

# Can I use the 0–1 probability scale to measure the probabilities of outcomes?

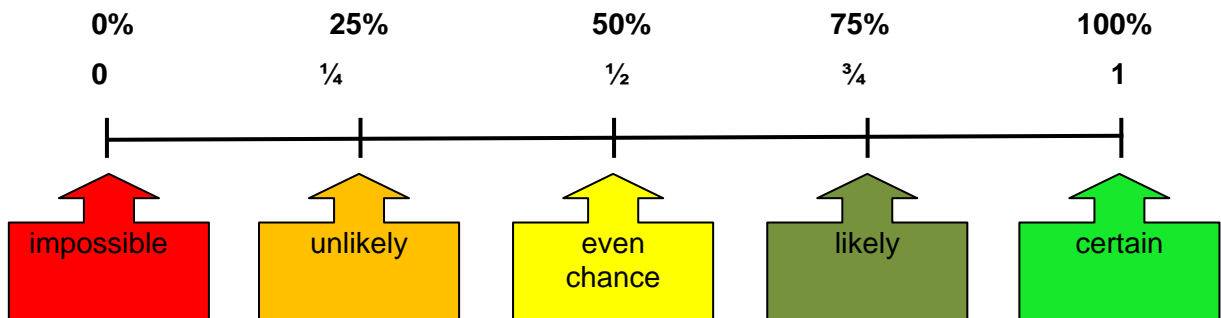
## Teaching guidance

### Key vocabulary

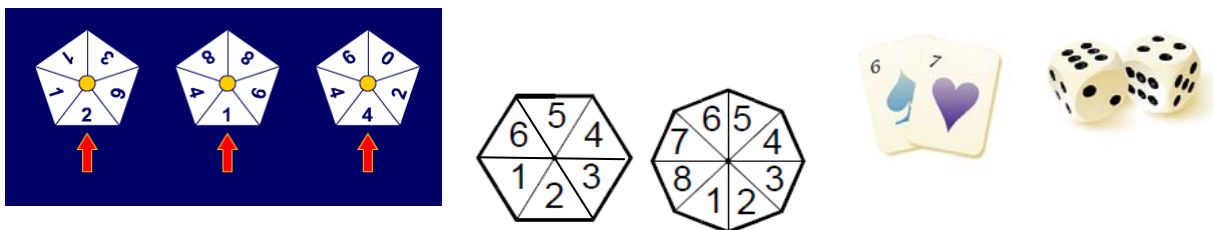
fair, likely, unlikely, equally likely, likelihood, certain, probable, good chance, poor chance, no chance, equal chance, even chance, outcome, biased, random, probability scale

### Models, images and resources

#### 0–1 scale



#### Spinners or Number spinners ITP, dice and cards



## Bags of assorted counters or Probability spreadsheet

The screenshot shows a digital simulation of a probability experiment. On the left, two bags are illustrated: the 'first bag' contains two counters (one blue, one red), and the 'second bag' contains three counters (one blue, one red, one yellow). The main interface features a window with 12 cubes, some green and some red. Below the cubes is a bar chart with three rows: 'red' (10 bars), 'green' (5 bars), and 'blue' (2 bars). A 'Reset Graph' button is located at the bottom right of the interface.

### Teaching tips

- Make connections between the language of probability and the positions that the words used represent on the probability scale.
- Ask children to illustrate, on a 0–1 probability scale, where words used to describe chance lie in relation to each other on the scale between 'impossible' and 'certain'.
- Model the probability scale using a paper strip. Fold a strip of paper in half to represent 0.5 ( $\frac{1}{2}$  or 50%), and focus on one half of the scale (e.g. 0 to  $\frac{1}{2}$ ). Make connections to previous work on fractions, decimals and percentages. Use a range of models (dice, counters, spinners) to look for outcomes that would be marked on this part of the scale, focusing on the language of probability of less than a half. Repeat for the other half of the scale (from  $\frac{1}{2}$  to 1).
- Use blank spinners to create spinners with given theoretical probabilities. For example:
  - Ask children to shade the spinner so that blue is the most likely outcome, red is the second most likely and green is the least likely outcome.
  - Ask children to discuss any differences in approach and explain how they decided to divide up the circle to fit the criteria.
- Support children in making the link between the probabilities of obtaining a given colour from a spin and the position of the theoretical probabilities on the 0–1 probability scale.

Use number cards within given boundaries, for example 11–20. Invite children to create a bank of questions to quantify the probability of selecting cards with given properties from the group of numbers, and indicate the probabilities on a 0–1 probability scale. For example: What is the probability of drawing an even-numbered card (or prime number, multiple of 3...) from the set 11–20?

- Use the Meteorological Office website, [www.metoffice.gov.uk](http://www.metoffice.gov.uk), to investigate the probability of different types of weather in your region. Ask children to make statements about the likelihood of different types of weather that can be illustrated on a 0–1 probability scale.
- Support children to begin to appreciate the difference between theoretical probability and what may happen in practice based on many repetitions on an experiment. For example, although the theoretical chance of getting an even number on a 1–6 dice is  $\frac{3}{6}$ , in an experiment, you may get a string of outcomes where odd numbers occur much more frequently than even numbers. This is the nature of probability. Discuss how we need to repeat experiments a very large number of times and then take an average of the results to get experimental results that better reflect theoretical probabilities.