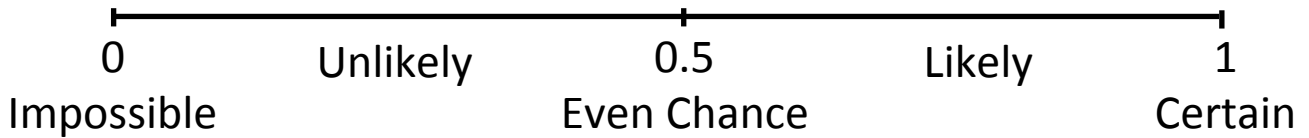


Probability

Probability is the chance of *outcome* happening in an *event*

Probability is measured on a scale of 0 to 1 and can be given as a fraction, decimal or a percentage.



1. The letters of the word OUTCOME are written on cards and placed in a bag. A card is picked at random. What is the probability that it is. (Give your answer as a fraction)

a. The letter T. $\frac{1}{7}$ b. The letter O $\frac{2}{7}$ c. A vowel $\frac{4}{7}$ d. not a vowel $\frac{3}{7}$ e. The letter S 0

2. 3 **blue**, 5 **red** and 4 **green** marbles are placed in a bag. A marble is picked at random. What is the probability that is. (Give your answer as a fraction)

a. a red marble $\frac{5}{12}$ b. a blue marble $\frac{1}{4}$ c. a green marble $\frac{1}{3}$ d. red or blue $\frac{2}{3}$ e. yellow 0

When two events are combined so that we are looking at the probability of an outcome in the first event **and** the second event we can find the probability of both outcomes occurring by multiplying the probabilities of the individual outcomes. This works as long as the events are independent of each other.

The probability of rolling a 6 on a die and throwing a head on a coin.

$P(6 \text{ on a die}) = \frac{1}{6}$

$P(\text{Head on a coin}) = \frac{1}{2}$

$P(6 \text{ on a die AND head on a coin}) = \frac{1}{6} \times \frac{1}{2}$
 $= \frac{1}{12}$

1. A 4 and a 6 sided die are thrown.

a. What is the probability that the 4-sided die lands on a 4 and the 6-sided die lands on a 6? $\frac{1}{24}$

b. What is the probability that the 4-sided die lands on a 4 and the 6 sided die lands on an even number? $\frac{1}{8}$

c. What is the probability that both dice land on an even number? $\frac{1}{4}$

2. 5 **red**, 4 **blue** and 2 **green** marbles are placed in a bag. A marble is picked from the bag and then put back before a second marble is picked.

a. What is the probability that the first marble is red and the second marble is blue? $\frac{20}{121}$

b. What is the probability that the first marble is green and the second marble is blue? $\frac{8}{121}$

c. What is the probability that both marbles are red? $\frac{16}{121}$

d. What is the probability that both marbles are green? $\frac{4}{121}$

e. Why does it make a difference that the first marble is put back into the bag? **If the marble wasn't replaced the outcome of the first event would effect the second and they wouldn't be independent.**