Finding the Probability of Two Things Happening Together

KS3 Ages 11-14 ⏰ 3 min read

What is Probability?

Probability is the chance that something will happen. If you flip a coin, the probability of getting heads is **1 in 2**, or **50%**. But what happens when you want to know the chance of **two things happening together**? For example, what's the chance of flipping a coin and getting heads **AND** rolling a dice and getting a 6?

The Multiplication Rule

The secret to finding the probability of two independent events happening together is called the **multiplication rule**. This rule says: multiply the probability of the first event by the probability of the second event.

Here's the formula:

Probability of both events = Probability of event A × Probability of event B

Think of it like making a sandwich. You need to pick bread AND a filling. If there are 2 types of bread and 3 fillings, you multiply to find how many different sandwiches you can make: 2 × 3 = 6 combinations.

A Real Example

Imagine you're playing a game where you flip a coin and roll a dice. You want both a heads **AND** a 6.

The probability of getting heads is **1/2** (one way to win out of two possible outcomes).

The probability of rolling a 6 is **1/6** (one way to win out of six possible outcomes).

Using the multiplication rule: **1/2 × 1/6 = 1/12**. So you have a **1 in 12 chance** of getting both!

Think of it like picking two colored balls from bags. If one bag has 2 balls and one bag has 6 balls, and you need a specific ball from each bag, your chances get smaller because you're combining them together.

Why Does This Work?

The reason we multiply is that each event doesn't depend on the other. Getting heads on a coin doesn't change your chances of rolling a 6 on a dice. These are called **independent events**. When you multiply the probabilities, you're finding how likely it is for both rare events to happen in the same try.

Remember

This rule only works when the events are **independent** – meaning one event doesn't affect the other. Always multiply the individual probabilities together to find the probability of two things happening together!