Working Out the Chance Something Will Happen

KS3 MATHS Ages 11-14 ⏰ 3 min read

What is Probability?

Probability is a way of measuring how likely something is to happen. It helps us understand whether an event is almost certain, very unlikely, or somewhere in between. We use probability every day without realising it—when we check the weather forecast, play games, or think about winning a prize.

Instead of just guessing, mathematicians use a special formula to work out exact probabilities. This makes predictions more reliable and fair.

The Basic Formula

The key to calculating probability is this simple idea: **divide the number of ways something can happen by the total number of possible outcomes**.

The formula is: **Probability = Number of Favourable Outcomes ÷ Total Number of Possible Outcomes**

Let's use a coin flip as an example. When you flip a coin, there are **2 possible outcomes**: heads or tails. If you want heads, there's **1 favourable outcome**. So the probability is **1 ÷ 2 = 0.5**, or **50%**—equally likely either way.

Think of it like a bag of coloured marbles. If your bag contains **3 red marbles and 7 blue marbles** (10 total), the probability of picking red without looking is **3 ÷ 10 = 0.3**, or **30%**. Blue is more likely because there are more blue marbles.

Understanding the Numbers

Probabilities are always between **0 and 1**. A probability of **0** means something is impossible—it will definitely not happen. A probability of **1** means something is certain—it will definitely happen. A probability of **0.5** means it's equally likely to happen or not happen.

You can also write probability as a **percentage** (multiply by 100) or a **fraction**. So **0.5 = 50% = 1/2**.

Real-World Examples

Rolling a fair dice has **6 possible outcomes** (1, 2, 3, 4, 5, or 6). The probability of rolling a **3** is **1 ÷ 6 ≈ 0.17**, or about **17%**. The probability of rolling **an even number** (2, 4, or 6) is **3 ÷ 6 = 0.5**, or **50%**.

Think of it like a raffle. If **500 tickets** are sold and you buy **5 tickets**, your probability of winning is **5 ÷ 500 = 0.01**, or **1%**. Pretty small!

Why This Matters

Understanding probability helps us make better decisions. Weather forecasters use probability to predict rain. Insurance companies use it to set prices. Scientists use it to understand how likely diseases are to spread. By learning this skill now, you're developing real-world problem-solving abilities that experts use every single day.