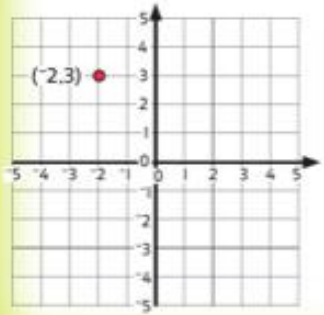
Unit 6

Geometry – position and direction

In this unit we will ...

- Look at how we can use coordinates to describe the position of a point on a grid
- Look at how coordinates can have positive or negative values
- Explore how we can use our knowledge of properties of shape to help us solve problems on a coordinate grid
- Explore how we can move and change shapes on a coordinate grid, through translations and reflections

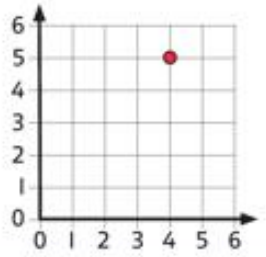


We are going to use grids like this in this unit. How is it different to what you have met before?

We will need some maths words. Which ones have you seen before?

quadrant	four quadrants		translate
translation	*x*-axis	*y*-axis	axis
axes	horizontal	vertical	
vertex	reflect	reflection	

We will need this too! Can you work out how we could describe the position of the point on the grid?



Plotting coordinates in the first quadrant

Discover

1 **a)** The points A, B and C are vertices of a square. The treasure is at the missing vertex, point D.

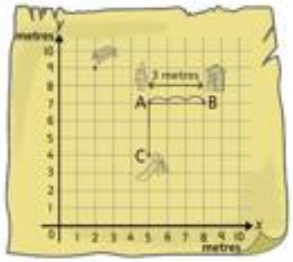
What coordinates take you to the treasure?

b) What is the perimeter of the square?

Unit 6: Geometry – position and direction, Lesson 1

Share

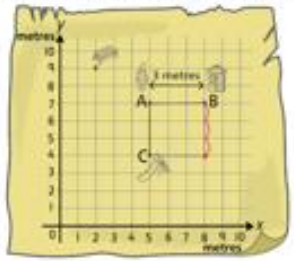
a) B(8,7) is 3 metres away from A(5,7).



The horizontal axis is called the *x*-axis. The vertical axis is called the *y*-axis. The *x*-axis is always given first in a set of coordinates.

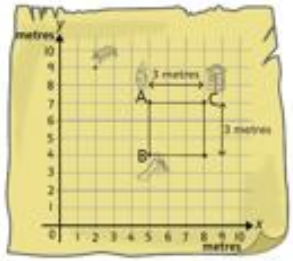
I will count how many metres point B is from point A. The missing point will be the same distance from B but downwards.

Counting 3 metres down from B(8,7) takes you to (8,4).
So D is (8,4), which is where the treasure is hidden.



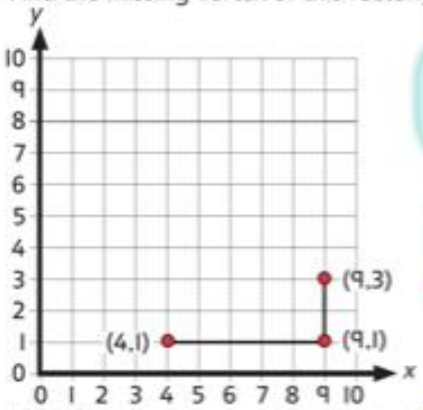
I could count across from C.

b) The length of each side is 3 metres.
Therefore the perimeter is 3 × 4 = 12 metres.



Think together

1 **a)** Find the missing vertex of this rectangle.

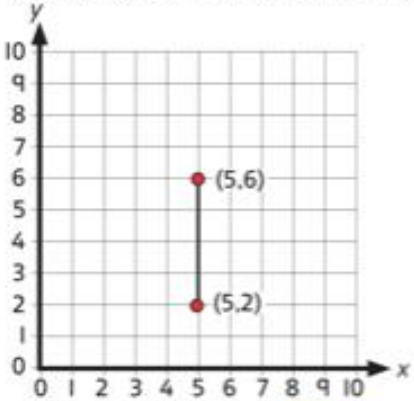


I could count up from one vertex or across from another to find the missing vertex.

The missing vertex is at coordinates (☐, ☐).

b) This line is part of a square.

What could two other vertices of the square be?

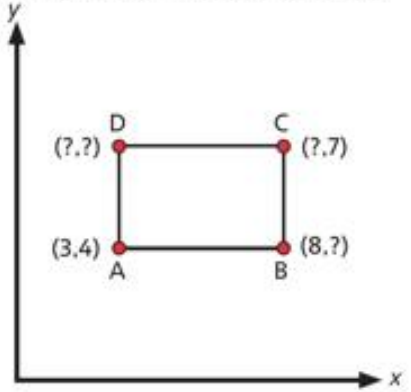


I think there is more than one correct solution.

One vertex could be at (☐, ☐).

Another vertex could be at (☐, ☐).

2 Point A of a rectangle is at (3, 4).
Work out the missing coordinates.



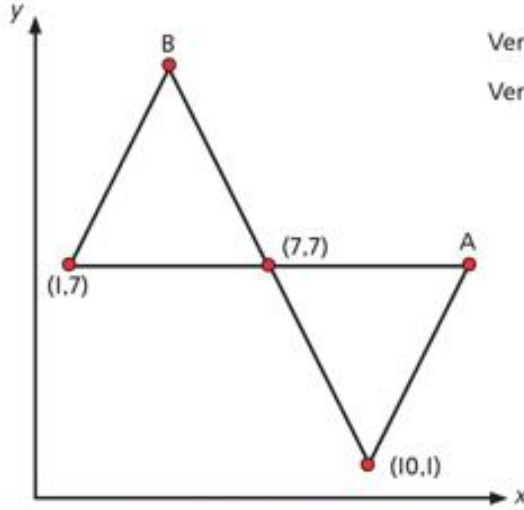
B (8, ☐)

C (☐, 7)

D (☐, ☐)

3 There are two identical isosceles triangles.
What are the coordinates of vertices A and B?

CHALLENGE



Vertex A (☐, ☐)

Vertex B (☐, ☐)

→ Practice book 6A p155

Now you have four options for your task –

Number 1 (aka the bog-standard option)

Turn in your Power Maths Book A to page 155 and work your way through as much as you can of pages 155, 156 and 157. Keep looking back at the teaching above to help you if you get stuck. You can also use your maths revision guide to have a look at some extra info for this. And, if you're really stuck, you can send me an email on Purple Mash or a message on dojo.

Number 2 (aka the much better option)

Make your own treasure map like the one in the lesson for your bedroom, lounge or garden. You'll have to do some measuring, divide your space up into equal size squares (maybe with tape/string/chalk/laying out spaghetti?!), then work out the co-ordinates for each square. Then, do some drawing and create some questions. Have some fun ☺ Share pictures of your efforts via the blog if you can.

Number 3 (aka the tech-savvy option)

Make your own treasure map/co-ordinates grid using some kind of computer game (can you do this sort of thing on minecraft?) or maybe take a photo of your room and add gridlines over the top. Then share with your friends on the class blog. You could make up some co-ordinate questions to go with your picture and challenge each other.

Number 4 (aka the whole-hog option)

Do option 1 *and* option 2 *and* option 3