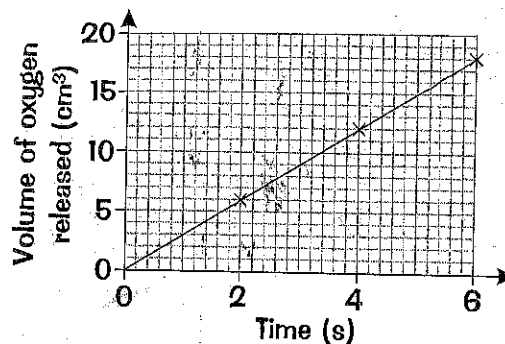


Linear Graphs

A linear graph is a straight line graph. The variable on one axis increases or decreases along with the variable on the other axis — so this gives a straight line. You can write the line as an equation...

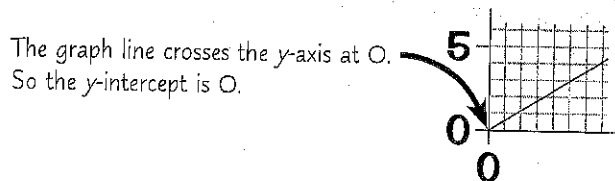
Example

The graph shows the volume of oxygen released in a chemical reaction over time. Write the equation of the graph line in the form $y = mx + c$.



- 1 Find the y -intercept of the line — this is ' c ' in the equation.

The y -intercept is the point where the line crosses the y -axis.

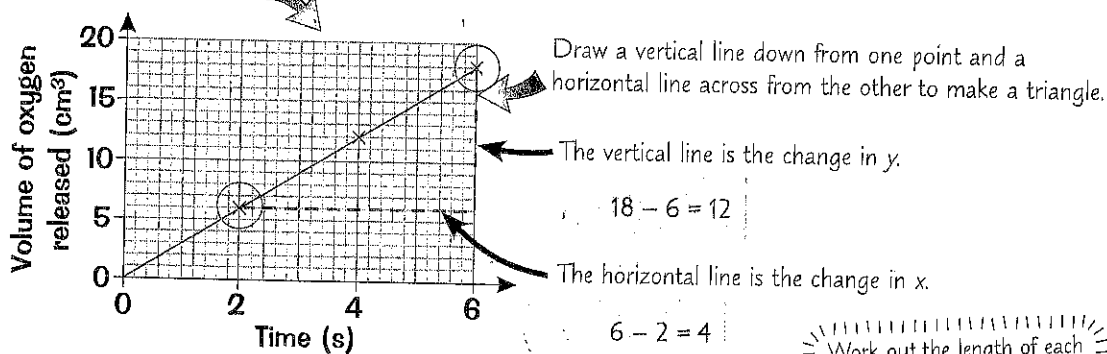


The x -intercept is where the line crosses the x -axis.

- 2 Find the gradient of the line — this is ' m ' in the equation.

Calculate the gradient by dividing the change in y by the change in x : $\text{gradient} = \frac{\text{change in } y}{\text{change in } x}$

Pick two points on the line that are easy to read and a good distance apart. Here, (2,6) and (6,18) are easy to read.



Work out the length of each side of the triangle using the scales on the axes.

Now pop these into the formula for the gradient.

$$\text{gradient} = \frac{\text{change in } y}{\text{change in } x} \Rightarrow \text{gradient} = \frac{12}{4} = 3 \quad \text{So the gradient is 3.}$$

- 3 Put it all together in the $y = mx + c$ equation.

The gradient (m) is 3.

$$y = 3x$$

The y -intercept (c) is 0. So it doesn't need to be in the equation.

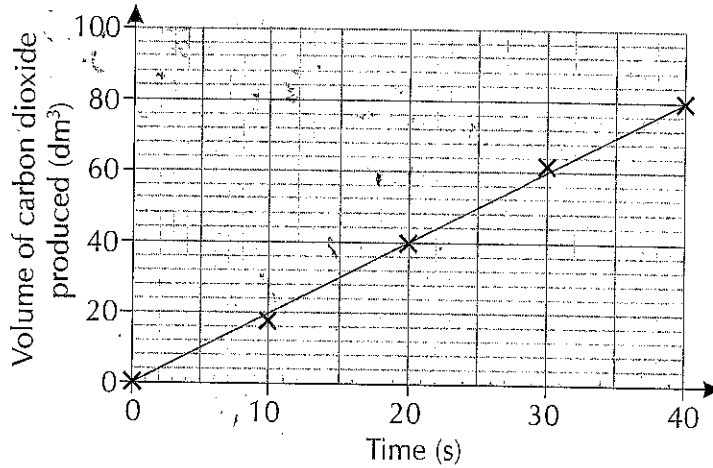
So the equation of the line is $y = 3x$.

Linear Graphs

You go now at some questions on linear graphs. If, by the end of the page, you're sick of straight lines, draw a big squiggly one. (I'd advise getting a sheet of scrap paper, rather than using the wall.)

Q1 The graph below shows how the amount of carbon dioxide produced changes during the first 40 seconds of a reaction.

CHEMISTRY



a) Give the value of the y intercept.

.....

b) Calculate the gradient of the line.

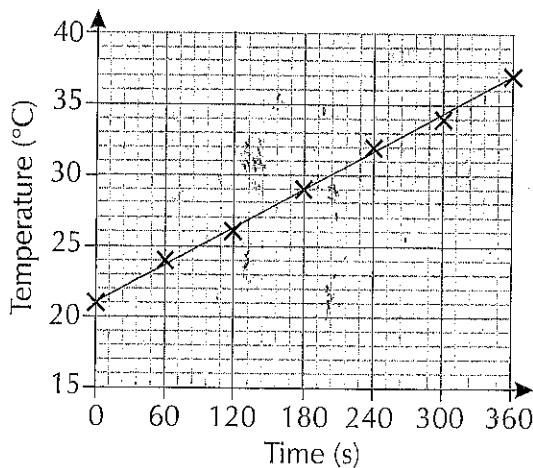
.....

c) Write the equation of the graph line in the form $y = mx + c$.

.....

Q2 The graph shows how the temperature of a reaction changed over time. Write the equation of the graph line in the form $y = mx + c$.

CHEMISTRY



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