

Probability

Probability is the measure of how likely an event is to occur. It is often measured between 0 (impossible) and 1 (certain to occur).

How to calculate probability:

$$\text{Probability of an event occurring} = \frac{\text{The number of occurrences}}{\text{The number of possibilities}}$$

Or (same thing, different wording):

$$\frac{\text{The number of times something happened}}{\text{The total number of times it could have happened}}$$

It is not:

The number of times something happened divided by the number of times it didn't happen.

Here are some examples:

Certainties:

- * The sun will rise
- * The sun will set
- * Christmas Day will always be on the 25th December
- * There will be a leap year every 4 years
- * I have a birthday every year
- * We will all die at some point

Impossibilities:

- * I will live to be 200
- * Pigs will fly unaided tomorrow
- * You cannot roll a 6 on a 5 sided dice
- * Walking on water unaided
- * People can return from the dead
- * I will travel back in time tomorrow
- * I will see a live dinosaur this afternoon



More likely: (a comparison of 2 events – X is more likely than Y)

- * I am more likely to win the lottery if I buy 2 tickets than 1
- * You are more likely to win £10 on the lottery than the jackpot
- * You are more likely to see a red car than a pink car
- * You are more likely to see snow in winter than in summer
- * It is likely to be hotter in the summer than in the winter in Britain
- * There are more likely to be 31 days in a month than only 30