

# fs4u

## Using Probability

### ‘How To’ Booklet 19

# Using Probability

Probability is measured on a scale of 0 to 1.

If an event is certain to happen then it is said to have a probability of 1 or 100%.

If an event is certain not to happen then it is said to have a probability of 0 or 0%.

If an event may or may not happen then it will have a probability somewhere between 0 - 1 or 0 - 100%

We can show probability on a line.

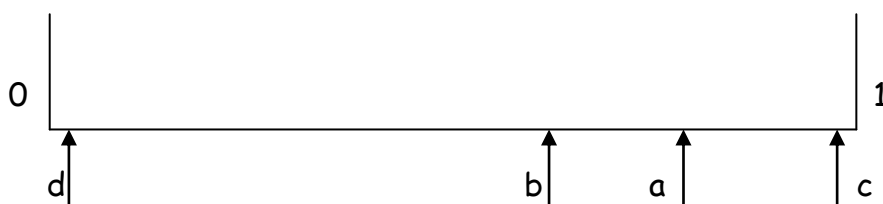


We use probability to describe the likelihood of a situation occurring.

It can be written as a fraction, decimal or percentage.

## Some examples:

- a. There is a 70% chance it will rain tomorrow.
- b. The probability of getting a head when you toss a coin is  $\frac{1}{2}$  or 0.5.
- c. It is 99% certain that Mansfield town will win the league.
- d. There is a 0.1% chance it will rain in June.



## Activity

Draw a probability line and mark on the following events.

- a     You will climb Mount Everest.
- b     That the next buss you see is red.
- c     If you drop a weight it will fall.
- d     That a drawing pin will land point down.
- e     Choose 3 of your own and mark them.

Now express the above (a to e) as percentages.

# Calculating The Probability Of Equally Likely Outcomes

## Example

What is the chance of picking up a red card from a pack of cards?

❖ there are 52 cards                      26 are red

So the probability is 26 out of 52

Which we write at  $\frac{26}{52} = \frac{1}{2}$

It can also be expressed as a percentage.                      **50% chance**

Probability of an event occurring                      =                       $\frac{\text{number of successful ways}}{\text{total number of all possible ways}}$

## Activity (Express your answers in fractions)

1	A die is rolled. Calculate the probability that the result will be	
	a	a 3
	b	a score less than 4
	c	an even number

2	A letter is chosen from the word 'terrific'. Determine the probability that it will be:	
	a	an f
	b	an r
	c	a vowel
	d	a consonant

3	A bag contains 3 red balls, 5 blue balls and 2 green balls. A ball is chosen at random from the bag. Find the probability that it will be:	
	a	green
	b	blue
	c	red
	d	not red

4	There are 7 tomatoes in a bag. Four of them are red and the remainder are green. A tomato is picked at random from the bag. What is the probability that it is red?	
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5	20 discs numbered 1 to 20 are placed in a box and one disc is chosen at random. Determine the probability that the number on the disc will be:	
	a	even
	b	a multiple of 3
	c	more than 8
	d	less than 8

6	A card is drawn from a deck of 52 playing cards. Find the probability that it will be:-	
	a	a king of hearts
	b	a queen
	c	an ace, king, queen, or jack
	d	the jack of spades or the ace of diamonds