

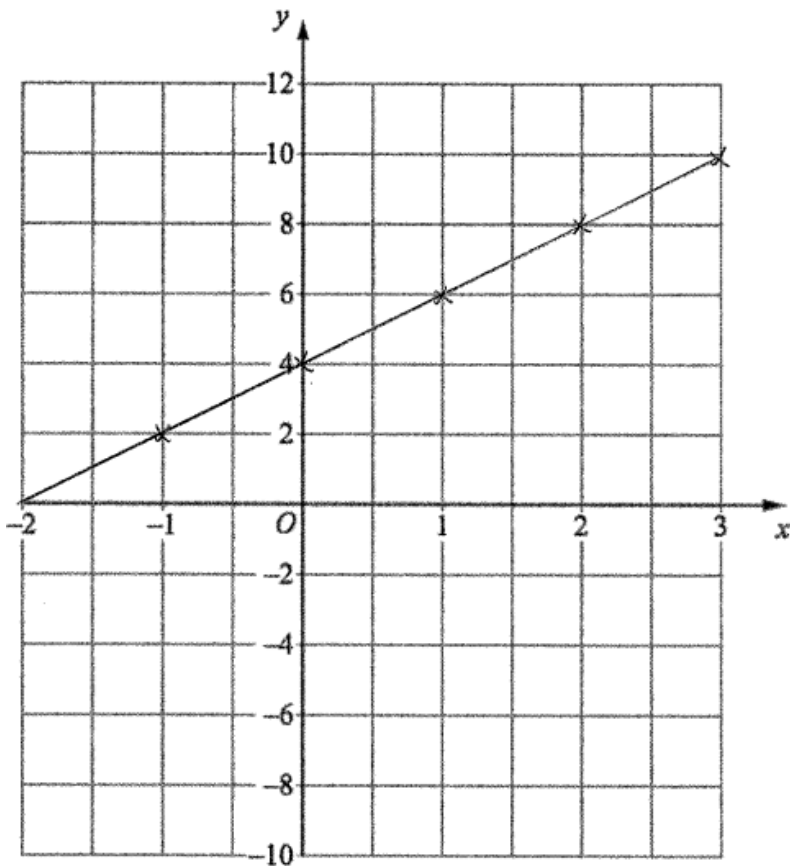
Y9H U4&5 Linear Graphs – Knowledge Organiser

Draw linear graphs

a) Complete the table of values for $y = 2x + 4$.

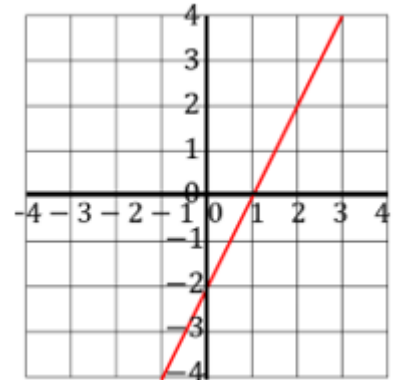
x	-1	0	1	2	3
y	2	4	6	8	10

b) On the grid, draw the graph of $y = 2x + 4$ for values of x from -1 to 3.



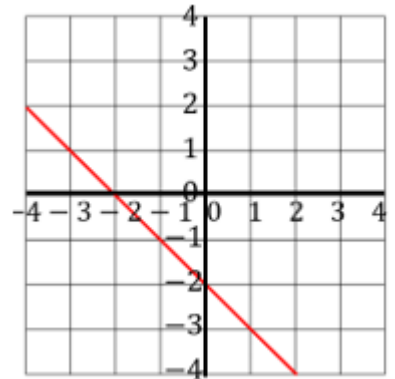
Write the equation of the straight lines in the form $y = mx + c$

a)



Equation: $y = 2x - 2$

b)



Equation: $y = -x - 2$

Find the equation of a line from two points.

Line L passes through points A (2, 5) and B (4, 9).

a) Find the gradient

$$\frac{4}{2} = 2$$

b) Find the y-intercept

$$y = 2x + c$$

At point A: $5 = 2 \times 2 + c$

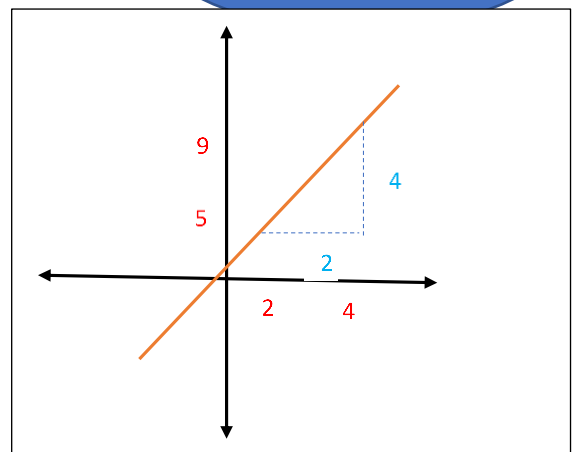
$$5 = 4 + c$$

$$c = 1$$

c) Write in the form $y = mx + c$

$$y = 2x + 1$$

Hint: sketch the line



Y9H U4&5 Simultaneous Linear Equations – Knowledge Organiser

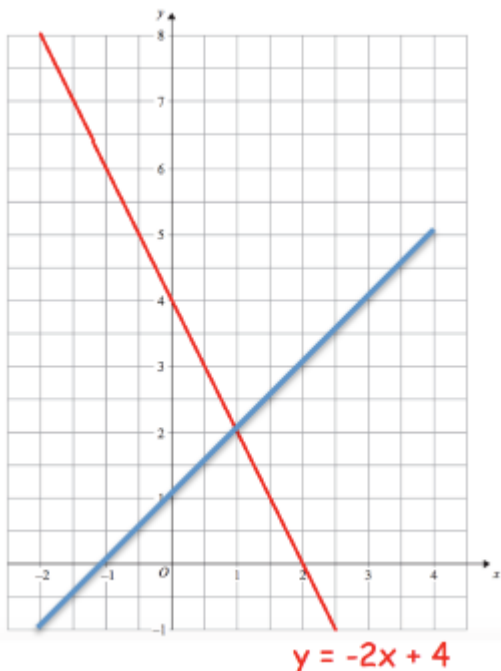
Solve graphically: **find the point of intersection (x,y values) of two straight lines**

Solve algebraically: **find a common solution (x, y values) through elimination or substitution**

Solving graphically

The straight line $y = -2x + 4$ has been drawn on the grid.

a) on the same grid, draw the graph of $y = x + 1$



b) Use the graphs to solve the simultaneous equations:

$$\begin{aligned}y &= -2x + 4 \\y &= x + 1\end{aligned}$$

Solution: $x = 1, y = 2$

Solve the following simultaneous equations through elimination

$$x + 3y = 13$$

$$x + y = 7$$

a) Eliminate one variable

$$+3y = 13 - x + y$$

b) Substitute y into one equation

$$x + 3y = 13$$

$$x + 3 \times 3 = 13$$

$$x + 9 = 13$$

$$x = 4$$

c) Check using the other equation

$$x + y = 7$$

$$4 + 3 = 7 \quad \checkmark$$

d) State both answers

$$x = 4$$

$$y = 3$$

Hegarty

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Solving through substitution

$$x + 2y = 27$$

$$x = 3y + 7$$

a) $x + 2y = 27$

$$3y + 7 + 2y = 27$$

$$5y = 20$$

$$y = 4$$

b) $x = 3y + 7$

$$x = 3 \times 4 + 7$$

$$x = 19$$

c) $x = 3y + 7$

$$19 = 3 \times 4 + 7 \quad \checkmark$$