

Graphs of straight lines

Starter

- 1 **(Review of last lesson)** Two metals X and Y , of densities 23.8 g/cm^3 and 11.4 g/cm^3 respectively, are mixed to form an alloy. If 400 g of metal X and 250 g of metal Y are used, work out the density of the alloy to 3 s.f., stating the units clearly.

Horizontal and vertical straight line

Horizontal lines are of the form: $y = \text{"a number"}$ $x\text{-axis} \equiv y = 0$
 Vertical lines are of the form: $x = \text{"a number"}$ $y\text{-axis} \equiv x = 0$

2. Write down the equation of the line that:
 (a) is parallel to the x -axis and passes through $(2, 3)$
 (b) is parallel to the y -axis and passes through $(7, 5)$
3. Write down the coordinates where the following lines intersect:
 (a) $x = 8$ and $y = -4$ (b) $y = 7$ and $x = -3$

Notes

Two points are needed to define a straight line. However, when drawing a straight line it is useful to find a third point as a check.

Success criteria – drawing straight line graphs

1. Choose three x -values, for example $x = 0$ and two others.
2. Find the corresponding y -values by substituting in the equation of the line.
3. Plot the points.
4. Draw a line through the points.
5. Label the line on the diagram.

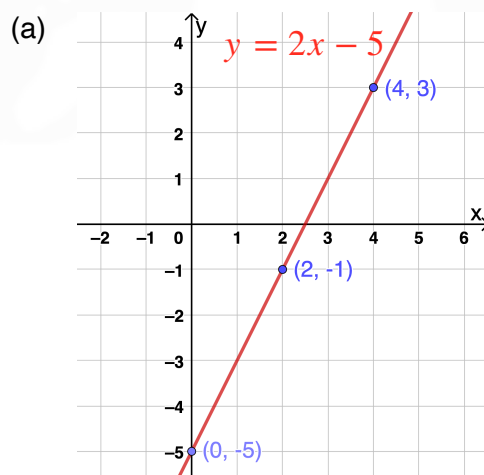
N.B. When choosing the points it is a good idea to choose points that are not too close together e.g. $x = 0, x = 2$ and $x = 4$

E.g. 1 Draw the following straight line graphs

- (a) $y = 2x - 5$ (b) $2y = 7x + 4$

Working:

(a)	$y = 2x - 5$		
	Let $x = 0$	$\Rightarrow y = 2 \times 0 - 5 = -5$	\therefore plot $(0, -5)$
	Let $x = 2$	$\Rightarrow y = 2 \times 2 - 5 = -1$	\therefore plot $(2, -1)$
	Let $x = 4$	$\Rightarrow y = 2 \times 4 - 5 = 3$	\therefore plot $(4, 3)$



Video:

[x equals graphs \(vertical\)](#)

Video:

[y equals graphs \(horizontal\)](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook: p183 M6.8 Qu 1-6
A*-G class textbook: p167 M6.8 Qu 1-9
9-1 homework book: p66 M6.8 Qu 1-5
A*-G homework book: p47 M6.8 Qu 1-5

Summary

Horizontal lines are of the form: $y = \text{"a number"}$

$x\text{-axis} \equiv y = 0$

Vertical lines are of the form: $x = \text{"a number"}$

$y\text{-axis} \equiv x = 0$

