

Probability

Probability is the likelihood of something happening.

The probability of event A is $P(A)$.

Probability can be written as a fraction, decimal, or percent and it is always between 0 and 1.

$P = 0$

Not going
to happen

$P = 0.5$

Equally likely
to happen or
not happen

$P = 1$

Definitely going
to happen

Theoretical Probability

Theoretical Probability is when all of the events are *equally* likely to happen.

Mostly just referred to as probability.

If we wanted to find the theoretical probability of an event A happening, we would use this formula:

$$\frac{\textit{number of ways Event A can happen}}{\textit{number of possible events}}$$

With a standard deck of 52 cards, what is the theoretical probability of drawing exactly 5 hearts or 5 diamonds if you are drawing exactly 5 cards?

$$\frac{\textit{number of ways Event A can happen}}{\textit{number of possible events}}$$

Event A is the number of ways we can draw a hand of exactly 5 hearts or exactly 5 diamonds.

The number of possible events is the number of 5 card hands we can possibly draw.

When choosing an integer between 1-20, you have an equal likelihood of choosing any integer.

What is the probability that you will choose a perfect square?

What is the probability that you will choose a factor of 20?

Experimental Probability

The probability of an event happening as determined by running a set of trials.

$$P(\text{event}) = \frac{\textit{number of trials where the event occurs}}{\textit{total number of trials}}$$

What is the experimental probability of drawing a red marble?

Marble Color	Frequency Of Times Drawn
Red	7
Blue	1
Yellow	5
Purple	0
Green	8
Orange	4