Khan Academy

Probability: The Basics

Probability is simply how likely something is to happen.

Whenever we're unsure about the outcome of an event, we can talk about the base-rate probability of certain outcomes. Base-rate probabilities tell us the relative frequency that specific outcomes will occur.

If you've ever made a Frequency Distribution Table, you already know how to calculate base-rate probability. That's because **base-rate probabilities are relative frequencies**!

Let's compare the formula for base-rate probability and the formula for relative frequency:

The base-rate probability of an event = (# of ways it can happen) / (total number of outcomes)

The relative frequency of an event = (# of times that type of event occurs) / (total number of events)

The two formulas are the same!

A good example for understanding base-rate probability is flipping a coin. There are two possible outcomes: heads or tails.

What's the base-rate probability of the coin landing on heads? We can find out using the equation P(Heads) = ? You might intuitively know that the likelihood is half/half, 50%, or .500. But how do we work that out?

In this case, P(Heads) = 1/2 = 50% = .500. Heads can only happen once, and there are two possible outcomes (heads or tails).

So P(Heads) = 1 (the number of times heads can happen)/ 2 (the total possible outcomes). Simplified, P(Heads) = 1/2 = 50% = .500