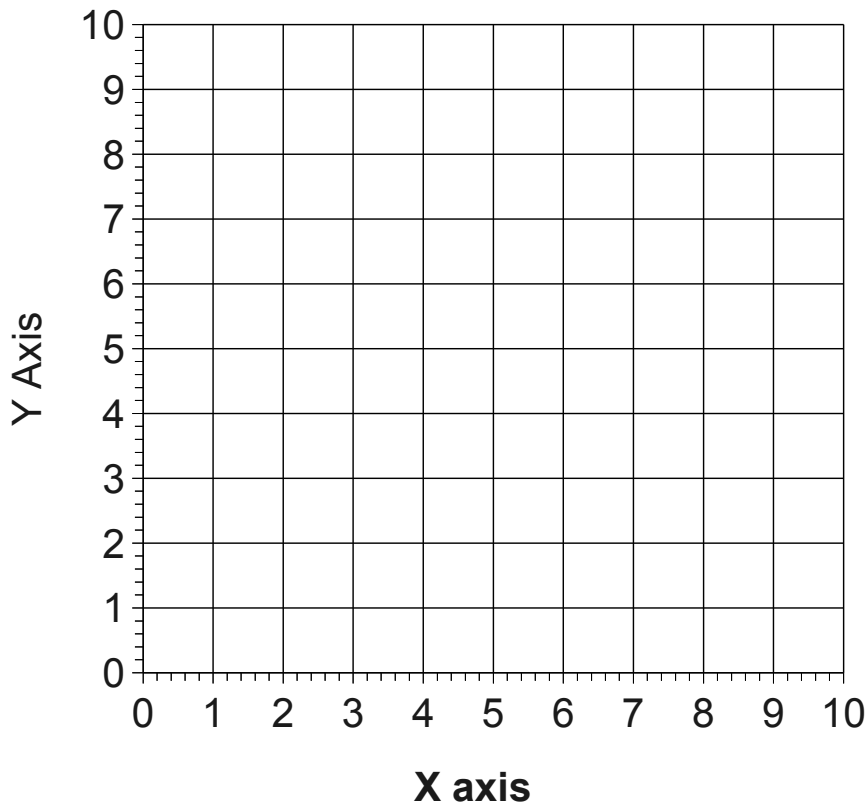


# Graphs 1: Plot Coordinates

- A point is represented by two coordinates like this: (3, 4)
- Points are often given capital letters, lets call (3, 4) the point A
- You plot A (3,4) by 'walking along the corridor' to 3 on the X axis and 'going up the stairs' to 4 on the Y axis
- Plot A on the axes below...

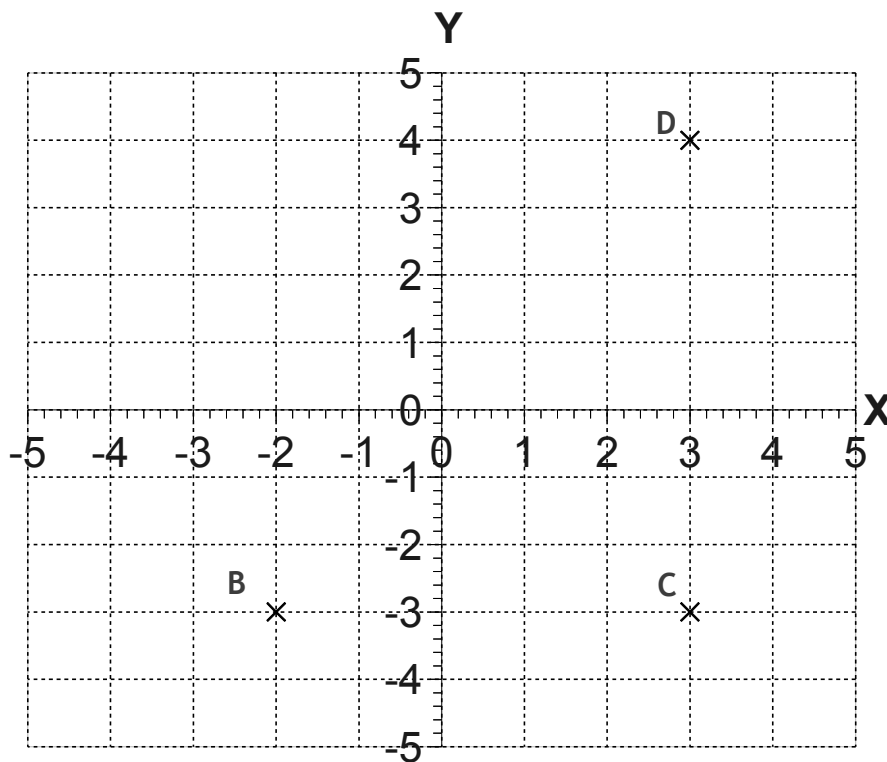


On the same axes plot

- The point B with coordinates (7, 6)
- Draw the line AB with a ruler
- By eye, make a cross at the point that is half way between A and B and on the line AB. Call that point M for midpoint
- Write down the coordinates of M
- Compare the X coordinates of A and B. Can you see where the X coordinate of M could be calculated from the X coordinates of A and of B?
- Test your idea out by comparing the Y coordinates of A and B. Can you see how the Y coordinate of M could be calculated?

## Negative coordinates

- Negative numbers revision: what is half way between  $-3$  and  $+5$ ?  
Ask me for a number line printout if you get stuck
- You can have negative X and Y coordinates
- The graph grid looks like the one below...



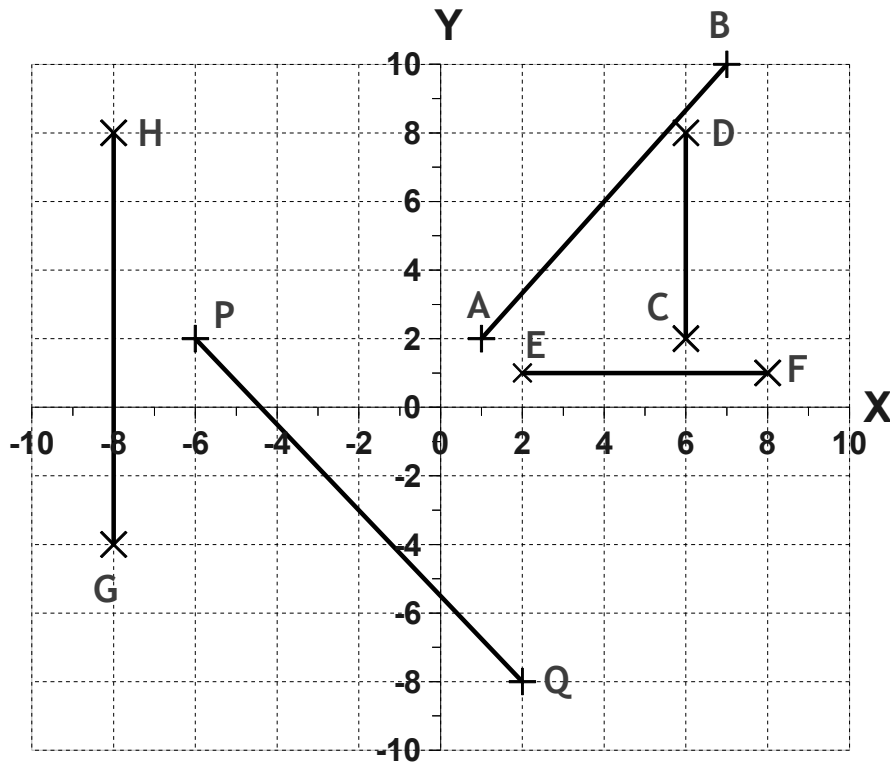
1. Write down the coordinates of the points B, C, D
2. There is a missing point A which makes a rectangle with the other three points. Can you plot where A has to be? What are its coordinates?
3. Draw the line BD and then the line AC. Where they cross is the centre of the rectangle. Write down the coordinates of that point  
Hint: coordinates may involve fractions
4. Can you calculate the coordinates of the centre of the rectangle by finding the midpoint of (say) BD?

## Summary

Coordinates always have the X number first and the Y number second

You can draw a line between two points. The midpoint is the point half way along the line. You can find the mean of the X coordinates of the points and the mean of the Y coordinates of the points to find the coordinates of the midpoint.

# Practice on Coordinates and Midpoints



## Question 1

For each line on the grid, you need to

- Write down the coordinates of the end points
- Work out the coordinates of the midpoints using a calculation
- Plot your calculated midpoint and compare it with what you estimate by eye
- Ask if you get stuck with the negative number ones

## Question 2

Make your own axes on some squared paper.

- Plot the points A (3, 5) and B (3, 10) and calculate the coordinates of the midpoint. Plot the points and check your answer
- Plot the points C (-3, 2) and D (2, -3). Calculate the coordinates of the midpoint. Plot the points and check your answer
- Plot the points E (-4, -5) and F