Definition: Probability is concerned with events of chance or uncertainty.

Probabilities are normally and usually represented as fractions e.g. 2/3 or 4/5

Scale of Probability:	Impossible		Maybe	Certain
	|----------|		|----------|	
0	Low	1/2	High	1

Sample Space (Universe of Event)
A listing or diagram of all possible outcomes from an experiment or occurrence.
Specific Event (Subset of Universe)

Simple (single event) or Non-Simple (multiple events) of chance.

Types of Probabilities for an Experiment (Event) of Chance or Uncertainty.
P = Probability * = Not P* = Not Probability

Probability Experiment: Draw a Card from a Standard Deck of 52 Cards. (Cards should be shuffled before each draw!) (Cards should be spread out for drawing of card!)	Cards: Spades, Hearts, Diamonds, Clubs (Each Suit contains 13 Cards!) 36 Number Cards & 16 Face Cards, Total Deck contains 52 individual cards.

Probability of Success = (Success / Total) Probability of Failure* = (Failure / Total)*

P (Heart) = 13/52	P (Any Number) = 36/52	P (Ace of Clubs) = 1/52
P* (Heart) = 39/52	P* (Any Number) = 16/52	P* (Ace of Clubs) = 51/52
$P(R) \cup P^*(R) = 1$ The Sum of P and P* equals 1.		$P(R) \cap P^*(R) = 0$ The intersection of P and P* equals 0.

Definition: Odds represents the probability of an event occurring and/or happening.

Definition: Odds is the Ratio of the (Probability of Success) / (Probability of Failure)

Odds are normally and usually represented as ratios e.g. 2:3 or 2 to 3

Summary of Odds: Deck of Cards Drawing card from a Standard Deck. (Cards should be shuffled before each draw!) (Cards should be spread out for drawing of card!)	Cards: Spades, Hearts, Diamonds, Clubs (Each Suit contains 13 Cards!) 36 Number Cards & 16 Face Cards, Total Deck contains 52 individual cards.

Simple Example of the Odds for the above Experiment of Chance or Uncertainty.

Odds equals ratio of Probabilities. Thus represent Odds then reduce as ratios.

Odds in favor of Any Heart event: $O_f(R) = 13/52 : 39/52 = 13 \text{ to } 39 = 1 \text{ to } 3$

Odds against Any Heart event: $O_a(R) = 39/52 : 13/39 = 39 \text{ to } 13 = 3 \text{ to } 1$

Odds in favor of Any Number event: $O_f(B) = 36/52 : 16/52 = 36 \text{ to } 16$

Odds against Any Number event: $O_a(B) = 16/52 : 36/52 = 16 \text{ to } 36$

Odds in favor of Any Card event: $O_f(G) = 1/52 : 51/52 = 1 \text{ to } 52$

Odds against Any Card event: $O_a(G) = 51/52 : 1/52 = 52 \text{ to } 1$

Reference for this information Fundamentals of Mathematics by Edwin I. Stein

