

# An investigation of randomness

## What is random?

The word 'random' is used commonly to describe a variety of unlikely or unexpected events. In this investigation we will look at how randomness behaves---what are the properties of randomness?

## How to use the program

The program uses a random number generator to simulate a six-sided die (pl. dice). There are six formulas available; only one of them is a fair simulator.

Select a formula to test (there are 6 options), and click “Generate new scenario”. You must do this each time you change the formula or the number of dice.

Using this formula, click the button to roll the dice. Clicking “Roll Dice” again will generate a new set of rolls. The results of these rolls will be displayed in a table, and cumulative results will be displayed in a graph.

## Task

Each time it is rolled, a fair die should have an equal chance of rolling each number between 1 and 6.

The dice in the program can roll based on 6 different formulae. Only one of these is fair.

Your task is to decide which one.

When you have decided which formula is fair, you should work out how the non-fair rolls are calculated.

## HINT

Select a formula to test, you will test them all over the course of the investigation. Roll the dice multiple times, the results will be stored in the table.