Finding the Probability of Two Events Together

KS4 MATHEMATICS PROBABILITY Ages 11-16 ⏰ 3 min read

What Does Probability Mean?

Probability is just a fancy word for the chance that something will happen. If you flip a coin, there's a **50% chance** it lands on heads and a **50% chance** it lands on tails. But what happens when you want to know the chances of **two things happening together**?

The Basic Rule: Multiply the Probabilities

Here's the secret: when you want to find the probability of two **independent events** (things that don't affect each other) happening together, you **multiply** their individual probabilities.

Let's say you roll a dice and flip a coin at the same time. The chance of rolling a **6** is **1 in 6** (or about **17%**). The chance of getting heads is **1 in 2** (or **50%**). What's the chance of getting **both** a 6 AND heads? You multiply: **1/6 × 1/2 = 1/12**. That's about **8%**!

Think of it like making a sandwich. You need **two things** to happen: finding the bread in your kitchen (say **80% chance**) AND finding the peanut butter (say **90% chance**). To make your sandwich, both must happen, so multiply: **0.8 × 0.9 = 0.72**, or **72% chance** you can make it.

An Important Word: Independent

This rule only works when the two events are **independent**. That means one event doesn't change the chances of the other. Flipping a coin doesn't change what happens when you roll a dice—they're independent. But if you're picking two cards from a deck without putting the first one back, they're **not independent**, because your first pick changes what's left in the deck!

Real-Life Examples

Imagine you want it to **rain tomorrow** (**40% chance**) AND you want your favourite team to **win their match** (**60% chance**). The probability of both happening is **0.4 × 0.6 = 0.24**, or just **24%**. That's why it's rare for everything to go perfectly at once!

Understanding this helps explain why unusual things rarely happen together. The more events you add, the smaller your chances become. This idea shapes everything from **weather forecasting** to **medical testing** to **sports predictions**.

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