



Drawing Straight Lines on Graphs Using Equations

KS3 MATHS Ages 11-14 ⌚ 3 min read

What's an Equation?

An **equation** is like a recipe that tells you how two things are connected. In maths, we often use **equations** to show how one number depends on another. For example, $y = 2x + 1$ is an equation that tells you how to find y if you know x .

Think of it like a vending machine: you put in money (that's your x), and the machine gives you snacks (that's your y). The equation is the rule inside the machine that decides what you get.

Finding Points for Your Graph

To draw a straight line, you need to find several **points** (pairs of numbers) that fit your equation. You do this by choosing different values for x and working out what y will be.

Let's use $y = 2x + 1$ as our example. If $x = 0$, then $y = 2(0) + 1 = 1$. So one point is $(0, 1)$. If $x = 1$, then $y = 2(1) + 1 = 3$. So another point is $(1, 3)$. If $x = 2$, then $y = 2(2) + 1 = 5$. That's point $(2, 5)$.

Plotting the Points

Now you have your points, it's time to draw your **graph**. Draw two lines that cross each other at right angles — a vertical line called the **y-axis** and a horizontal line called the **x-axis**. These lines help you place your points in exactly the right spot.

Mark each point where it belongs on your graph. For $(0, 1)$, go along the x-axis to zero, then up to one. For $(1, 3)$, go along to one, then up to three. Do the same for all your points.

Think of it like treasure hunting on a map: the x-axis tells you how far across to go, and the y-axis tells you how far up to go. Each point is like marking where treasure is buried.

Drawing the Line

Once all your points are plotted, use a ruler to draw a straight line through them. This line shows every possible answer to your equation. Any point on this line will be a true solution — if you pick any x value on the line and find the matching y value, they'll fit your equation perfectly.

This is why **equations with straight lines** are called **linear equations** — the word 'linear' means 'related to lines.' Not all equations make straight lines (some make curves!), but these special ones do, and they're useful for spotting patterns in real life, from how fast a car is going to how much pocket money you'll have after saving for weeks.