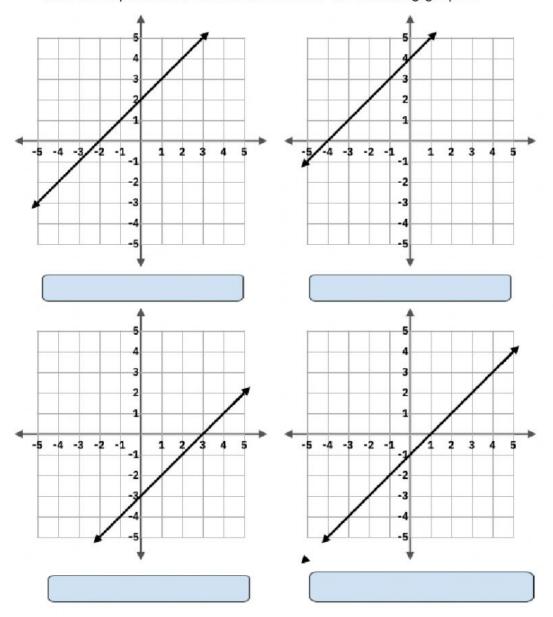
Straight Lines graphs

Directions to find the equation of the line: y = mx + c

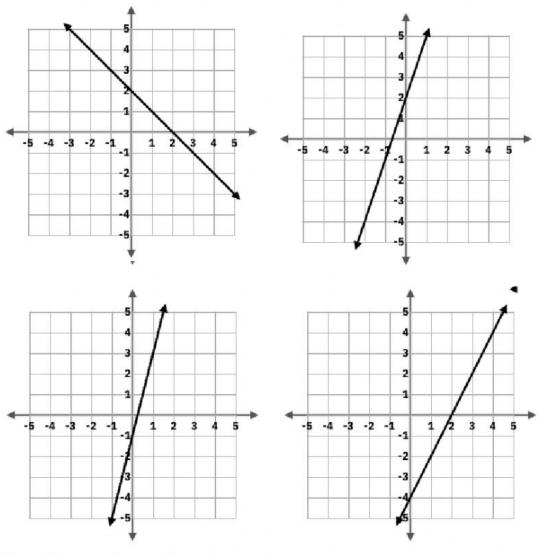
- To find the gradient (m) of the slope we use the formula rise ÷run
- To find the intercept (c) we look where the lines crosses the y axis

Find the equation of the line for each of the following graphs:

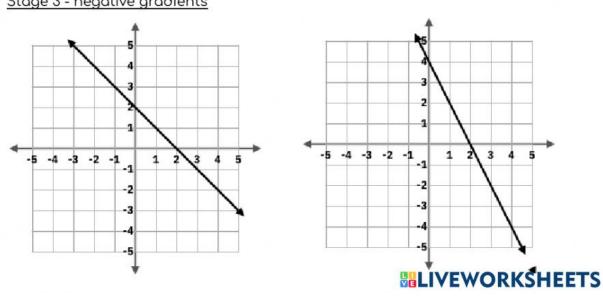




Stage 2 - different gradients - write your answers underneath the graph



Stage 3 - negative gradients



Drawing graphs - We need to be able to plot straight line graphs.

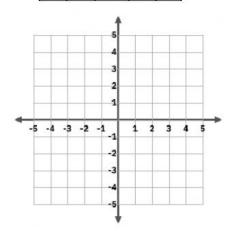
For example y = x + 2

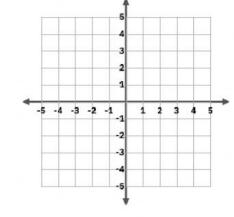
This means the y coordinate is equal to whatever the x coordinate is plus 2 more.

If the x coordinate is 3 then y is 3+2=5. So we would plot the coordinate (3,5)

1)
$$y = x + 1$$

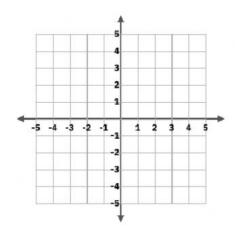
| x | -1 | 0 | 1 | 2 |
|---|----|---|---|---|
| У | | | | |



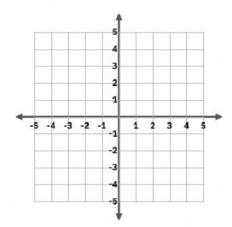


2) y = x - 1

3)
$$y = 2x + 2$$

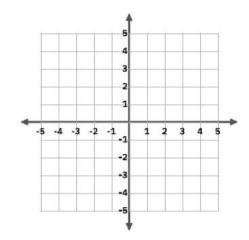


4)
$$y = 3x - 1$$



Challenge question Draw the graph of $y = x^2 + 2x + 3$

| x | -1 | 0 | 1 |
|-------|----|---|---|
| x^2 | | | |
| +2x | | | |
| +3 | | | |
| y= | | | |



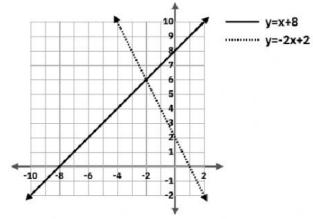
When given the equation of the line we can pick out the gradient (m) and the intercept (c - where the line crosses the y axis). The line should always follow the pattern y=mx + c. If it does not follow this pattern we need to rearrange the equation until it does.

Easy y = 4x - 5m= C= y=3x +1m= C= Medium y=2xm= C= y = 2 - 3xm= C= Hard 2y=4x+14 m= C= 3y=2x +12m= C=

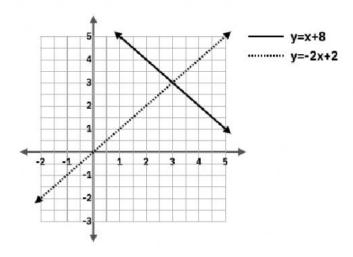
Simultaneous Equations - This is where two straight lines cross each other at a single coordinate. We can solve this using a graph or using algebra

These two lines cross at the Point (_______, _____)

x=____



Solve these simultaneous equations graphically



Simultaneous equations using algebra:

- Look to see if either the x or the y values are the same
- If they are look at the sign (+/-) in front of the them
- If the sign is the same i.e. both + or both then SUBTRACT the equations
- If the signs are different i.e. one and one + you ADD

Solve the simultaneous equations - same coefficient (letter before y)

1.
$$4x + 2y = 10$$

 $x + 2y = 7$

$$3.5x - 2y = -23$$

 $5x - 6y = -39$

3.
$$4x + 2y = 10$$

 $4x + 8y = 28$

Medium

If the values before x/y are not the same then we need to multiply the one of the equations until they are

$$5x + 2y = 11$$

 $3x - 4y = 4$

Hard

Sometime we may need to multiply both equations before we can start

$$3x + 5y = 13$$

$$2x + 2y = 6$$

