Probability Vocabulary

Probability: The likelihood or chance of an event occurring.

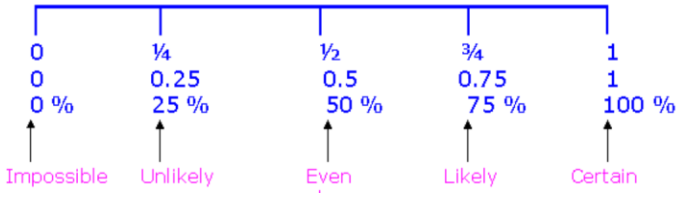
The probability of an event is equal to the number of favourable outcomes divided by the number of possible outcomes.

$$P(\text{event}) = \frac{\text{number of favourable outcomes}}{\text{number of possible outcomes}}$$

Probability is represented with a fractional number between 0 and 1 (or 0% to 100%).

The closer to 1, the more likely the event is to occur.
An event is certain to occur if it has a probability of 1 (100%)

The closer to 0, the less likely the event is to occur.
An event is impossible if its probability is equal to 0 (0%).



100%		certain
93%	Give or take about 6%	Almost certain
75%	Give or take about 12%	Probable
50%	Give or take about 10%	Chances about even
30%	Give or take about 10%	Probably not
7%	Give or take about 5%	Almost certainly not
0%		Impossible

Vocabulary

Random experiment: Is an experiment where we cannot foresee the outcome with certainty. (It depends entirely on chance).

Set of possible outcomes: All possible outcomes in a random experiment.

Outcomes

The set of possible outcomes is called the set of possibilities. We use the symbol Ω (omega). When writing the set of possible outcomes we do not repeat possible outcomes

Example 1: the set of possibilities when rolling a die numbered 1-6 is
$\Omega = \{1,2,3,4,5,6\}$

Example 2: the set of possibilities when randomly picking a letter in the word MISSISSIPPI

$\Omega = \{M, I, S, P\}$

Finding the Number of Outcomes

1. **Multiplication Rule**
   Multiply the number of outcomes in the first step by the number of outcomes in the second step.
   Example: In a random experiment a coin is flipped and then a die is rolled. Find the number of outcomes.

2. **Tree Diagram**
   Use a tree diagram to show the possible outcomes for the following example In a random experiment a coin is flipped and then a die is rolled. Find the number of outcomes.

Types of Experiments Vocabulary

Theoretical probability: when we use a formula to find the probability of an event

Experimental probability: When you find the probability by doing an experiment.

Simple event: a random experiment carried out in a single step. Example picking a card out of a deck of cards.

Compound event: a random experiment carried out in many steps. Example tossing a coin and picking a card out of a deck of cards.

Tree Diagrams

Independents events: replacement. When one-step does not affect the other.

INDEPENDENT EVENTS:

Daniel has ten coloured marbles in a bag. Three of the marbles are red and 7 are blue. He removes a marble at random from the bag and notes the colour before replacing it. He then chooses a second marble at random.

a) Record the information in a tree diagram.

b) Calculate the probability of him selecting both red marbles

c) Calculate the probability of him selecting a red marble followed by a blue marble.

d) Calculate the probability of him selecting different colour marbles.

Dependent events: occurs when the first step affects the other steps. No replacement.

DEPENDENT EVENTS:

Dante has ten coloured marbles in a bag. Three of the marbles are red and 7 are blue. He removes a marble at random from the bag, notes the colour and **DOES NOT** replace it. He then chooses a second marble at random.

a) Record the information in a tree diagram.

b) Calculate the probability of him selecting both red marbles

c) Calculate the probability of him selecting a red marble followed by a blue marble.

d) Calculate the probability of him selecting different colour marbles.