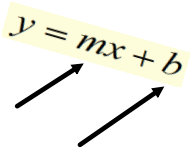
2.1 Midpoint and Review of y = mx + b

Remember...

To write the equation of a line you need:



- *Perpendicular* lines have slopes that are _____.
- *Parallel* lines have the _____ slope.
- Given two points, find slope using:
- Use _____ point on the line to substitute into the equation, along with ____, to find ____.
- *Same x-int* means find the *x*-int by substituting _____, then use this point, _____, as a point on the line to find _____.

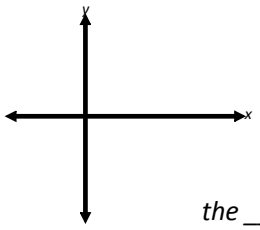
Examples: Find the equations of the following lines:

a) passes through C(3,-4) and D(-1,7)

b) perpendicular to $4x + 3y - 7 = 0$ with the same *x*-intercept as $2x + 3y - 12 = 0$

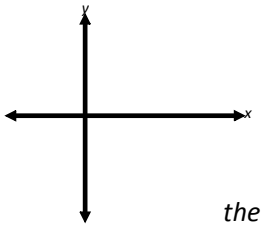
SPECIAL CASES: Horizontal & Vertical Lines

c) a vertical line passing through (-3,5)



the ____-coordinate is always ----___

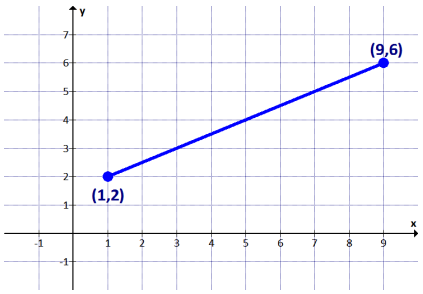
d) a horizontal line passing through (7,-2)



the ____-coordinate is always ----___

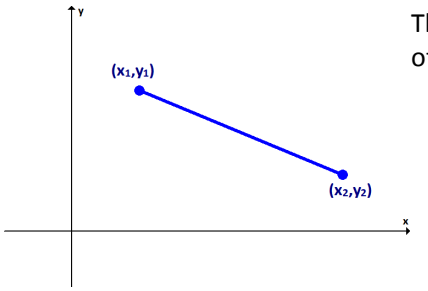
The Midpoint

Notation: _____ is used for midpoint. Remember that _____ denotes slope!



What are the coordinates of the midpoint of segment AB?

How can you determine the midpoint <u>algebraically</u> given the coordinates of the endpoint?



The coordinates of the midpoint of a line segment are:

<u>Ex. 1</u> Find the midpoint of the line segment AB where A(2,-4) and B(-3,5).

<u>Ex. 2</u> C(4, -3) is the midpoint of a line segment with endpoints A(7, 5) and B.
Determine the coordinates of B.

<u>Ex.3</u> The diameter of a circle has endpoints A(4, -3) and B (-3, 5).
Find the centre of the circle.