



Introduction to Card Combinations

PS Grinder
11 December 2009

Let me give you all a quick introduction to card combinations. First, remember that there are 4 suits of every card:

A♥, A♣, A♠, A♦

Un-Paired Hands

To figure out how many combinations are possible for an un-paired hole card, multiply the number of combinations per card together. For example, in calculating the number total AK hands we know that there are 4 A's and 4 K's in the deck:

4 Aces * 4 Kings = 16 total combinations of Ace-King

There are only 4 combinations for any suited cards: A♥K♥; A♣K♣; A♠K♠; A♦K♦

So that leaves 12 combinations of un-suited, un-paired Ace-King (otherwise known as Ace-King Offsuit).

Pocket Pairs

Each pair has 6 combinations to it, so as an example QQ: Q♥Q♠; Q♥Q♣; Q♥Q♦; Q♠Q♣; Q♠Q♦; Q♣Q♦

Sample Hand

You have A♣Q♦ and the flop is: Q♥J♠2♦. If your opponent is loose/passive pre-flop, what is the number of combinations he can have per a specific hand?

QQ = 1 Combination: Q♠Q♣; He can't have the Q♦ because it is in our hand or the Q♥ because it is on the flop.

JJ = 3 Cominations: J♥J♣; J♦J♠; J♥J♦; He can't have any hand with the J♠ in it because it is on the flop.

22 = 3 Cominations: (Same as Above).

There are only 6 combinations of: QJ (2 Queens * 3 Jacks), Q2 (2 Queens * 3 Deuces) and AQ (3 Aces * 2 Queens)

He can also have 6 combinations of KK, but only 3 combinations of AA possible since we have the A♣.

There are 9 combinations of: J2 (3 Jacks * 3 Deuces), AJ (3 Aces * 3 Jacks) and A2 (3 Aces * 3 Deuces) possible.

There are 8 combinations of: KQ (4 Kings * 2 Queens), QT (2 Queens * 4 Tens) and Q9 (2 Queens * 4 Nines) possible.

There are 16 combinations of: KT (4 Kings * 4 Tens), T9 (4 Tens * 4 Nines), K9 (4 Kings * 4 Nines) and 98 (4 Nines * 4 Eights) possible.

There are also 12 combinations of AK (3 Aces * 4 Kings), AT (3 Aces * 4 Tens) and A9 (3 Aces * 4 Nines) possible if you choose to include those hands in his range.

The total number of combinations pre-flop in a 52 Card Deck is 1326. However, there are only 169 different specific hands since we don't differentiate between suits pre-flop. We can calculate the likelihood of getting dealt a specific hand by dividing the number of combinations for that hand by the total combinations in the deck. For Example:

$$AA: 6/1326 = 1/221 \text{ or } 0.45\%$$

$$AKs: 4/1326 = 1/331.5 \text{ or } 0.30\%$$

$$AK: 16/1326 = 1/82.875 \text{ or } 1.21\%$$

This was a quick introduction to hand combinations; hopefully this will give you a starting point to understanding hand combinations to a further degree in your poker progress.

