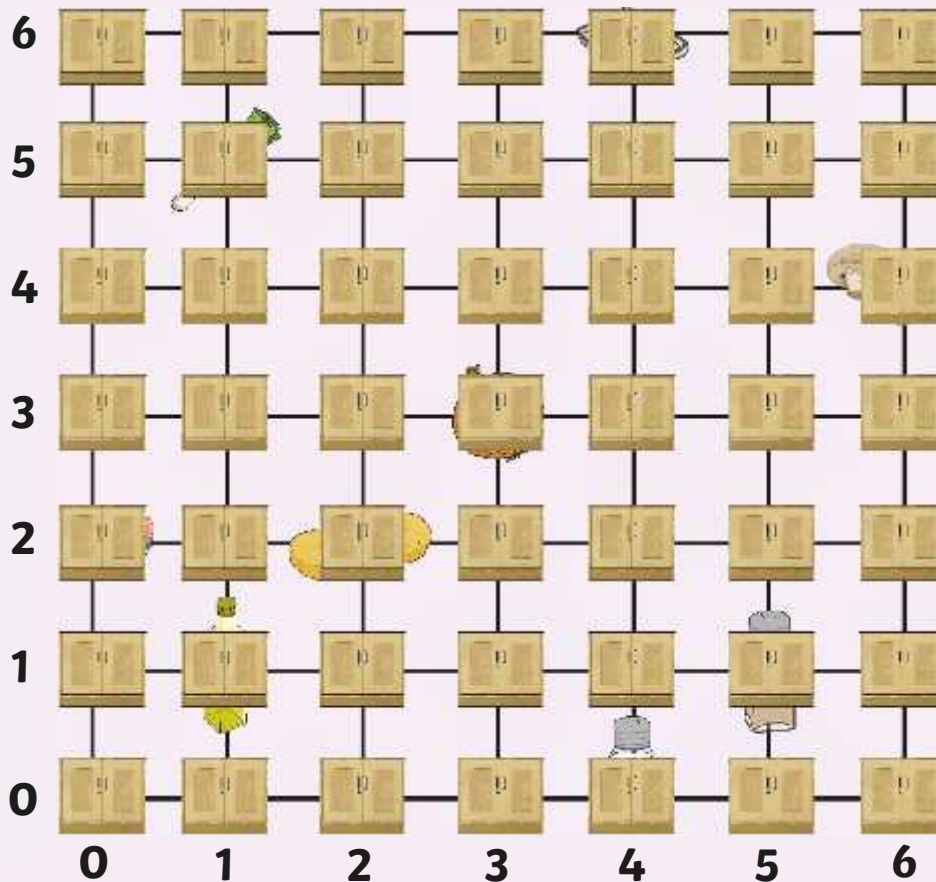


Salmon
(0,2)

Gourmet Cooking



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

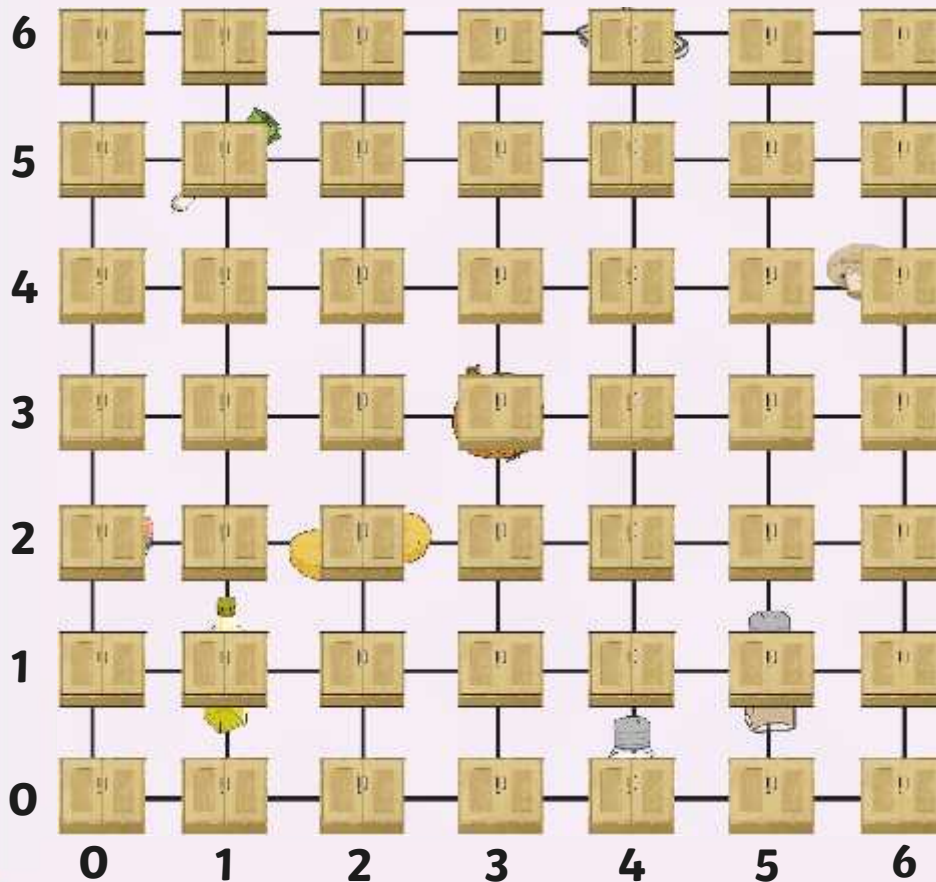


Potatoes
(2,2)

Gourmet Cooking



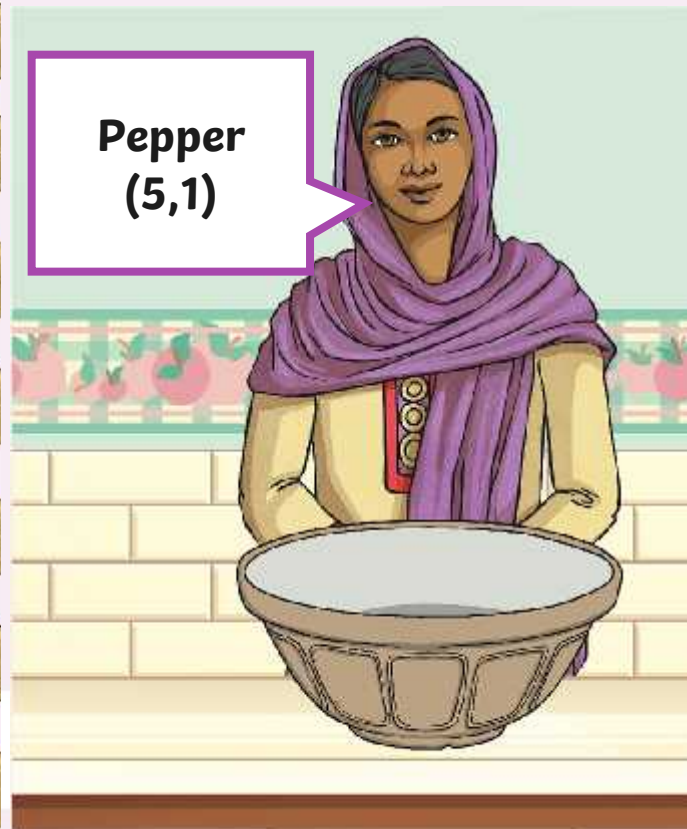
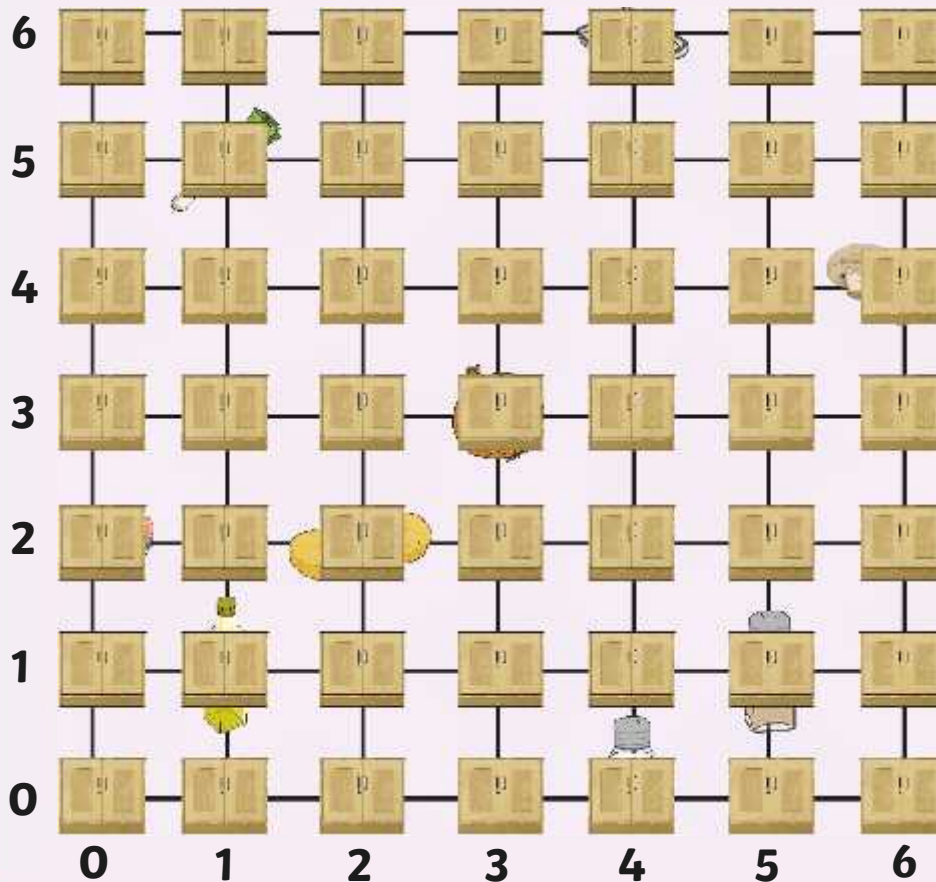
Collect the ingredients to help the chef prepare her gourmet food by reading and plotting the coordinates correctly.



Gourmet Cooking



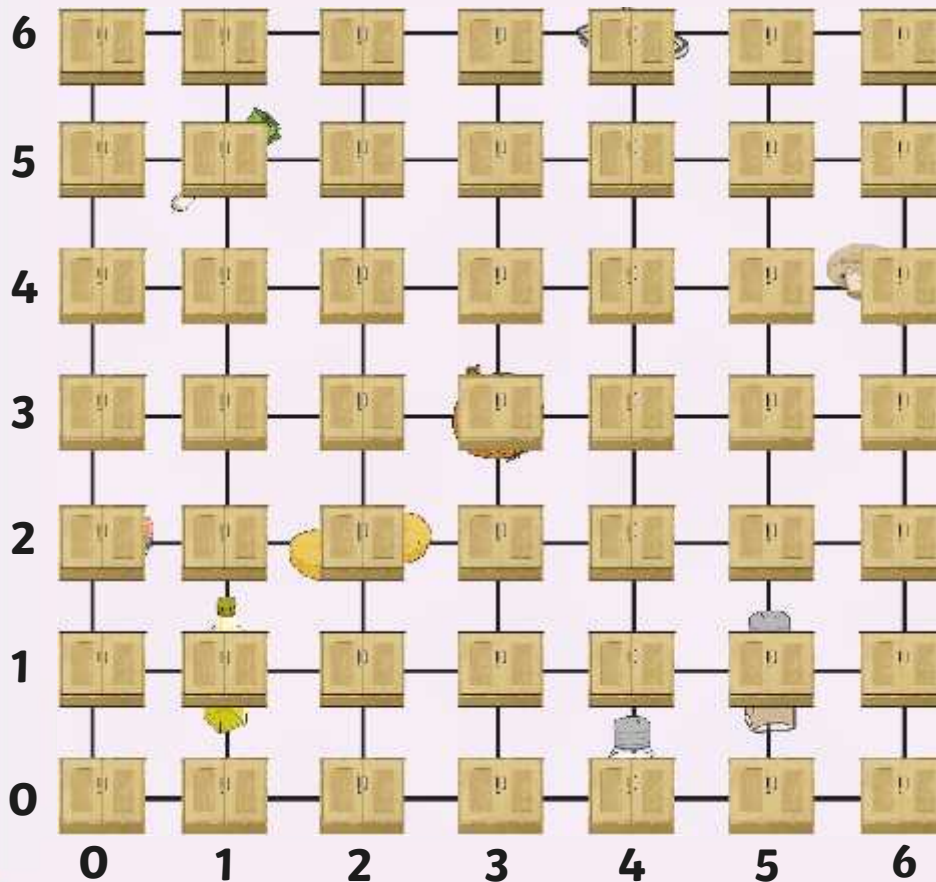
Collect the ingredients to help the chef prepare her gourmet food by reading and plotting the coordinates correctly.



Gourmet Cooking



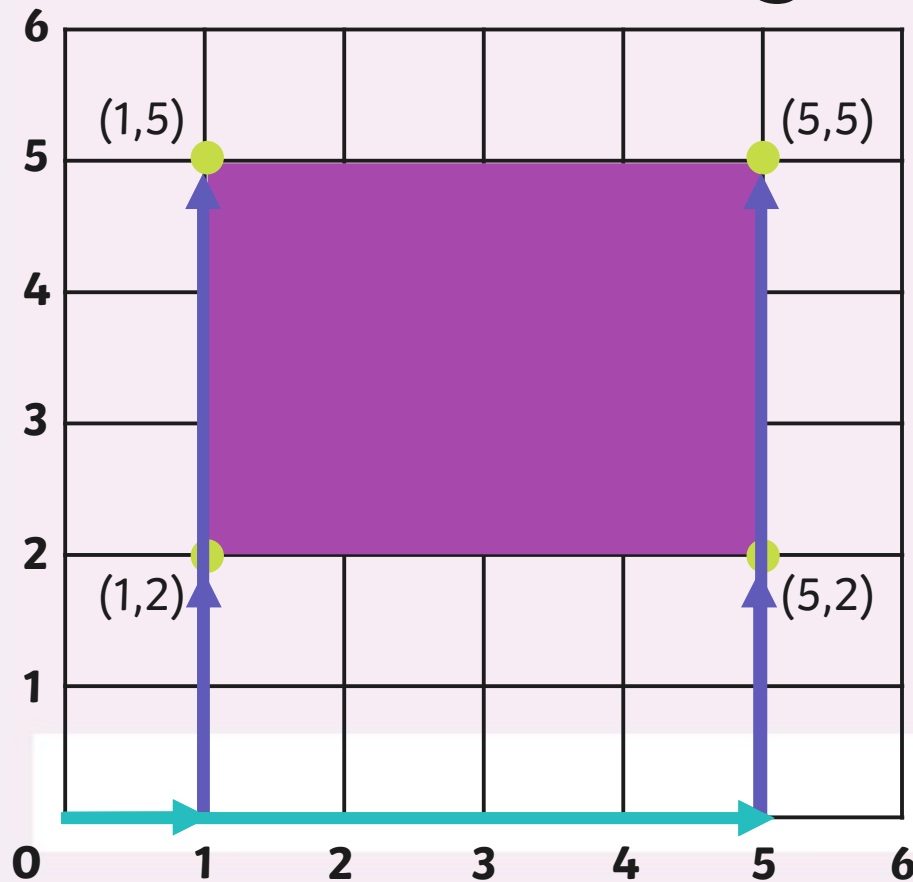
Collect the ingredients to help the chef prepare her gourmet food by reading and plotting the coordinates correctly.



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.

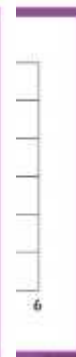
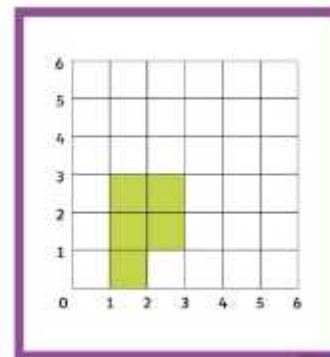
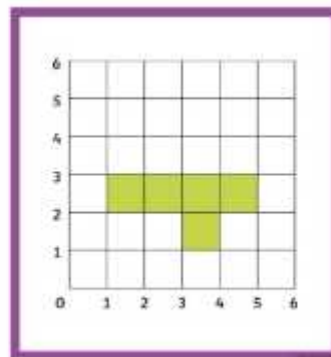
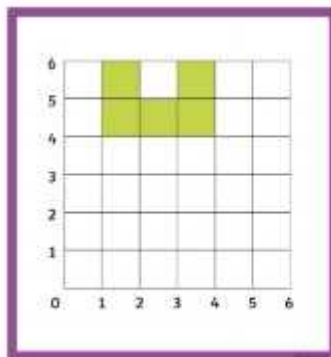
We can give the position of the four corners of this rectangle using this coordinate grid.

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

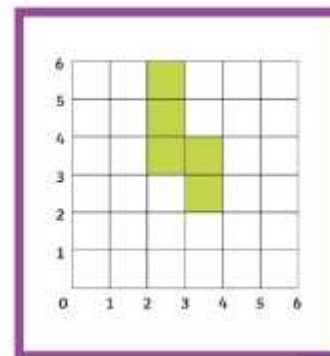
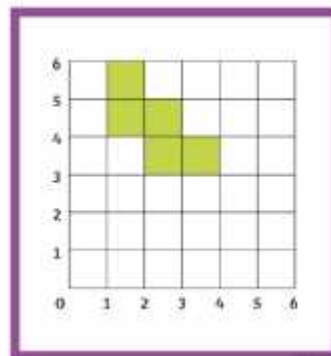
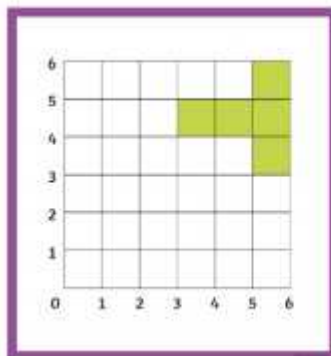
Plotting Shapes



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

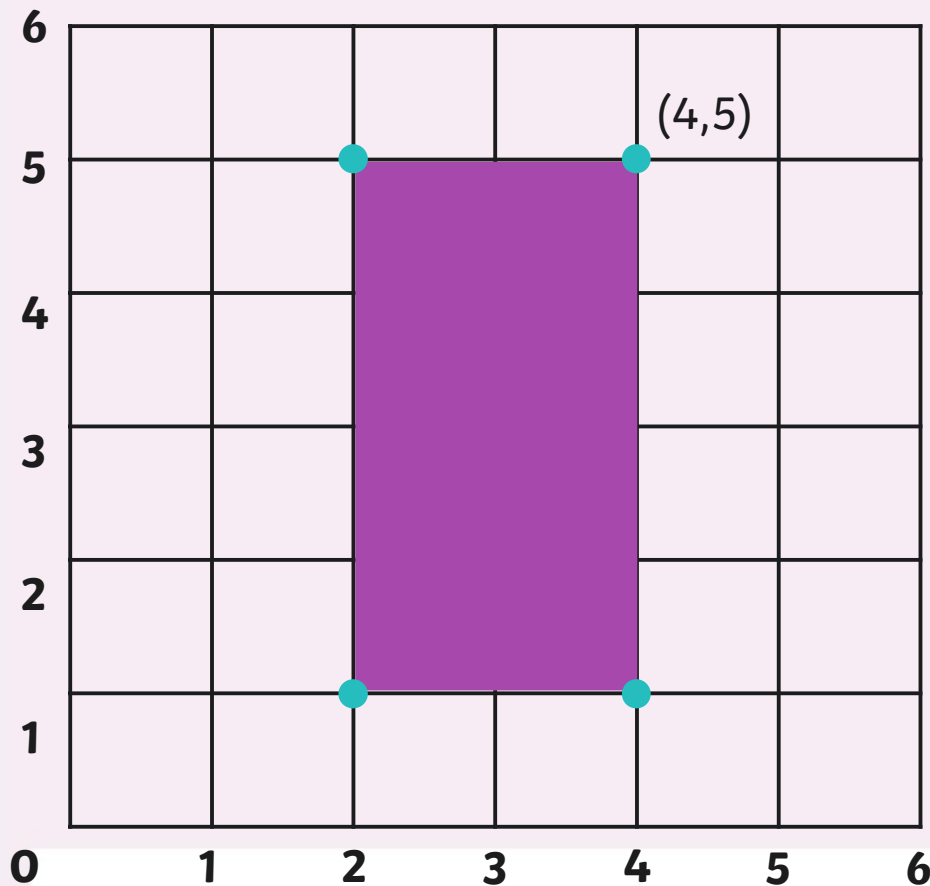


(1,4)	(3,5)
(4,4)	(2,5)
(4,6)	(2,6)
(3,6)	(1,6)



(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 Coordinate Polygons

I can identify and fill missing coordinates of polygons on a 20 grid.

<p>Put the missing coordinates to make a square.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a rectangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a right-angled triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>
<p>Put the missing coordinates to make a square.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a rectangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a right-angled triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>

Missing Coordinate Polygons

I can identify and fill missing coordinates of polygons on a 20 grid.

<p>Put the missing coordinates to make a square.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a rectangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a right-angled triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>
<p>Put the missing coordinates to make a square.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a rectangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a right-angled triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>

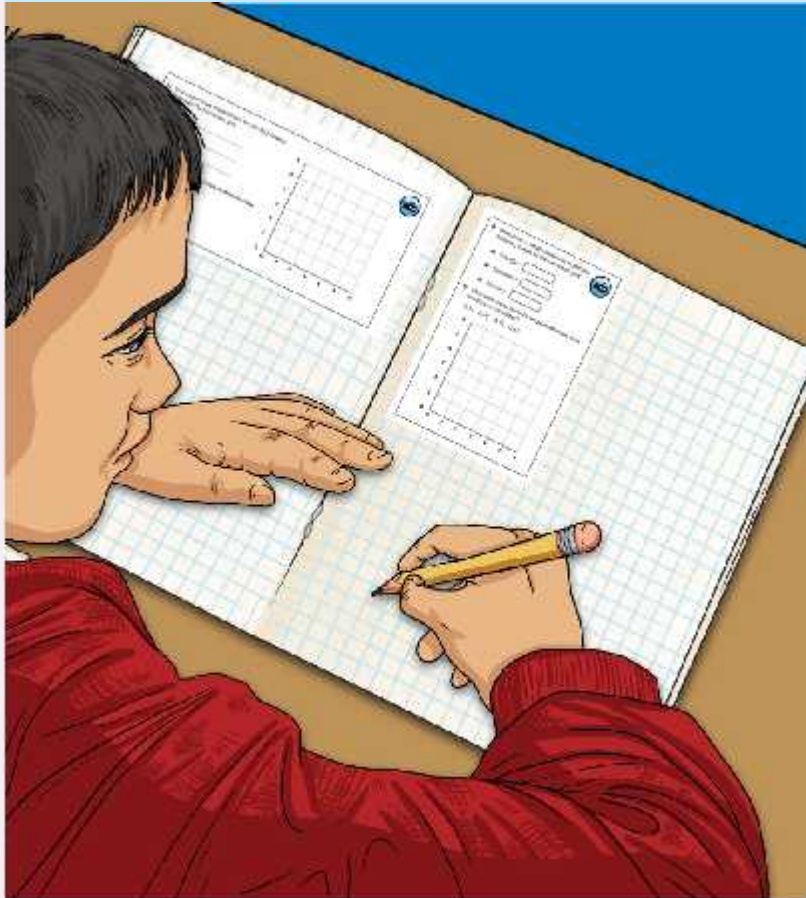
Missing Coordinate Polygons

I can identify and fill missing coordinates of polygons on a 20 grid.

<p>Put the missing coordinates to make a right-angled triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make an isosceles triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a scalene triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>
<p>Put the missing coordinates to make a right-angled triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make an isosceles triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>	<p>Put the missing coordinates to make a scalene triangle.</p> <p>Complete the drawing and write the missing coordinates.</p>

Diving into Mastery

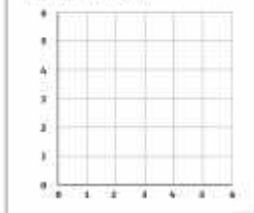
Dive in by completing your own activity!



1) Write down a set of coordinates to plot the following shapes on the coordinate grid.

- a) Triangle =
- b) Rectangle =
- c) Square =

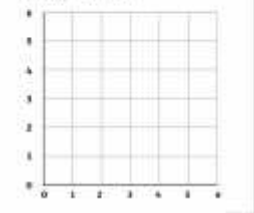
2) What is the name of the 2D shape made when these coordinates are joined?
(1,0) (0,4) (1,4) (1,1)



3) Write down a set of coordinates to plot the following shapes on the coordinate grid.

- a) Triangle =
- b) Rectangle =
- c) Square =

4) What is the name of the 2D shape made when these coordinates are joined?
(1,0) (0,4) (1,4) (1,1)



In this drawing of a pair, I used to plot vertices (1,4).

On your notebook

Missing Coordinates Quiz

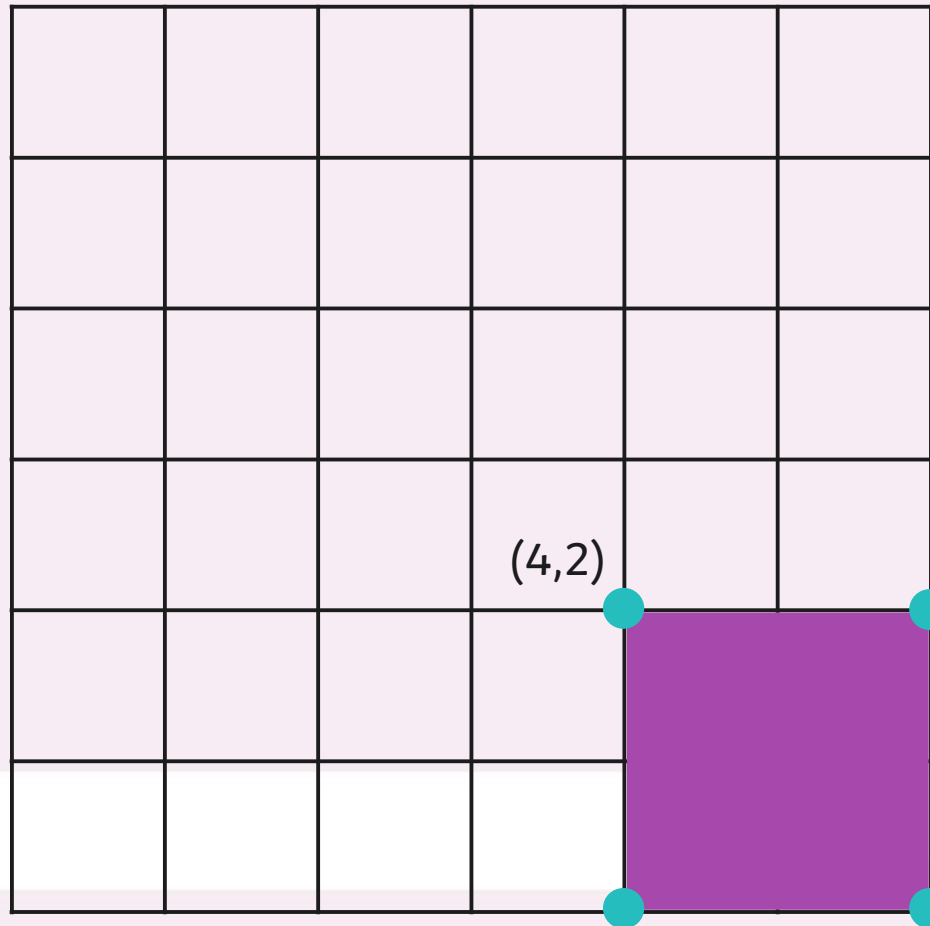


Which coordinate will complete the square?

$(4,2)$

$(2,4)$

$(4,3)$



Missing Coordinates Quiz

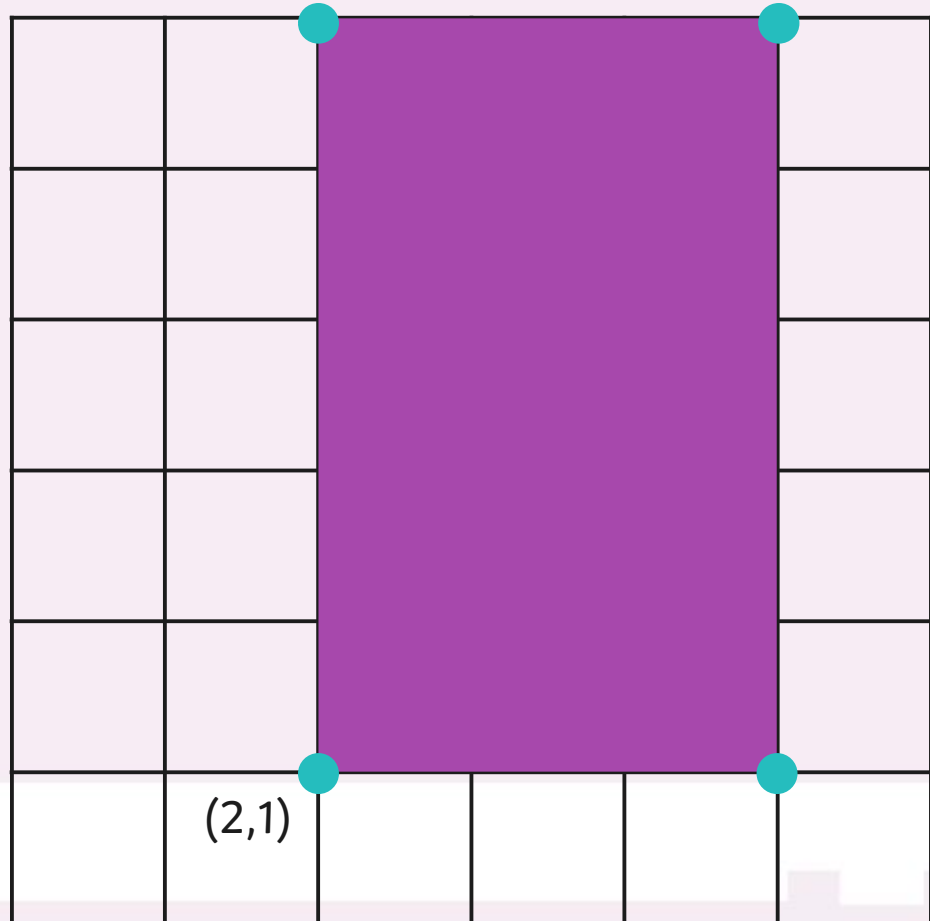


Which coordinate will complete the square?

$(2,2)$

$(1,2)$

$(2,1)$



Missing Coordinates Quiz

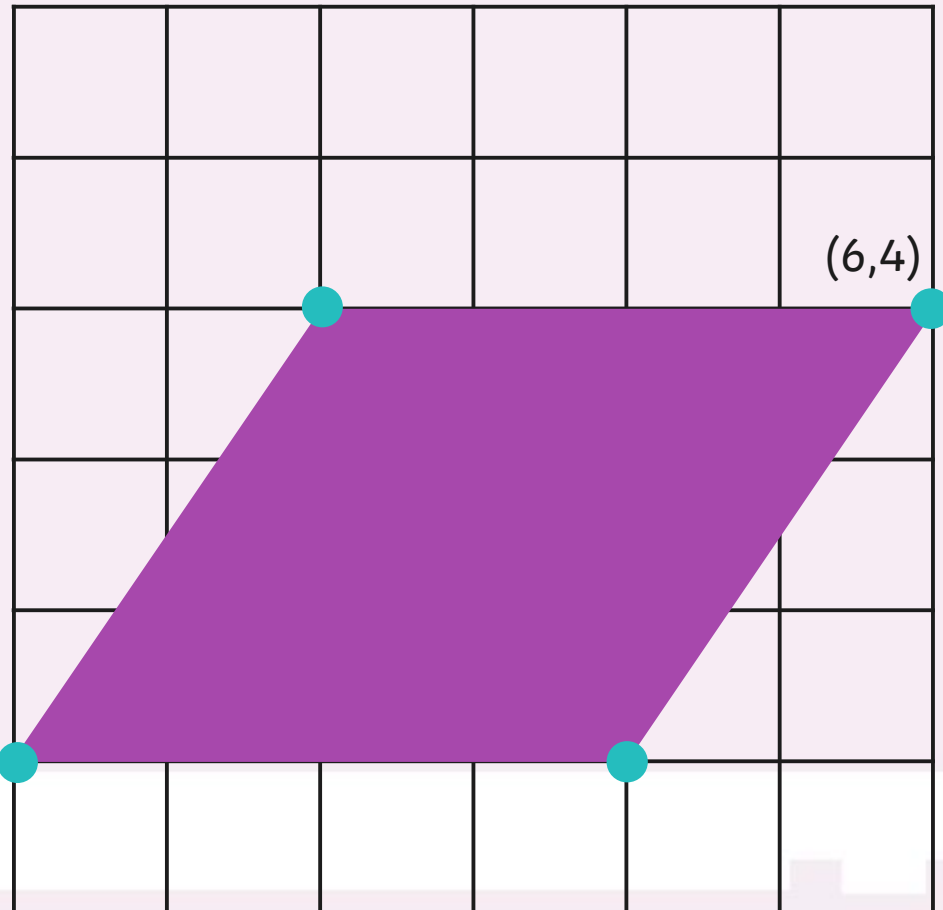


Which coordinate will complete the square?

$(6,6)$

$(6,4)$

$(4,6)$



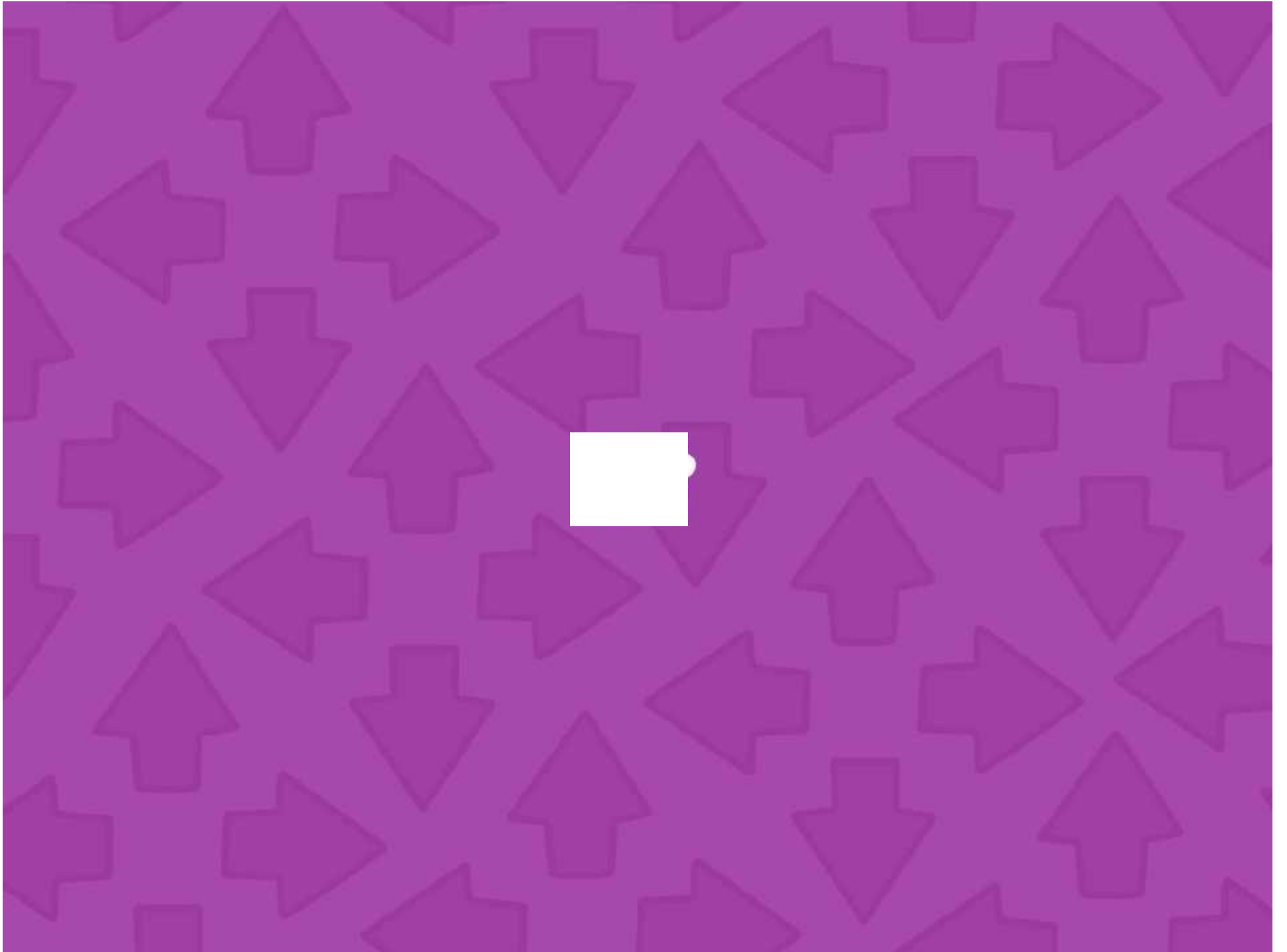
Aim



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

Success Criteria

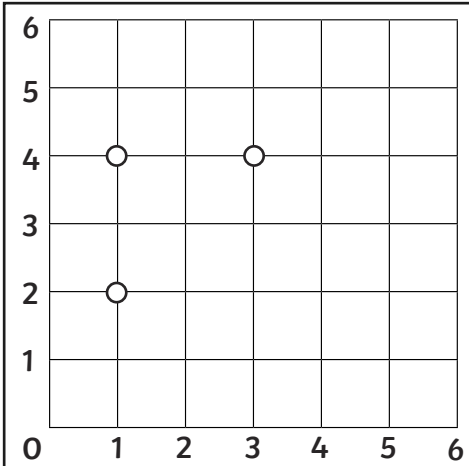
- I can label the x-axis and y-axis.
- I know that a coordinate is represented by two numbers in brackets, separated by a comma.
- I can read a coordinate correctly by going along and then up.





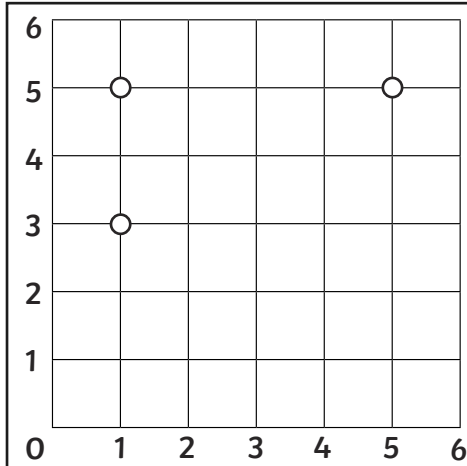
Missing Coordinate Polygons

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



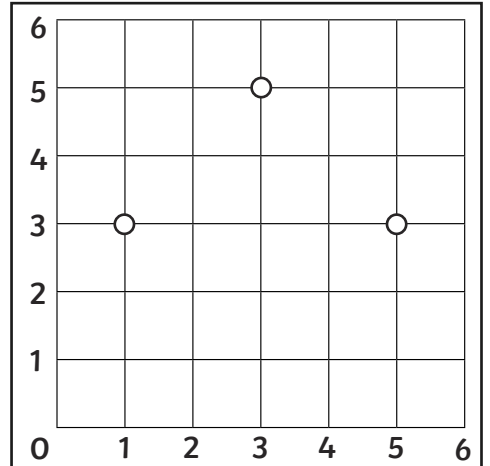
Plot the missing coordinate to make a **square**.

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



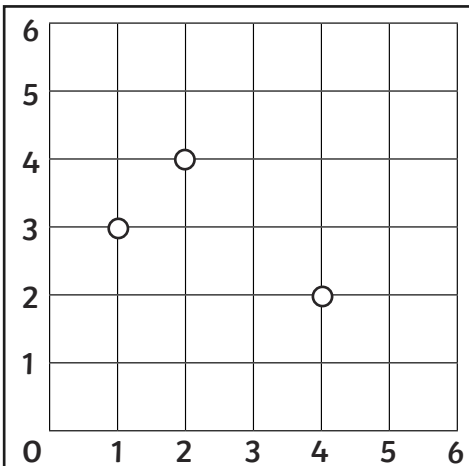
Plot the missing coordinate to make a **rectangle**.

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



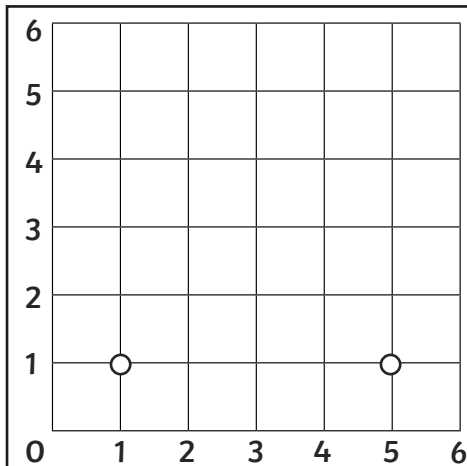
Plot the missing coordinate to make a **square**.

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



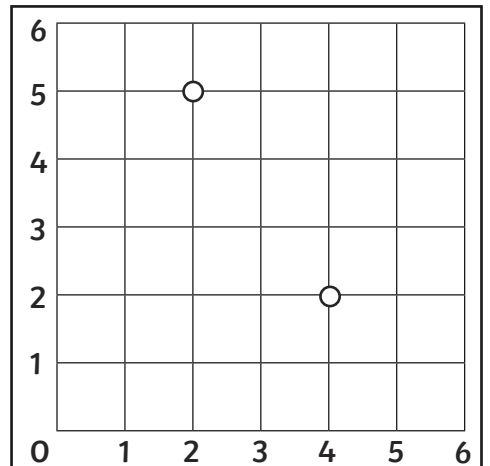
Plot the missing coordinate to make a **rectangle**.

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



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

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



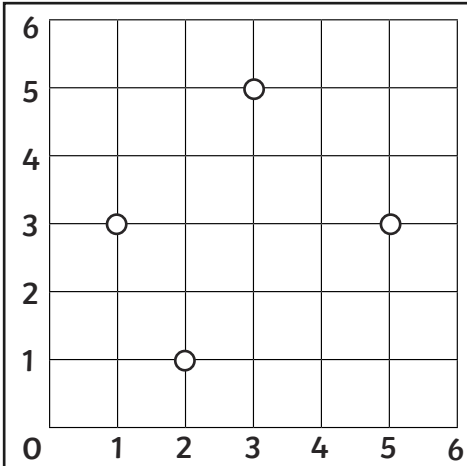
Plot the missing coordinate to make a **triangle**.

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



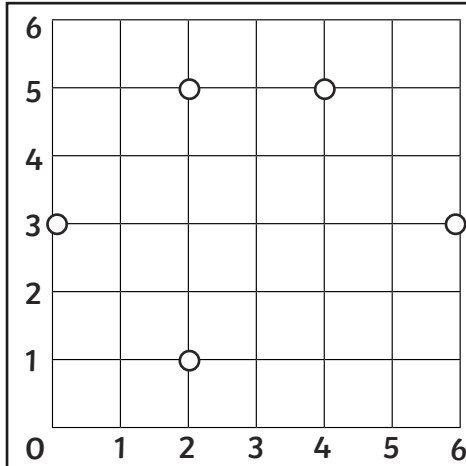
Missing Coordinate Polygons

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



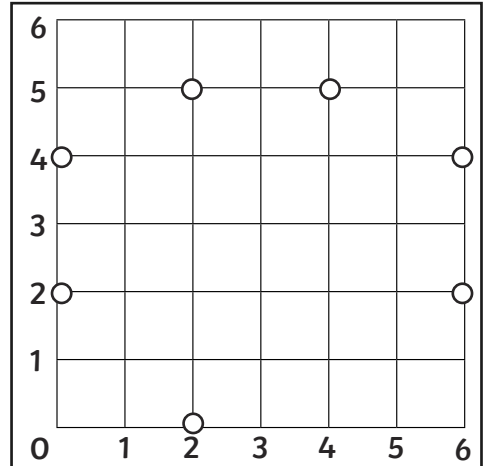
Plot the missing coordinate to make a **pentagon**.

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



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

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



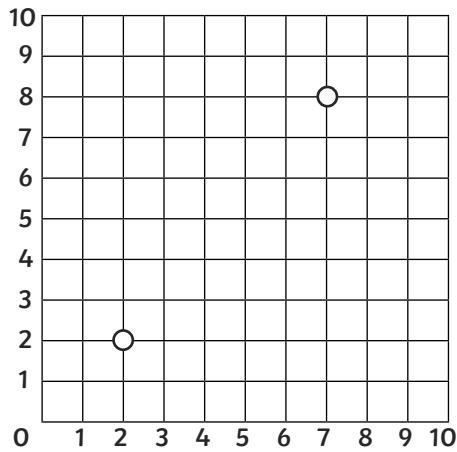
Plot the missing coordinate to make a **octagon**.

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



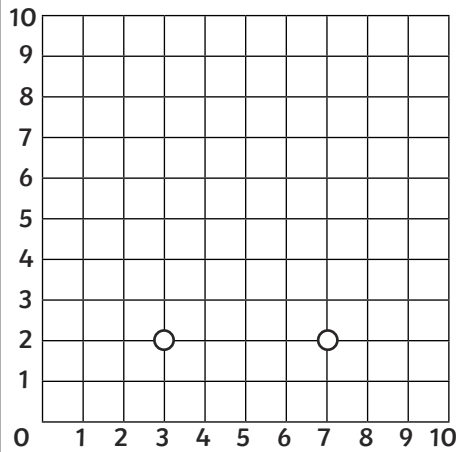
Missing Coordinate Polygons

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



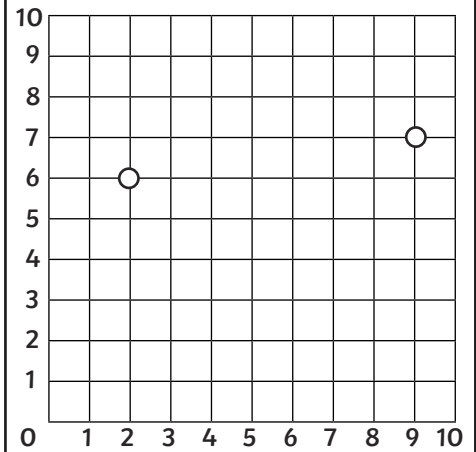
Plot the missing coordinate to make a **right-angled triangle**.

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



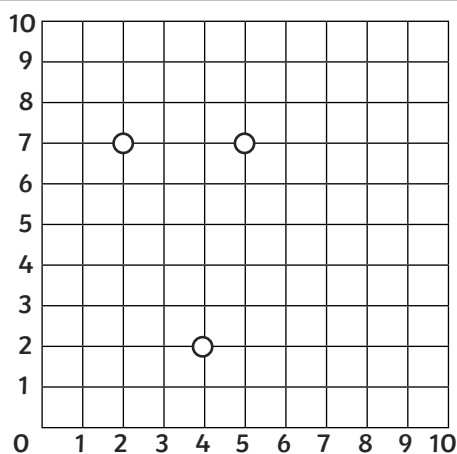
Plot the missing coordinate to make a **isosceles triangle**.

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



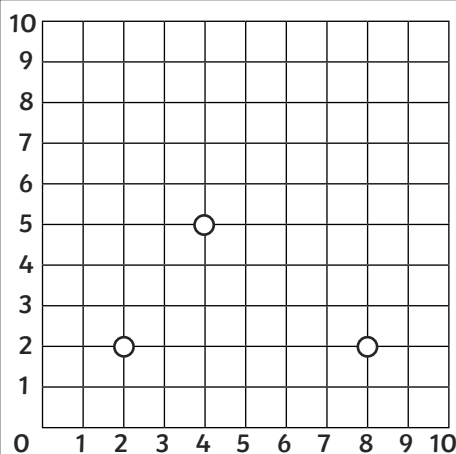
Plot the missing coordinate to make a **scalene triangle**.

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



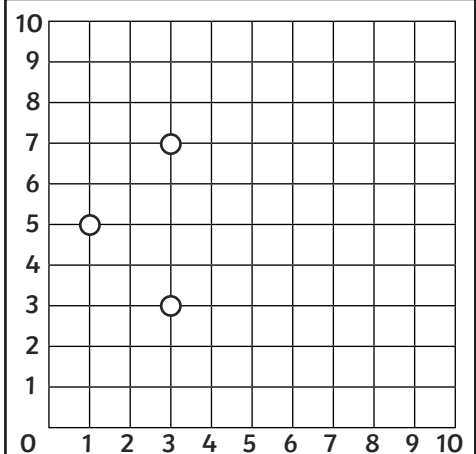
Plot the missing coordinate to make a **parallelogram**.

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



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

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



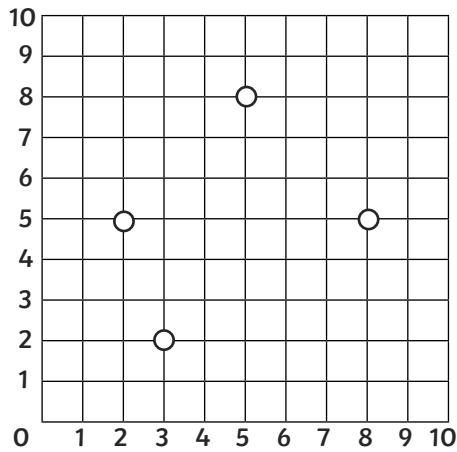
Plot the missing coordinate to make a **kite**.

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



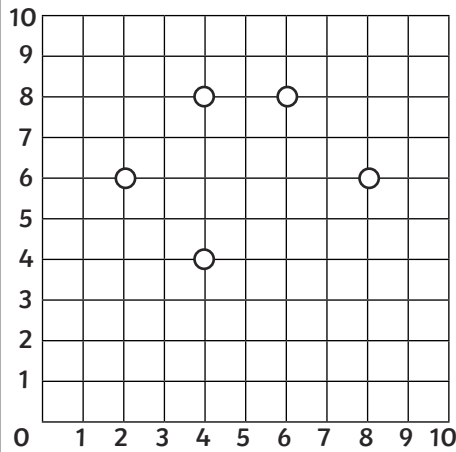
Missing Coordinate Polygons

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



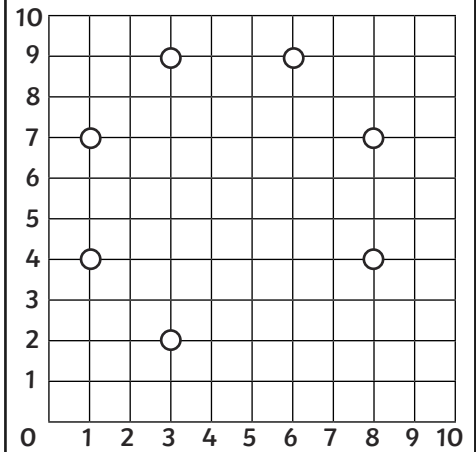
Plot the missing coordinate to make a **pentagon**.

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



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

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



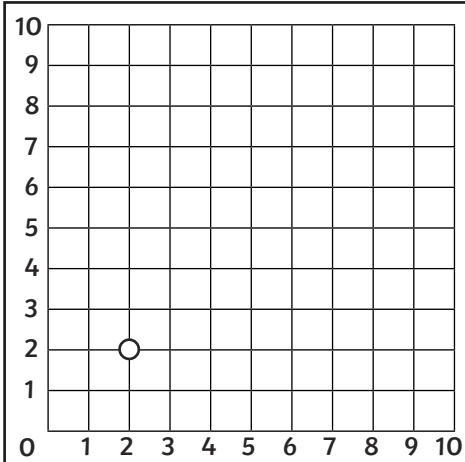
Plot the missing coordinate to make a **octagon**.

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



Missing Coordinate Polygons

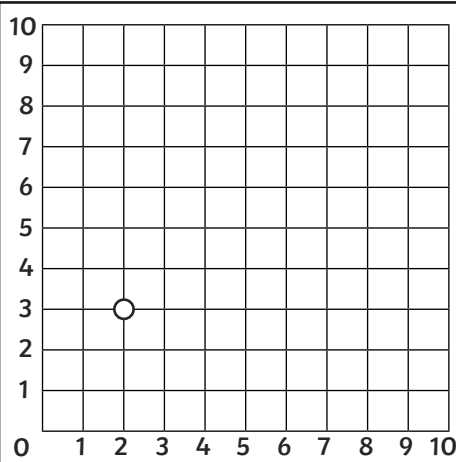
I can identify and plot missing coordinates of polygons on a 2D grid.



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

Complete the drawing and write the missing coordinates:

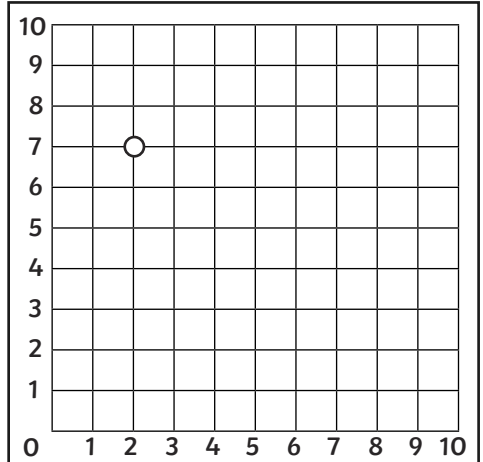
(,), (,).



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

Complete the drawing and write the missing coordinates:

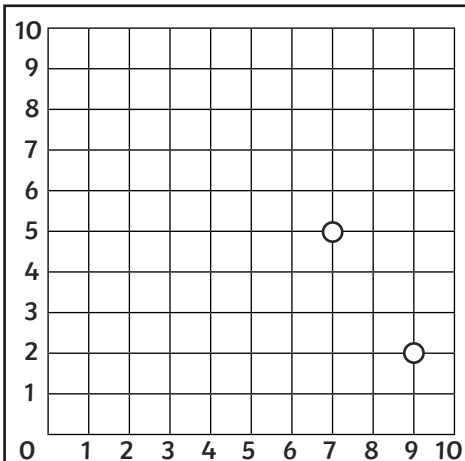
(,), (,).



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

Complete the drawing and write the missing coordinates:

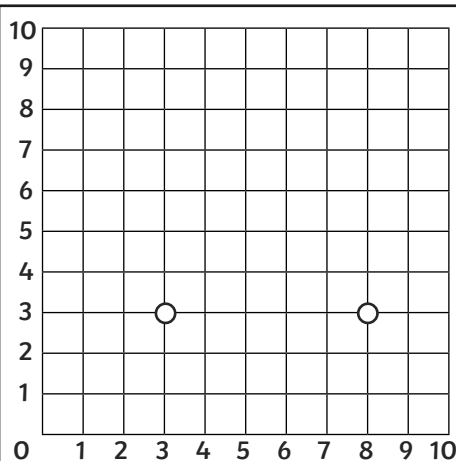
(,), (,).



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

Complete the drawing and write the missing coordinates:

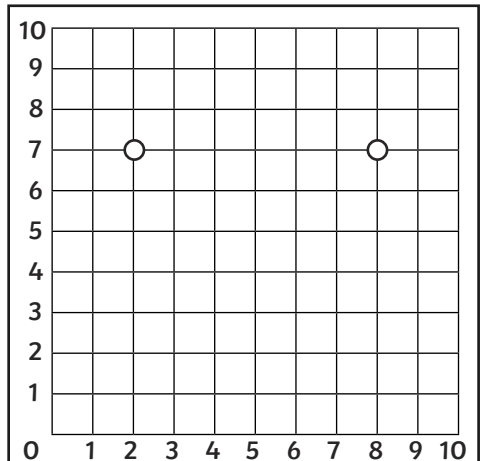
(,), (,).



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

Complete the drawing and write the missing coordinates:

(,), (,).



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

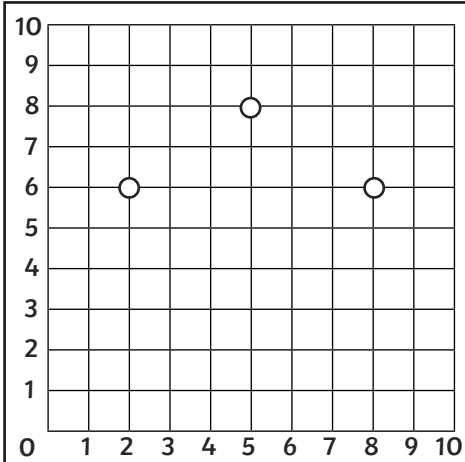
Complete the drawing and write the missing coordinates:

(,), (,).



Missing Coordinate Polygons

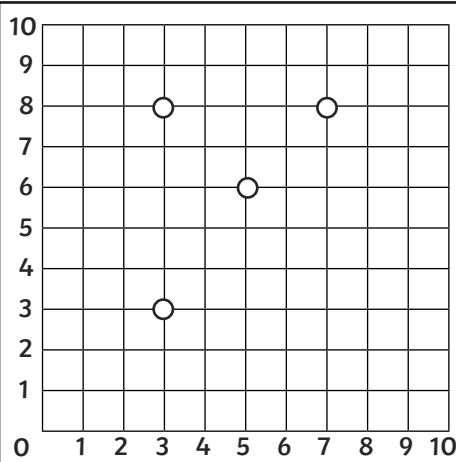
I can identify and plot missing coordinates of polygons on a 2D grid.



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

Complete the drawing and write the missing coordinates:

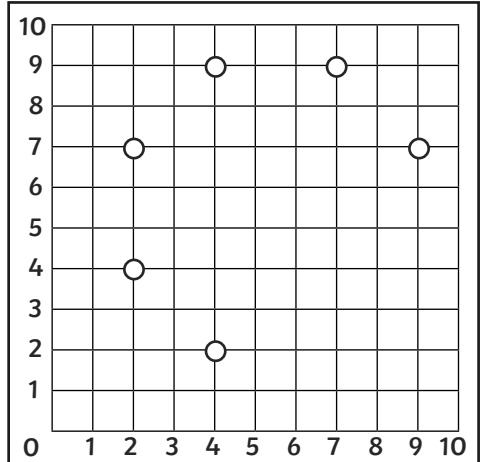
(,), (,).



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:

(,), (,).

- 1) *Any answers that plot to make the correct 2D shape.*
- 2) *A kite.*



- 1) *Disagree because the missing vertex is (6,4).*
- 2) *This is correct. Children may prove this by drawing a square with the coordinates (0,0), (4,0), (4,4) and (0,4).*



- 1) *Multiple answers possible.*
- 2) *Answers may vary. Accept any triangles that children work out the coordinates for and plot correctly.*



1) Write down a set of coordinates to plot the following shapes on the coordinate grid:

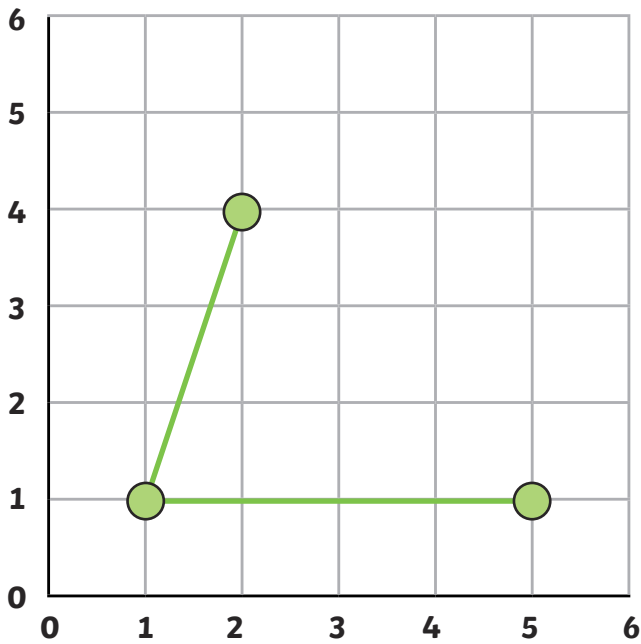
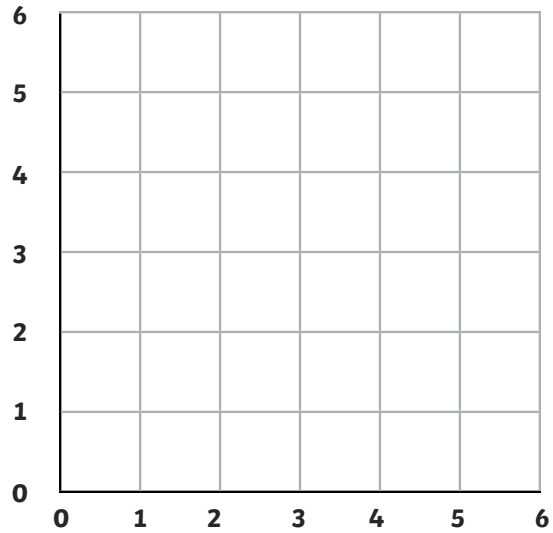
a) Triangle = _____

b) Rectangle = _____

c) Square = _____

2) What is the name of the 2D shape made when these coordinates are plotted?

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



1)



To complete this drawing of a parallelogram, I need to plot the coordinate (4,6).

Do you agree? Explain your reasoning.

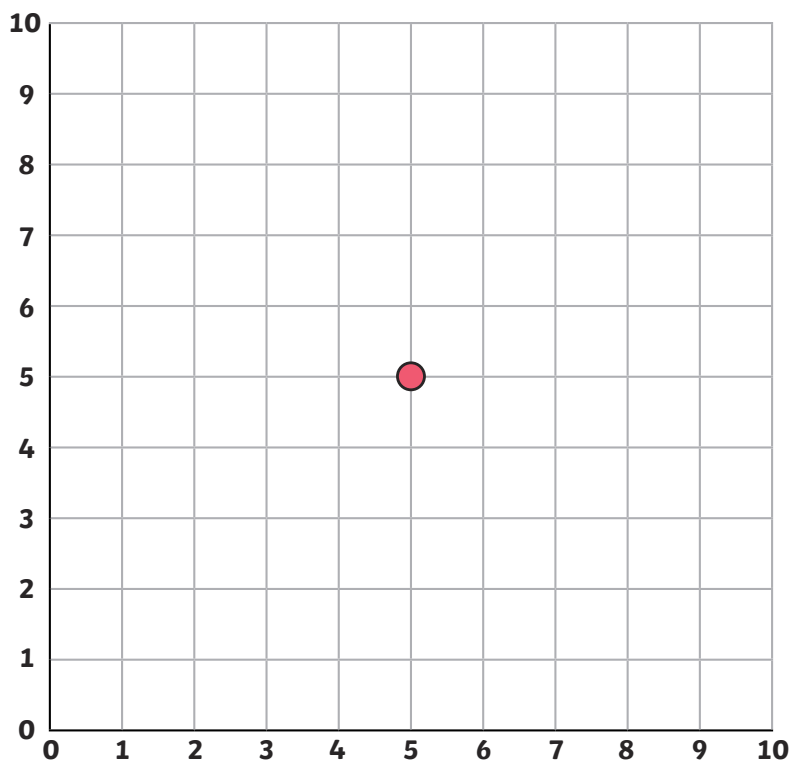


2)

I plot these coordinates to draw a square: (0,0), (2,0), (2,2), (0,2). If I want to draw another square twice as big, I can just double every number in the coordinates.



Prove if this is correct.



The coordinate point (5,5) is a shared vertex of three right-angled triangles of different sizes.

- 1) Draw three different right-angled triangles that share this vertex. For each triangle, plot the coordinates of their two other vertices.

First triangle: _____ Second triangle: _____ Third triangle: _____

- 2) Look at the numbers in the coordinates of the right-angled triangles you have drawn. Can you spot a pattern? Write down the coordinates of a new right-angled triangle and then plot them on the grid to see if you have correctly made a right-angled triangle.

First coordinate: _____ Second coordinate: _____ Third coordinate: _____

1) Write down a set of coordinates to plot the following shapes on the coordinate grid:



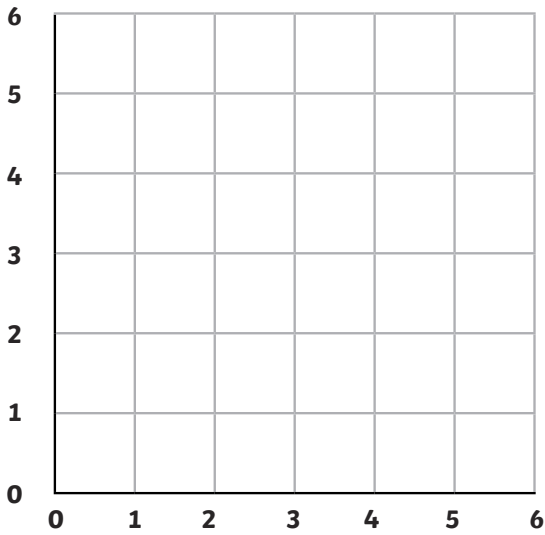
a) Triangle =

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



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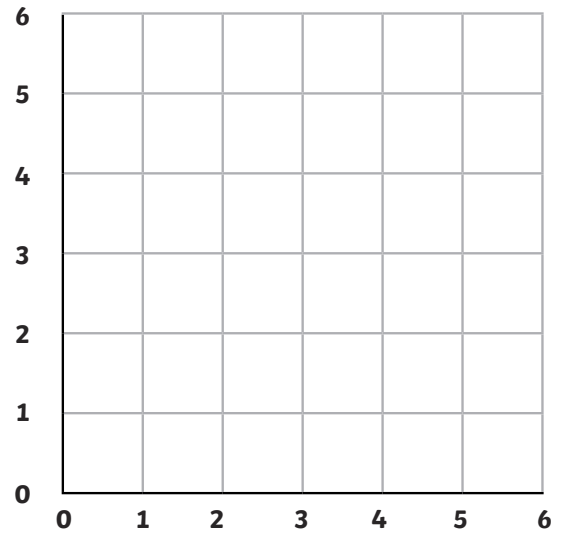
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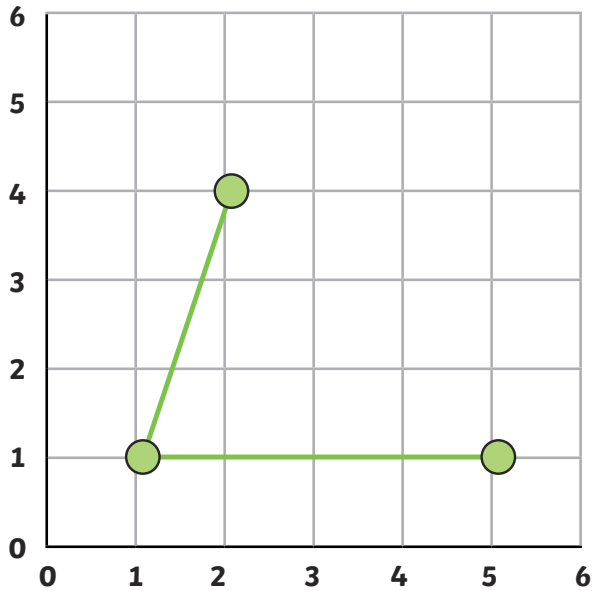


1)

To complete this drawing of a parallelogram, I need to plot the coordinate $(4,6)$.



Do you agree? Explain your reasoning.



2)

I plot these coordinates to draw a square: $(0,0)$, $(2,0)$, $(2,2)$, $(0,2)$. If I want to draw another square twice as big, I can just double every number in the coordinates.



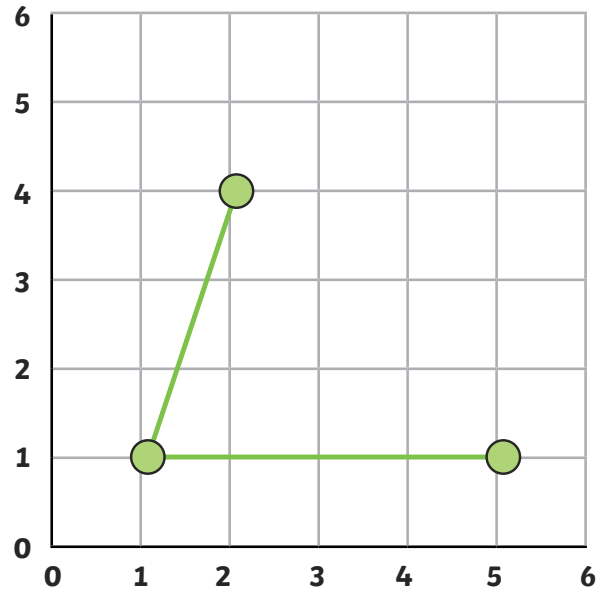
Prove if this is correct.

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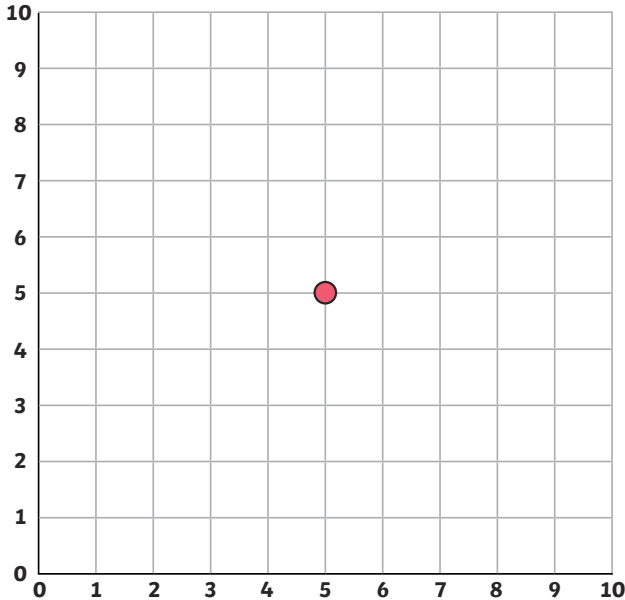


Prove if this is correct.

The coordinate point (5,5) is a shared vertex of three right-angled triangles of different sizes.



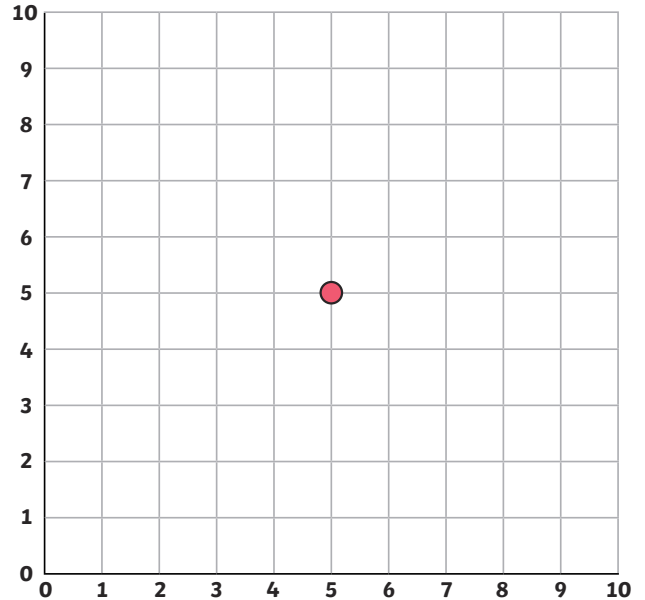
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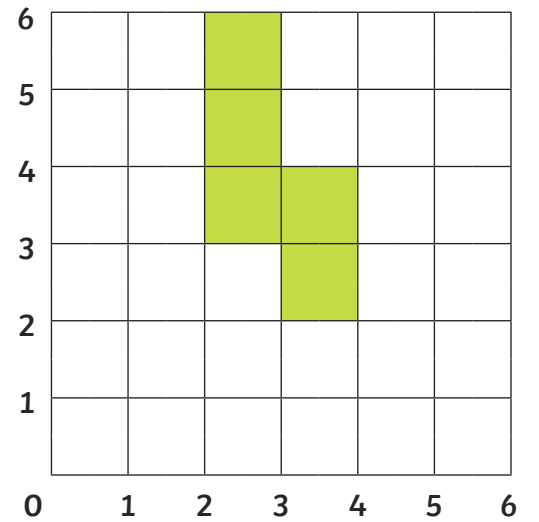
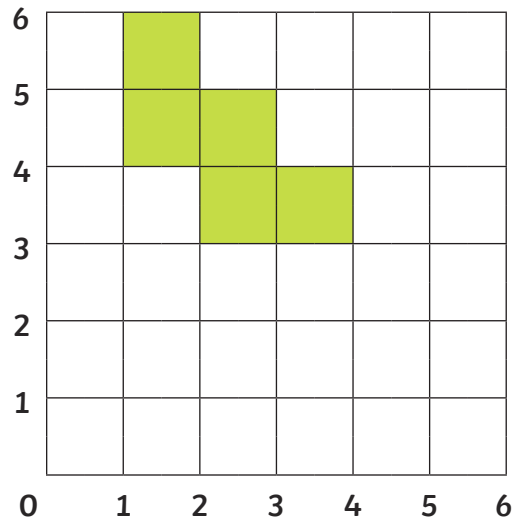
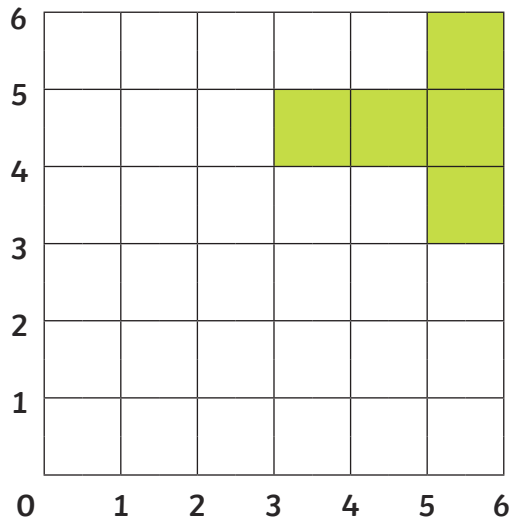
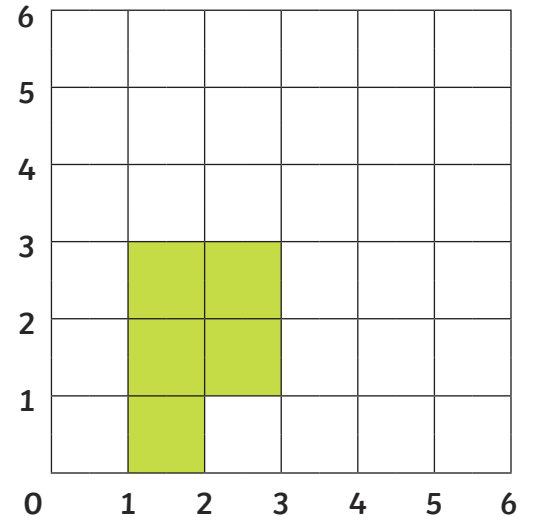
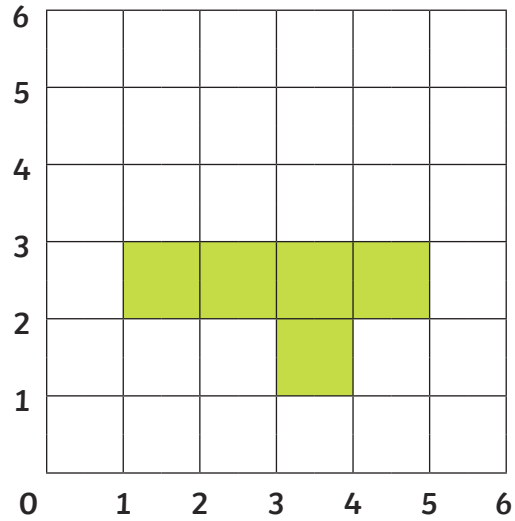
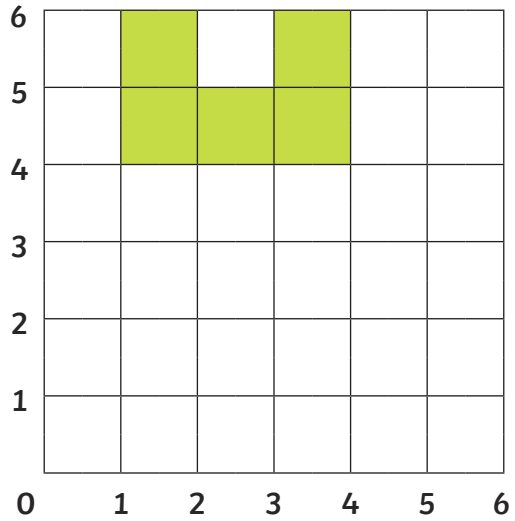


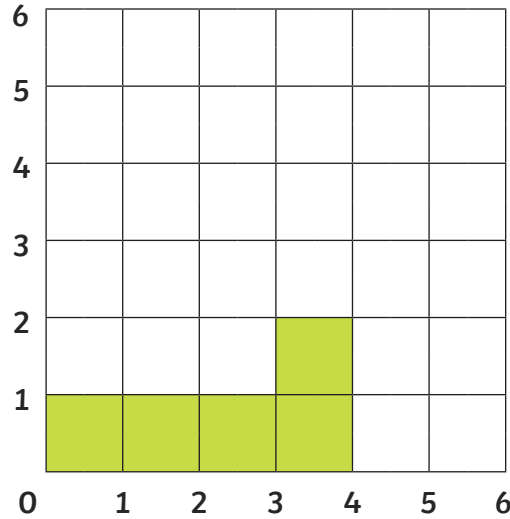
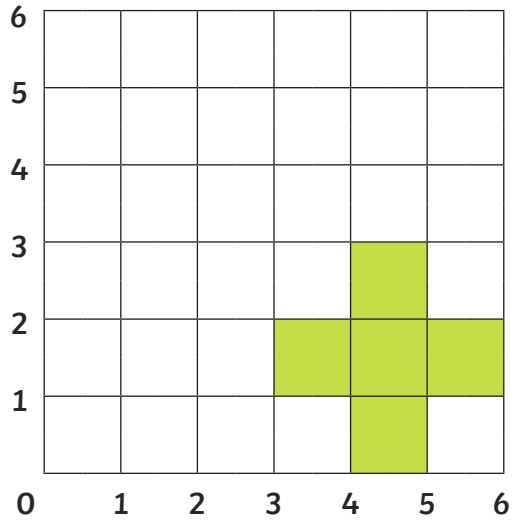
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(1,4) **(3,5)**
(4,4) **(2,5)**
(4,6) **(2,6)**
(3,6) **(1,6)**

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

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

(4,0)	(5,3)
(5,0)	(4,3)
(5,1)	(4,2)
(6,1)	(3,2)
(6,2)	(3,1)
(5,2)	(4,1)

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

Position and Direction | Missing Coordinate Polygons

I can 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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