POKER WORK BOOK FOR MATH GEEKS

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Introduction

There is a mathematical backbone of poker, and it can be learned. Much of the math that you need at the table is simple, but you need to practice away from the table so that you know what is important and can do what is needed when needed.

This book gives you hundreds of practice problems so that the mental math of poker becomes as automatic as simple addition. These practice problems are presented as worksheets that you will fill out for each kind of problem, with an answer key in the back to check your work. By practicing these worksheets over and over, you will remember the procedures for calculating important percentages and numbers when you need to do this math at the table.

I also include my own mental dialogue that I have when I am working out these problems. You will notice that there is rarely more than one or two numbers we need to remember at any given time. Each operation is made as simple as possible. For example multiplying 37 by 4 might be too taxing. Instead I would advocate thinking along the lines of, "Double 37 is 74, 74 is basically 75 and double 75 is 150."

Is it absolutely correct? No.

Is it close enough? Yes.

In this book we will be calculating equities of specific hands versus specific hands. You might say, "But this donkey could show up with K7o after re-raising pre-flop!" You are right, he very well might. This book is about calculating the winning chance of one hand versus another or one hand versus a set of several possible hands. It is up to you and your poker sense to decide what those hands might be. Because of the inherent uncertainty in poker, we are not worried about calculating winning chances out to something like 73.1% on the flop. That level of accuracy is meaningless in the face of other larger uncertainties. If the exact math were to come out to 73.1% but we just estimated to 75% that would be plenty good. There is no need to measure with a micrometer if you are going to mark with chalk and then cut with an ax.

With practice, you will be completely capable of doing these calculations at the tables when you need them. We will be quite liberal with the simplification of problems and that is quite acceptable. My grandfather, Papaw, often said, "Close only counts in horseshoes and hand grenades." I would argue it is also true for the mental math of poker.

These problems can also be used to get better with computer tools like Flopzilla, Equilab, Poker Cruncher, and the like. The solution key for this book was made with these tools, and there is an appendix of which tools I recommended using.

The focus of this book is on mental math so we will not be talking about the tools much here. There will be companion videos for this book on

http://RedChipPoker.com

The answer key for this book is not just a list of answers without context. It is a complete reprint of the problems with the answers written in. This allows you to read the answer key as a way of reviewing the correct answers and building up intuition, and it saves you the trouble of flipping back and forth to the key later.

The answer key is exact where it can be. Do not hope, or try to get your mental math as exact. If you are within 5% either way of the answer, you will be a monster at the tables.

All of this math is used to enhance your poker sense. The problems in this book all tell you what the Villain holds. Doing the math in this ideal situation allows you to estimate better when the Villain's holding is unknown. Will the Villain show up with unexpected hands? Yes. Will your rivered pair of Deuces actually put you ahead in unexpected situations? Yes. All of this math will be done in an uncertain environment, but we practice it here to better deal with that uncertainty.

Contents

PRE-FLOP ALL-IN MATH

Pre-Flop All-In Percentages

If all the money goes in before the flop, there is no more action and the cards just run out.

There are eight basic ways two hands can relate to each other. They are shown on the following pages. A common match-up is for one person to have two overcards and one person to have a pair. This is commonly referred to as a race or a coin flip because each person will win essentially 50% of the time.

A second typical match-up is pair versus pair. The lower pair will only win 20% of the time. The percent chance of winning is also known as your equity. So if there was $100 in the pot, on average the lower pair would win $20 because 20% of $100 is $20.

Pre-flop equities are not calculated at the tables, they are remembered. All of the equities that are listed on the next pages were calculated with Equilab, but any of the tools in the appendix of this book would do the same.

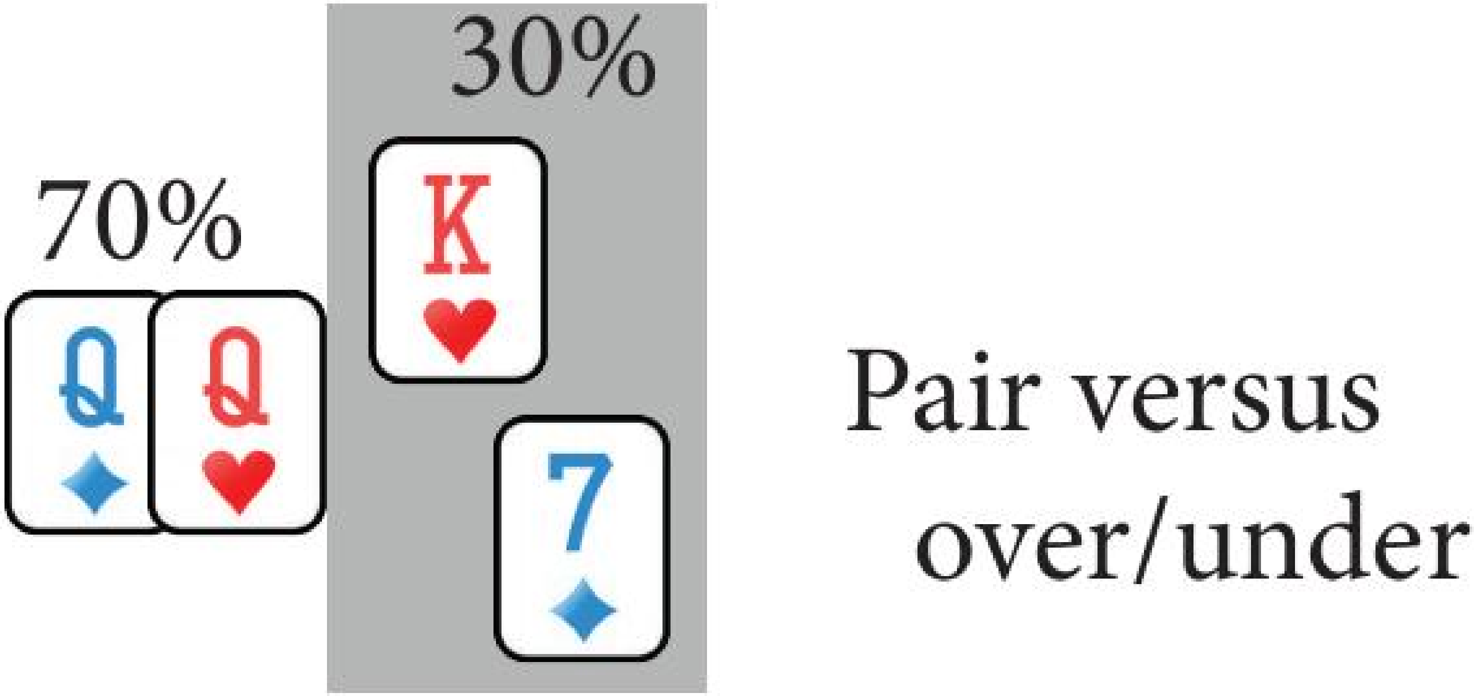
We only need an approximation of the percent chance of each hand winning, and we can round the equities off to make them easier to remember. As with most of this book, we are only trying to get close. These equities are important when calling a shove or making a shove pre-flop.

A simple example would be if you raise to $10 with Ace King and someone shoves all-in for $50. You have seen this player do this kind of thing with small pocket pairs quite often, and you believe that is what he has now. You are being given the opportunity to call $40 to win a total pot of $100.

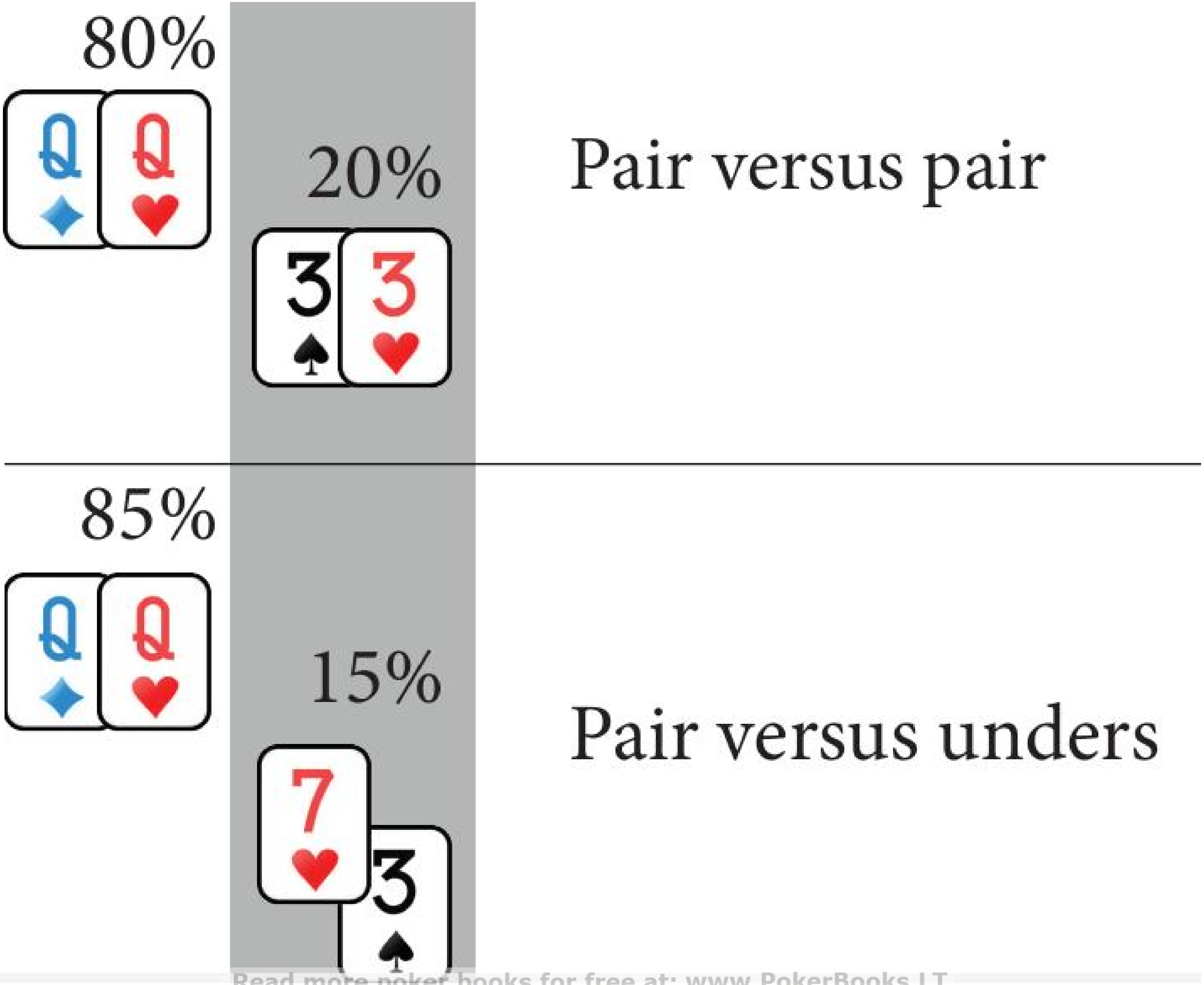
Your Ace King wins 50% of the time versus his assumed holding of a small pocket pair like 77. Since you expect to walk away with 50% of the $100, that is $50. If you put $40 into the pot and expect to win $50, this is a good bet and you should call. Later in the book we consider more complex (and realistic) situations, like the fact that the Villain might also hold AQ, KK, or something like 78s.

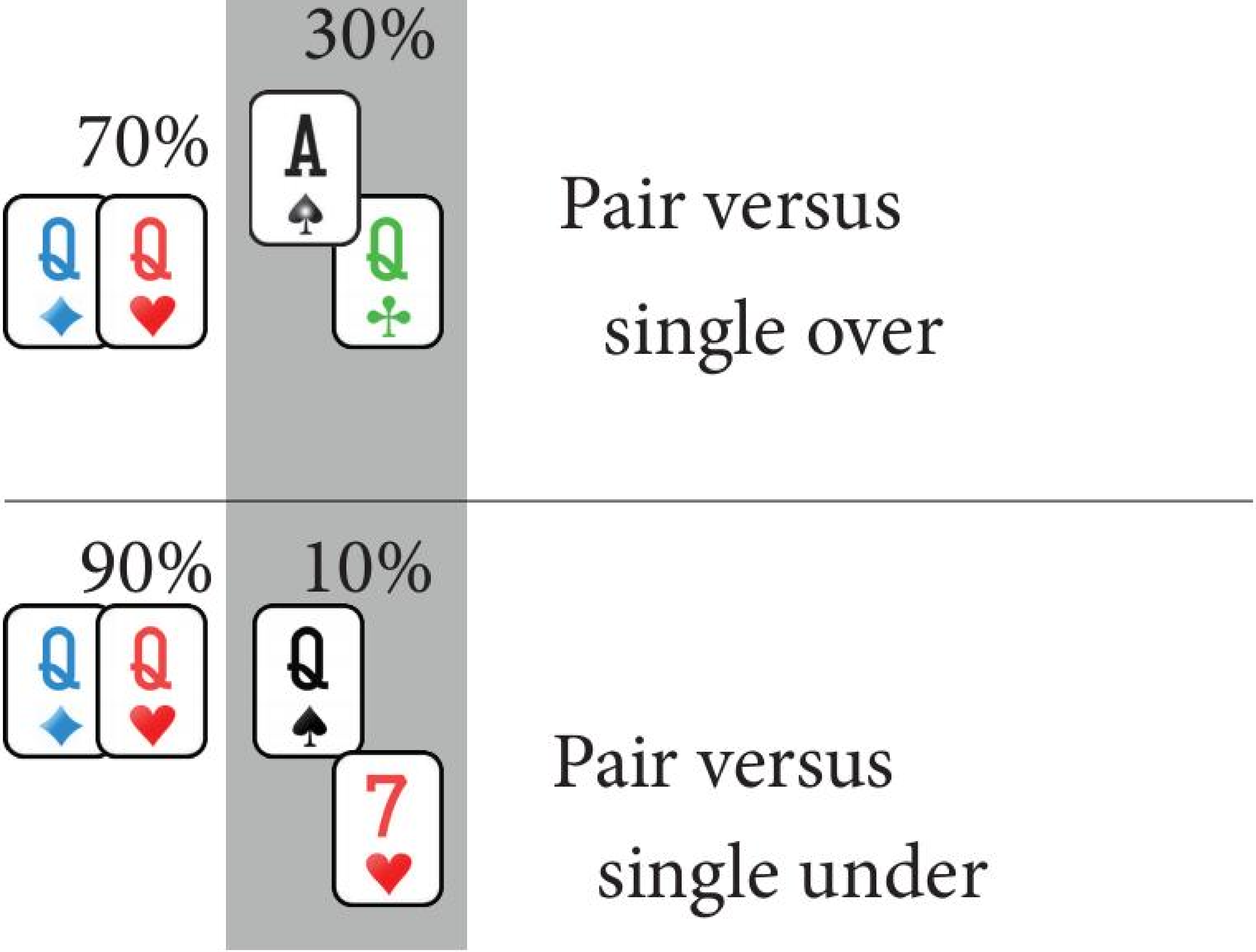
In the following diagrams, notice that the cards are not haphazardly placed, they are higher or lower in the space based on their ranks so it is easier to see their relationships.

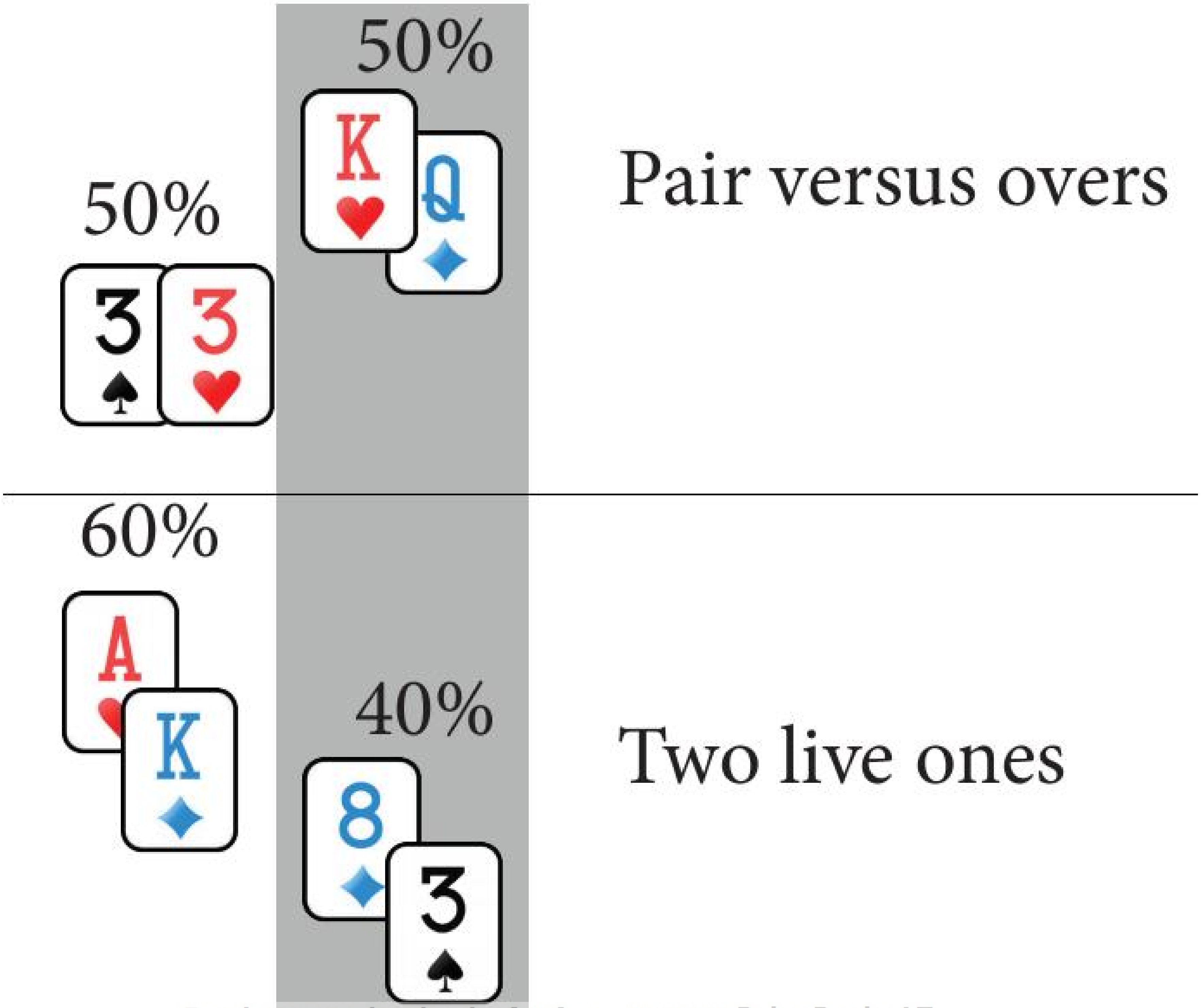
For instance, in the diagram below, the King is higher up than the pair of Queens and the Seven is placed lower. Also using Equilab, we know that the Queens are a 70%-30% favorite over K7o, and this statistic is mentioned above the pairs of cards. This basic percentage will hold whenever a pair is matched up against an over card and under card with slight bonuses for the possibility of a straight or flush by the unpaired cards.

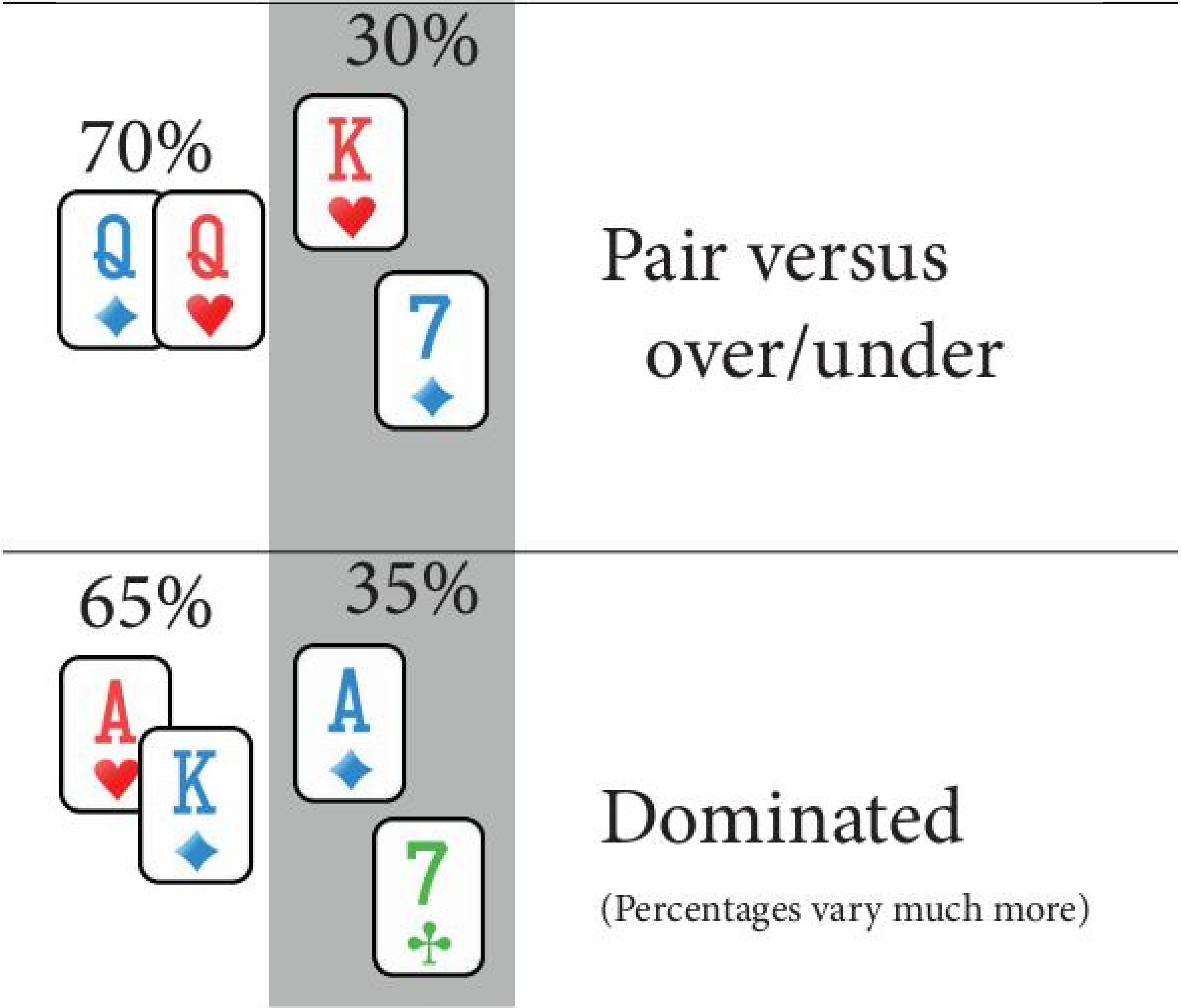


Note that in a dominated situation (a hand like A7 versus AK below) the actual equities can vary quite a bit from the stated 35%-65%. This is because in a dominated situation like K3 versus K2, frequently neither the Deuce nor the Trey will play, so the equities are much closer to 50%-50%. In other situations like A7o versus 78s is 35%-65%. Hands that share a small card, like Q2o versus K2o are more like 25%-75%. It is not worth doing a lot of work to remember all these possibilities.


80%
20%
Pair versus pair
85%
15%
Pair versus unders


70%
30%
Pair versus
single over
90%
10%
Pair versus
single under


50%
50%
Pair versus overs
60%
40%
Two live ones


30%
70%
Pair versus over/under
65%
35%
Dominated
(Percentages vary much more)

These first exercises are very straight forward and based off of the percentages mentioned above. The point of this exercise is to get you thinking about the possible variations of the type of hands described above and begin to develop an intuition on your own of how mathematically good your hand is versus other possible hands.

For the first set, circle the hand that is ahead if all the money goes in pre-flop. The second set of exercises are tougher but more useful. Write the percentages in for each hand. Just find the applicable case in the prior page and fill in the percentages.

To further refine the estimates, the hand that is behind gets an equity boost for being suited and/or connected. For instance:

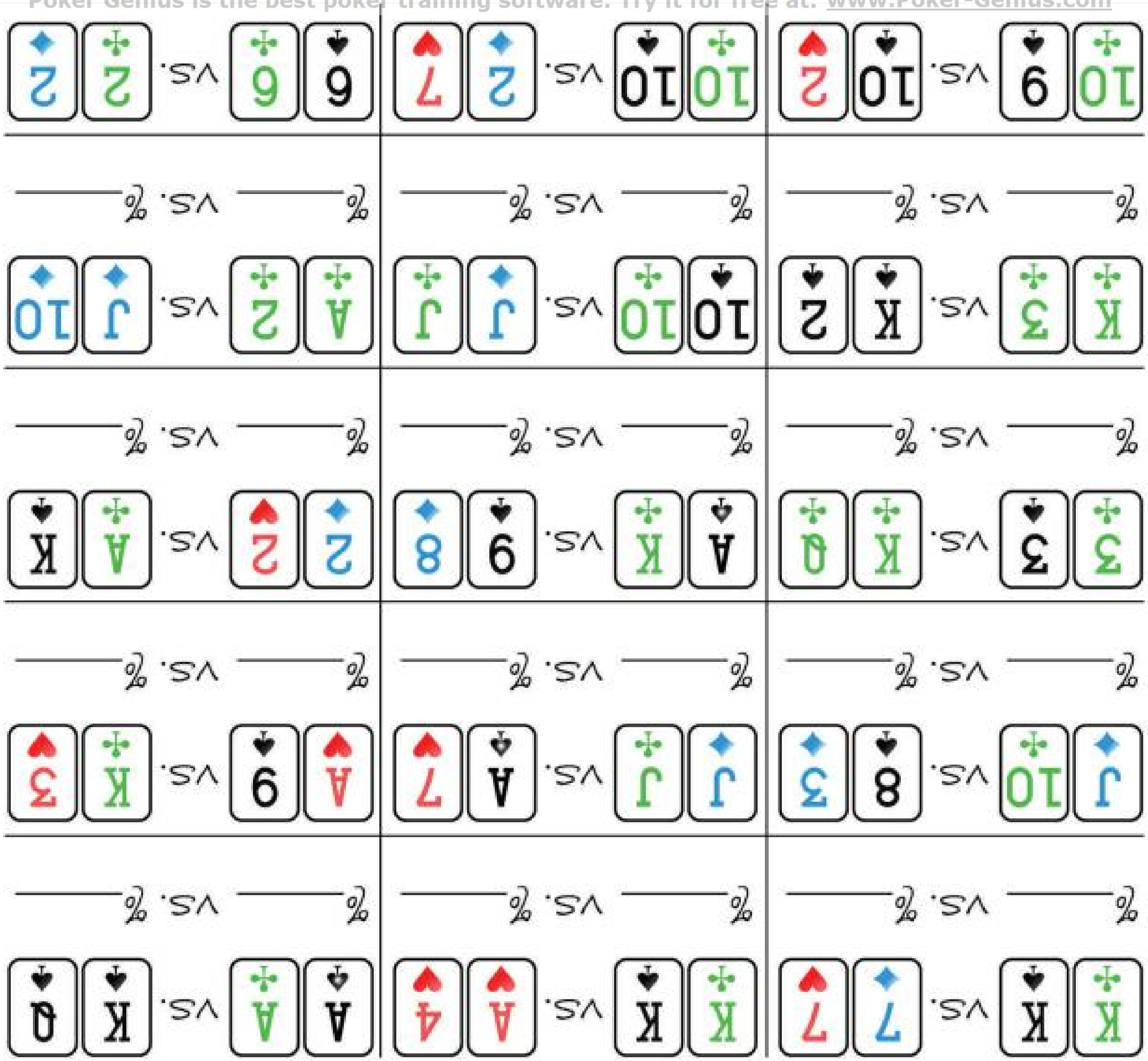
- KK versus 92o is 13%,
- KK versus 92s is 17%,
- KK versus 98o is 19%,
- KK versus 98s is 22%.

Add 4% for suitedness and 4% for connectedness and that is a good approximation.

Add 4% for suitedness and 4% for connectedness and that is a good approximation.

Just about any poker calculator will be capable of this kind of calculation. Look for the video accompaniment to this book on RedChipPoker.com to see how to use compute tools to solve these. See the appendix for recommended tools.

7♦ 2♣ vs. A♠ A♥	3♣ 3♠ vs. A♣ K♠
8♣ 8♦ vs. 7♣ 7♠	A♥ 3♥ vs. K♣ K♠
2♦ 2♠ vs. 3♠ 4♠	K♣ J♣ vs. A♥ Q♠
A♠ 3♠ vs. A♥ 2♥	7♦ 7♣ vs. 8♥ 9♥
A♠ K♠ vs. 2♣ A♣	3♣ 9♦ vs. K♣ 4♠



10♣ 9♠ vs. 10♠ 2♥	10♣ 10♠ vs. 2♦ 7♥	6♠ 6♣ vs. 2♣ 2♦
%______ vs. %______	%______ vs. %______	%______ vs. %______
Q♦ Q♠ vs. A♣ 10♣	K♣ 2♣ vs. J♦ 10♦	J♠ J♣ vs. 8♠ 2♣
%______ vs. %______	%______ vs. %______	%______ vs. %______
J♠ 3♠ vs. 9♣ 2♠	3♣ 3♠ vs. K♣ Q♠	J♠ 9♣ vs. 2♦ 8♥
%______ vs. %______	%______ vs. %______	%______ vs. %______
3♠ 3♣ vs. 2♣ 10♦	K♣ J♠ vs. Q♦ 10♥	10♣ 10♠ vs. 3♠ 3♣
%______ vs. %______	%______ vs. %______	%______ vs. %______

3♣ 3♠ vs. K♦ Q♦	10♠ 10♣ vs. 3♠ 9♣	10♠ 6♣ vs. 10♦ 2♥
%______ vs. %______	%______ vs. %______	%______ vs. %______
7♠ 5♠ vs. 6♣ 2♣	9♣ 9♠ vs. 3♥ 4♥	K♥ 10♥ vs. J♥ 7♥
%______ vs. %______	%______ vs. %______	%______ vs. %______
K♣ Q♣ vs. 7♠ 2♠	K♠ 2♣ vs. J♦ 10♦	K♣ Q♣ vs. 7♠ 6♠
%______ vs. %______	%______ vs. %______	%______ vs. %______
A♠ 2♣ vs. J♦ 10♦	A♥ 9♥ vs. A♦ 2♦	9♣ 9♥ vs. J♠ 2♠
%______ vs. %______	%______ vs. %______	%______ vs. %______

J♣ 8♣ vs. 10♠ 9♣	10♠ J♠ vs. 10♥ 3♣	A♣ A♠ vs. 9♣ 9♠
%______ vs. %______	%______ vs. %______	%______ vs. %______
	7♦ 7♠ vs. A♦ 9♣	
	%______ vs. %______	

TURN MATH

Equity on the Turn, Hand Versus Hand

Pre-flop is the easiest street to calculate. It is not even calculating, it is looking up pre-calculated numbers. Calculating equities on the turn is the next easiest street because there is only one card to come.

Outs are cards that make the hand that is behind take the lead. On the turn there is only one thing to do, count outs and use the Rule of Two (explained soon). Remember, the guy counting outs on the turn is the one behind. Some of these problems are tricky with some false outs that actually improve both hands so they are not really outs. Don't worry if these tricky situations trip you up. At the tables, even if you miss these, you are rarely going to be off by more than a couple of percent.

The Rule of Two says multiply the number of outs by two to get the percentage chance of winning after the next card. The reason this rule works is that there are 52 cards in the deck and we know where six of them are on the turn, that leaves 46 unseen cards. If there were 50 unseen cards, each one would be exactly two percent of the deck. In actuality (because there are slightly fewer cards than 50), on the turn each unseen card represents 2.17% of the deck.

Since we are usually calculating our hand versus an assumed holding, we can refine this rule further. If we pretend to know the Villain's cards also, there are only 44 remaining cards so each is really slightly higher — 2.27% of the deck. We can add 1% bonus equity for every four outs to account for the extra 0.27%. This is becomes more important when the number of outs increases. In this book we will add the bonus percentage if we think it will matter. However, usually the simple multiplication of outs by two is enough.

If we are not assuming we know the Villain's cards, we can account for that extra 0.17% by adding a bonus percent for every six outs. Add these bonus percents in if you like or not as you choose. (Note that the answer key is as accurate as possible and does account for this.)

Add-ons to the Rule of Two

Multiply outs by two to get the percentage to win on the next card.

Think you know their cards? One bonus percent for every four outs.
Not sure? One bonus percent for every six outs.

Rule of Two applies on the turn since there is one card to come, but you can use it on the flop also if you expect to face another bet on the turn.

Let's work an example of the kind of problem in this section:

outs ______

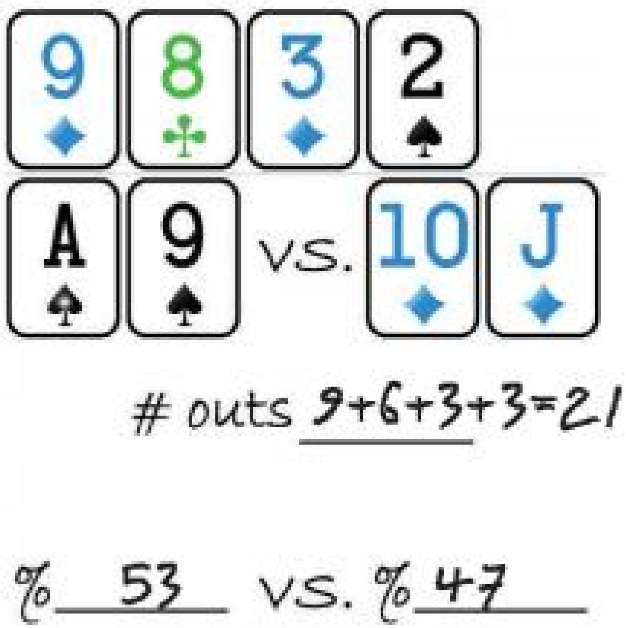
%______ vs. %______

In this hand, JTs has no pair, and A9s does have a pair. This means A9s is ahead, so we will be counting outs for JTs.

Start by counting the most powerful draws—the flush. Any of the remaining nine Diamonds makes a winner. Next, any of the four Queens or four Sevens will make a straight. We already counted the Diamond outs that are among the straight cards, so be careful to not count them twice. We get three of each of the Queens and Sevens as outs instead of four each. We have the luxury of knowing that our overcards to the pair of Nines are good also. That means we also win if a Jack or Ten comes, so we can also count three outs for each rank.

When doing these problems, space is provided to write down the number of outs. Notice that in the example below we wrote out all the outs separately, 9+6+3+3=21. (You may find it beneficial to adopt this trick for this kind of counting if keeping all the numbers in your head before adding is tricky. You might want to count up each time or do some other strategy to keep the mental dialog simpler. This will make sure the math gets done right. This book allows you time to practice this and find something that works for you away from the table.)

Once 21 outs are counted, double 21 to get 42%. If we want to be more accurate, we can add the bonus percentage of 5% because we get a bonus percent for every four outs. 21 divided by 4 gives us 5% to add in as a bonus bringing 42% to 47%. The actual equity is 47.7%. This was a damn fine estimate considering we did this in our head.



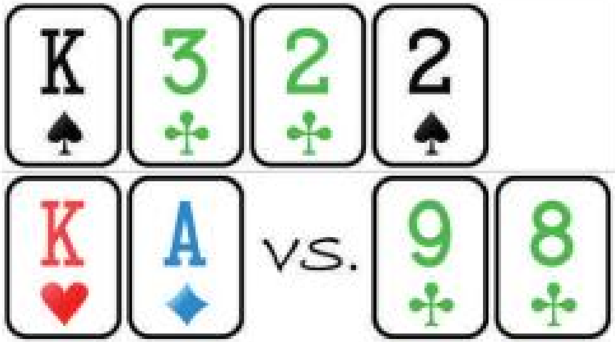
Some people do these exercises with computer tools to get used to using the tools. This can be helpful in learning the tools and building intuition. You can use these tools and get as accurate as you want, but the estimating we do here is going to be just fine at the tables.

At the tables, if you think you know what your opponent has, just round 47% equity up to 50% for ease of calculations. If we want to be more conservative because it is hard to know exactly what your opponent has (maybe it isn't exactly A9 without blockers), we might discount a few outs and call it 40% for easy calculations.

Do not be overly concerned about the errors in your calculations because of small adjustments for uncertainty and ease of mental math. Remember that it is the approximations we are looking for. Being off by a few percentage points doesn't matter if it means you comfortable doing the math at the table when necessary.

outs ______

% ______ vs. % ______

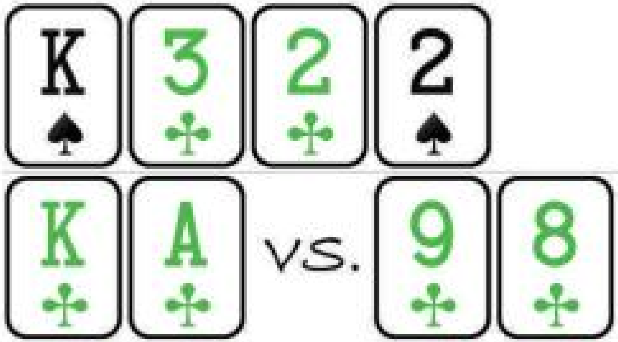


outs ______

% ______ vs. % ______

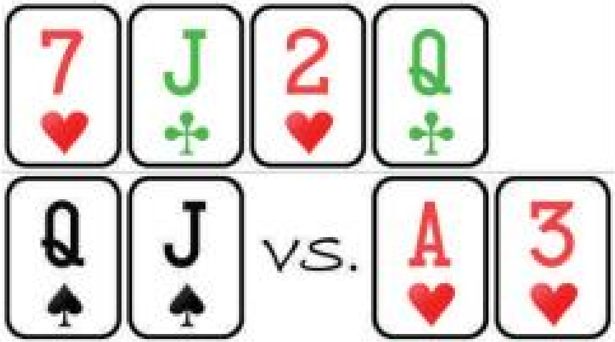
outs ______

% ______ vs. % ______



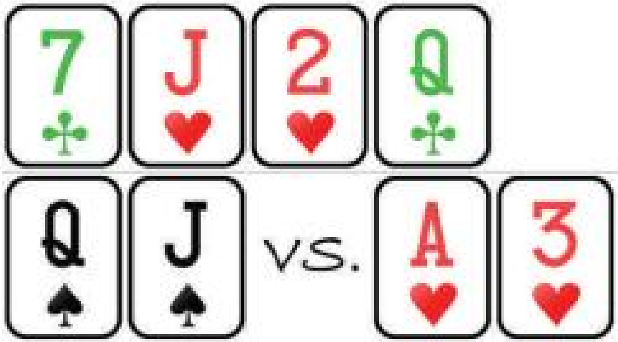
outs ______

% ______ vs. % ______



outs ______

% ______ vs. % ______



outs ______

% ______ vs. % ______

7♠ J♥ 2♣ Q♥

Q♠ J♠ vs. A♥ 3♥

outs ______

% ______ vs. % ______

7♥ J♥ 2♥ Q♣

Q♠ J♠ vs. A♥ 8♠

outs ______

% ______ vs. % ______

7♥ J♥ 2♣ Q♥

Q♠ J♠ vs. A♥ 8♠

outs ______

% ______ vs. % ______

K♦ K♣ 3♣ 9♠

3♦ 2♦ vs. A♣ 7♣

outs ______

% ______ vs. % ______

K♦ K♠ 3♣ 9♣

3♦ 2♦ vs. A♣ 7♣

outs ______

% ______ vs. % ______

7♦ 2♠ 3♦ Q♥

7♥ 7♣ vs. A♦ K♦

outs ______

% ______ vs. % ______

Answers: page 203

7♠ 2♦ 3♦ Q♥

7♥ 7♣ vs. A♦ K♦

\# outs ______

%______ vs. %______

7♦ 2♦ 3♦ Q♣

7♥ 7♣ vs. A♦ K♠

\# outs ______

%______ vs. %______

9♣ 9♥ 4♥ 3♦

9♦ 8♦ vs. Q♥ J♥

\# outs ______

%______ vs. %______

9♣ 9♠ 4♥ 3♥

9♦ 8♦ vs. Q♥ J♥

\# outs ______

%______ vs. %______

K♠ 7♦ 6♥ 3♦

K♥ A♦ vs. 9♣ 8♣

\# outs ______

%______ vs. %______

K♠ 10♦ 7♥ 3♦

K♥ A♦ vs. 9♣ 8♣

\# outs ______

%______ vs. %______

K♠ 10♦ J♥ 3♦

K♥ A♣ vs. 9♣ 8♣

outs ______

% ______ vs. % ______

Q♠ 10♦ 6♥ 3♦

Q♣ A♣ vs. 9♣ 8♣

outs ______

% ______ vs. % ______

Q♠ 10♦ 8♥ 6♦

Q♣ A♥ vs. 9♣ A♣

outs ______

% ______ vs. % ______

Q♠ 10♦ 8♥ 6♦

A♠ A♥ vs. 9♣ A♣

outs ______

% ______ vs. % ______

J♠ 10♦ 8♥ 6♦

A♠ A♣ vs. K♣ Q♠

outs ______

% ______ vs. % ______

Q♣ J♠ 10♦ 3♣

A♠ A♣ vs. 9♠ 7♣

outs ______

% ______ vs. % ______

9♦ 8♦ 3♠ 4♠

9♠ 8♠ vs. J♣ 10♥

outs ______

% ______ vs. % ______

9♦ 8♦ 3♠ 3♣

9♠ 8♠ vs. J♣ 10♥

outs ______

% ______ vs. % ______

9♦ 8♦ 3♠ 3♣

Q♠ Q♣ vs. 7♣ 6♥

outs ______

% ______ vs. % ______

9♦ 8♦ 8♣ 3♣

Q♠ Q♣ vs. J♣ 10♥

outs ______

% ______ vs. % ______

9♦ 8♦ 8♣ 3♣

A♠ A♣ vs. J♣ 10♥

outs ______

% ______ vs. % ______

9♦ 7♥ 5♦ 3♣

9♣ 7♣ vs. 8♠ J♠

outs ______

% ______ vs. % ______

6♠ 6♣ 5♣ K♣

A♥ 6♥ vs. 7♦ 8♦

outs ______

% ______ vs. % ______

6♠ 6♣ 5♣ K♣

9♥ 6♥ vs. 7♦ 8♦

outs ______

% ______ vs. % ______

6♠ 6♣ 5♣ K♣

7♥ 6♥ vs. 4♦ 3♦

outs ______

% ______ vs. % ______

10♦ K♠ 4♥ 5♥

10♠ 10♣ vs. J♣ Q♣

outs ______

% ______ vs. % ______

9♣ 8♣ 3♠ 2♠

K♥ K♣ vs. Q♠ J♠

outs ______

% ______ vs. % ______

9♣ 8♣ 3♠ 3♣

K♥ K♣ vs. Q♠ J♠

outs ______

% ______ vs. % ______

9♣ 8♣ 3♠ 3♣

A♥ 9♥ vs. Q♠ J♠

outs ______

% ______ vs. % ______

9♣ 8♣ 5♠ 3♣

A♥ 9♥ vs. A♠ 7♠

outs ______

% ______ vs. % ______

A♦ 10♦ 3♠ 2♠

A♥ A♠ vs. K♣ Q♣

outs ______

% ______ vs. % ______

A♦ 10♦ A♠ 2♠

A♥ J♥ vs. K♣ Q♣

outs ______

% ______ vs. % ______

A♦ 10♦ A♠ 2♠

A♥ 3♥ vs. K♣ Q♣

outs ______

% ______ vs. % ______

2♣ 3♠ K♦ 7♦

3♣ 3♥ vs. 4♣ A♣

outs ______

% ______ vs. % ______

5♦ 4♥ K♦ J♠

A♣ K♠ vs. 7♦ 6♦

outs ______

% ______ vs. % ______

9♦ 8♣ 3♦ 2♠

A♠ 9♠ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♦ 8♣ 3♦ 2♠

Q♠ Q♣ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♦ 8♣ 3♦ 2♠

A♠ A♣ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♦ 8♣ 3♦ 2♠

9♠ 8♠ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♥ 8♣ 3♦ 2♦

9♦ 8♦ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♦ 8♣ 3♦ 3♠

A♦ A♣ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♦ 8♦ 3♣ 3♠

A♦ A♣ vs. 10♦ J♦

outs ______

% ______ vs. % ______

9♦ 8♦ 6♠ 6♦

A♦ A♣ vs. K♣ 7♦

outs ______

% ______ vs. % ______

9♦ 8♦ 6♦ 6♠

A♥ A♣ vs. K♣ 7♦

outs ______

% ______ vs. % ______

9♠ 6♣ A♠ 3♦

9♣ 9♦ vs. 7♠ 8♠

outs ______

% ______ vs. % ______

9♠ 6♣ K♠ 9♥

A♣ 9♣ vs. 7♠ 8♠

outs ______

% ______ vs. % ______

K♦ 10♦ 3♠ 2♣

K♣ K♠ vs. Q♦ J♦

outs ______

% ______ vs. % ______

7♦ 9♠ 2♠ 6♣

7♠ 7♣ vs. 8♠ J♠

outs ______

% ______ vs. % ______

3♥ 6♠ 6♣ K♥

3♣ 3♠ vs. 5♥ 4♥

outs ______

% ______ vs. % ______

3♥ 6♠ 6♥ K♦

3♣ 3♠ vs. 5♥ 4♥

outs ______

% ______ vs. % ______

9♦ 6♣ 7♦ 2♥

A♥ K♠ vs. Q♠ J♠

outs ______

% ______ vs. % ______

9♦ 6♣ 7♦ 2♥

A♥ 3♠ vs. Q♠ J♠

outs ______

% ______ vs. % ______

A♠ 3♦ 6♣ 7♠

A♥ K♥ vs. 10♣ 10♠

outs ______

% ______ vs. % ______

Q♠ 7♠ 8♦ A♣

Q♦ J♠ vs. 2♣ 2♠

outs ______

% ______ vs. % ______

Q♠ 7♠ 8♦ 2♣

Q♦ J♠ vs. 2♣ K♠

outs ______

% ______ vs. % ______

Q♠ 7♠ 8♦ 2♣

Q♦ J♠ vs. 2♣ 3♠

outs ______

% ______ vs. % ______

6♠ 6♣ 2♦ A♥

K♠ K♣ vs. 7♦ 8♦

outs ______

% ______ vs. % ______

6♠ 6♣ 2♦ A♥

Q♠ Q♣ vs. 9♦ K♦

outs ______

% ______ vs. % ______

9♠ 9♦ 8♠ 8♦

A♠ 2♠ vs. 7♣ 7♠

outs ______

% ______ vs. % ______

9♦ 8♦ 7♠ 6♠

9♠ 8♠ vs. 7♣ 6♣

outs ______

% ______ vs. % ______

9♦ 8♦ 7♦ 6♦

9♠ 8♠ vs. 7♣ 6♣

outs ______

% ______ vs. % ______

J♦ J♠ 2♦ 4♥

A♠ A♣ vs. K♠ K♣

outs ______

% ______ vs. % ______

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. A♣ A♦

outs ______

% ______ vs. % ______

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. 6♣ 6♦

outs ______

% ______ vs. % ______

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. K♣ 7♣

outs ______

% ______ vs. % ______

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. 3♣ 7♣

outs ______

% ______ vs. % ______

3♦ 7♠ 8♣ 3♠

3♥ A♥ vs. K♣ K♦

outs ______

% ______ vs. % ______

A♦ 7♠ 8♣ A♠

3♥ A♥ vs. K♣ K♦

outs ______

% ______ vs. % ______

A♠ 7♦ 3♥ 2♣

7♣ 7♠ vs. A♦ 2♦

outs ______

% ______ vs. % ______

A♠ A♦ 2♣ 5♣

A♣ K♣ vs. A♥ Q♥

outs ______

% ______ vs. % ______

A♠ A♦ J♦ 5♣

A♣ 7♣ vs. A♥ 2♥

outs ______

% ______ vs. % ______

3♣ 7♣ 5♦ 3♠

A♣ 2♣ vs. K♣ Q♣

outs ______

% ______ vs. % ______

Q♠ 7♣ 3♣ 5♠

A♣ 9♣ vs. K♣ Q♣

outs ______

% ______ vs. % ______

8♠ 6♠ 5♦ 3♥

A♠ 7♠ vs. K♣ 7♣

outs ______

% ______ vs. % ______

8♠ 6♠ 5♦ 3♥

A♣ 7♣ vs. 3♣ 3♦

outs ______

% ______ vs. % ______

8♠ 6♠ 5♦ 3♥

A♣ K♠ vs. Q♠ J♠

outs ______

% ______ vs. % ______

Equity on Turn Hands Versus Type of Hand

In this section, we are considering an instance where we have a specific hand (like AQo) and we guess that the other player has a certain kind of hand (like a set). We will now practice calculating our equities against these guesses.

In the two empty rectangles where you calculate outs, you can write a specific hand for the other player. Some of the time, all the hands of a given description have the same equity against our hand. Other times, the specific hand matters quite a bit.

As an example, when we have top two pair and the unknown hand has a set, the different sets will have different equities. Top set versus top two pair is an unbeatable hand on the turn, but bottom set can lose if the top two pair gets a full house.

When you are writing down a specific hand for the unknown hand, just choose something that seems realistic. Do not be concerned if the answer key chose a different hand.

Q♥ A♦ vs. Overpair

outs AA 2

% 4 vs. % 96

K♠ J♠ vs. Overpair

outs AA 6

% 13 vs. % 87

3♠ 3♦ vs. Overpair

outs AA 2

% 4 vs. % 96

Q♣ 3♣ 2♠ 10♥

Q♥ A♦ vs. Set

outs ____

%____ vs. %____

K♠ J♠ vs. Set

outs ____

%____ vs. %____

3♠ 3♦ vs. Set

outs ____

%____ vs. %____

K♣ J♣ vs. Set

outs ____

%____ vs. %____

9♠ 9♦ vs. Set

outs ____

%____ vs. %____

A♥ K♠ vs. Set

outs ____

%____ vs. %____

Q♣ 3♣ 2♠ 10♥

Q♥ A♦ vs. Overpair

outs ____

% ____ vs. % ____

K♠ J♠ vs. Overpair

outs ____

% ____ vs. % ____

3♠ 3♦ vs. Overpair

outs ____

% ____ vs. % ____

K♣ J♣ vs. Overpair

outs ____

% ____ vs. % ____

9♠ 9♦ vs. Overpair

outs ____

% ____ vs. % ____

A♥ K♠ vs. Overpair

outs ____

% ____ vs. % ____

Q♣ 3♣ 2♠ 10♥

Q♥ A♦ vs. Two Pair

outs ____

% ____ vs. % ____

K♠ J♠ vs. Two Pair

outs ____

% ____ vs. % ____

3♠ 3♦ vs. Two Pair

outs ____

% ____ vs. % ____

K♣ J♣ vs. Two Pair

outs ____

% ____ vs. % ____

9♠ 9♦ vs. Two Pair

outs ____

% ____ vs. % ____

A♥ K♠ vs. Two Pair

outs ____

% ____ vs. % ____

A♥ 6♦ 7♠ 8♠

A♣ 6♣ vs. Straight

\# outs ____

%____ vs. %____

A♣ 6♣ vs. Set

\# outs ____

%____ vs. %____

A♣ 6♣ vs. Two Pair

\# outs ____

%____ vs. %____

A♣ 6♣ vs. Top pair

\# outs ____

%____ vs. %____

A♣ 6♣ vs. Pair + Open ender

\# outs ____

%____ vs. %____

A♣ 6♣ vs. Open ender + Flush draw

\# outs ____

%____ vs. %____

4♠ 5♠ vs. Straight

\# outs ____

%____ vs. %____

4♠ 5♠ vs. Set

\# outs ____

%____ vs. %____

4♠ 5♠ vs. Two Pair

\# outs ____

%____ vs. %____

4♠ 5♠ vs. Top pair

\# outs ____

%____ vs. %____

4♠ 5♠ vs. Pair + Open ender

\# outs ____

%____ vs. %____

4♠ 5♠ vs. Open ender + Flush draw

\# outs ____

%____ vs. %____

A♥ 6♦ 7♠ 8♠

A♣ A♦ vs. Straight # outs ____ %____ vs. %____	A♣ A♦ vs. Set # outs ____ %____ vs. %____	A♣ A♦ vs. Two Pair # outs ____ %____ vs. %____
A♣ A♦ vs. Top pair # outs ____ %____ vs. %____	A♣ A♦ vs. Pair + Open ender # outs ____ %____ vs. %____	A♣ A♦ vs. Open ender + Flush draw # outs ____ %____ vs. %____

A♥ 6♦ 7♠ 8♠

A♠ 5♠ vs. Straight

outs ____

%____ vs. %____

A♠ 5♠ vs. Set

outs ____

%____ vs. %____

A♠ 5♠ vs. Two Pair

outs ____

%____ vs. %____

A♠ 5♠ vs. Top pair

outs ____

%____ vs. %____

A♠ 5♠ vs. Pair + Open ender

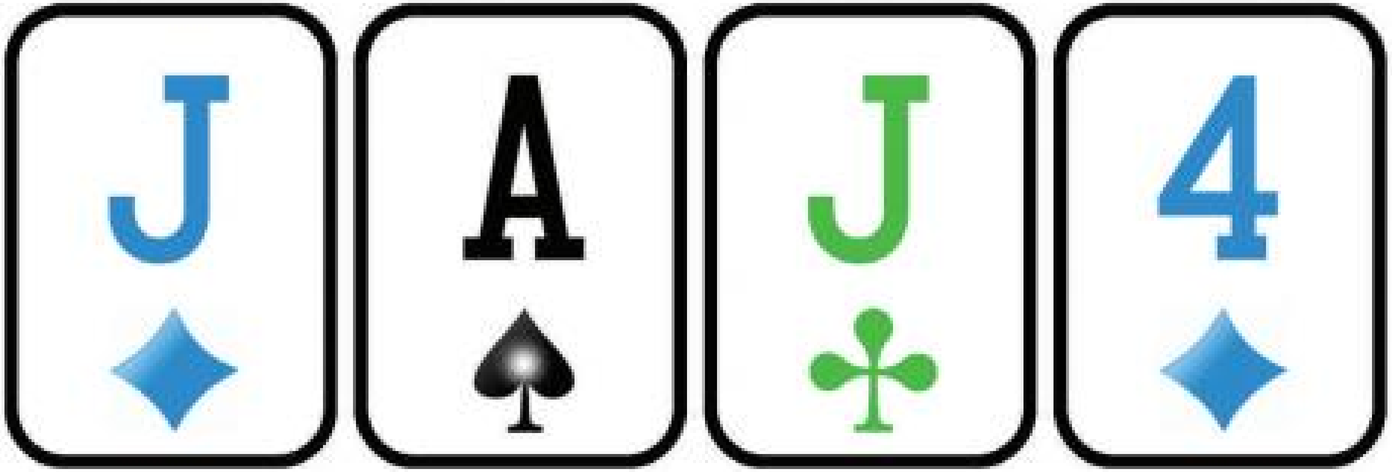
outs ____

%____ vs. %____

A♠ 5♠ vs. Open ender + Flush draw

outs ____

%____ vs. %____



K♣ K♦ vs. Pocket pair below TP

outs ____

%______ vs. %______

A♦ K♦ vs. Pocket pair below TP

outs ____

%______ vs. %______

A♥ A♣ vs. Pocket pair below TP

outs ____

%______ vs. %______

K♠ Q♠ vs. Pocket pair below TP

outs ____

%______ vs. %______

K♦ Q♦ vs. Pocket pair below TP

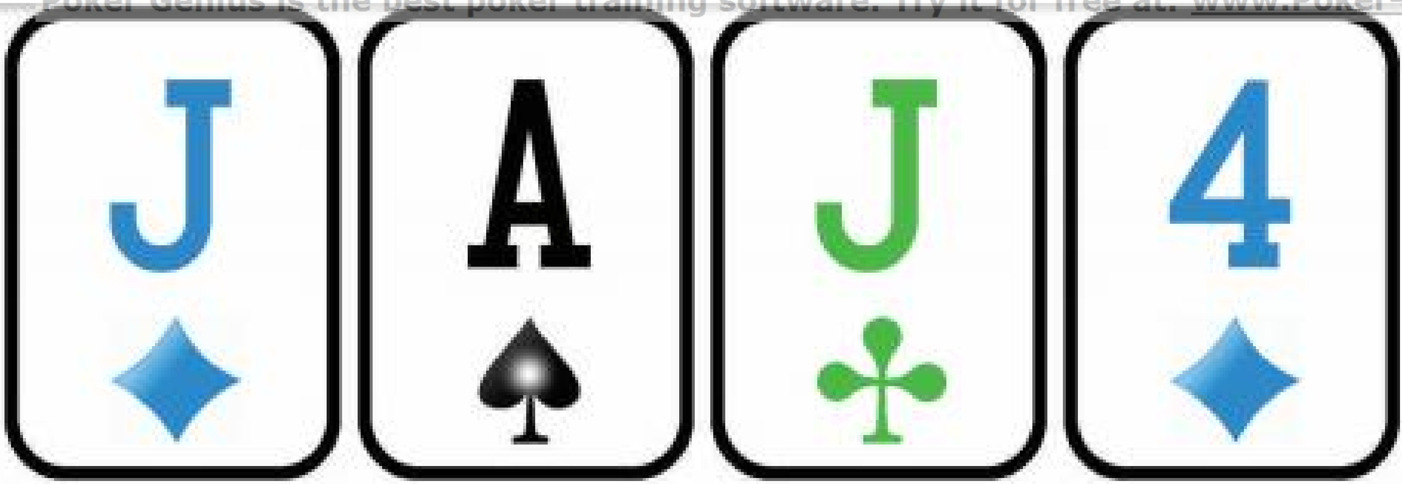
outs ____

%______ vs. %______

J♠ 10♠ vs. Pocket pair below TP

outs ____

%______ vs. %______



K♣ K♦ vs. Top pair

\# outs ____

%____ vs. %____

A♦ K♦ vs. Top pair

\# outs ____

%____ vs. %____

A♥ A♣ vs. Top pair

\# outs ____

%____ vs. %____

K♠ Q♠ vs. Top pair

\# outs ____

%____ vs. %____

K♦ Q♦ vs. Top pair

\# outs ____

%____ vs. %____

J♠ 10♠ vs. Top pair

\# outs ____

%____ vs. %____

J♦ A♠ J♣ 4♦

K♣ K♦ vs. Gut shot

outs ____

%_____ vs. %_____

A♦ K♦ vs. Gut shot

outs ____

%_____ vs. %_____

A♥ A♣ vs. Gut shot

outs ____

%_____ vs. %_____

K♠ Q♠ vs. Gut shot

outs ____

%_____ vs. %_____

K♦ Q♦ vs. Gut shot

outs ____

%_____ vs. %_____

J♠ 10♠ vs. Gut shot

outs ____

%_____ vs. %_____

K♠ K♣ vs. Full House

\# outs ____

%____ vs. %____

K♠ K♣ vs. Three of a kind

\# outs ____

%____ vs. %____

K♠ K♣ vs. Overpair

\# outs ____

%____ vs. %____

K♠ K♣ vs. Flush draw

\# outs ____

%____ vs. %____

K♠ K♣ vs. Open ender

\# outs ____

%____ vs. %____

K♠ K♣ vs. Overcards

\# outs ____

%____ vs. %____

9♠ 10♠ vs. Full House

outs ___

% ___ vs. % ___

9♠ 10♠ vs. Three of a kind

outs ___

% ___ vs. % ___

9♠ 10♠ vs. Overpair

outs ___

% ___ vs. % ___

9♠ 10♠ vs. Flush draw

outs ___

% ___ vs. % ___

9♠ 10♠ vs. Open ender

outs ___

% ___ vs. % ___

9♠ 10♠ vs. Overcards

outs ___

% ___ vs. % ___

A♥ 10♥ vs. Full House

\# outs ____

%____ vs. %____

A♥ 10♥ vs. Three of a kind

\# outs ____

%____ vs. %____

A♥ 10♥ vs. Overpair

\# outs ____

%____ vs. %____

A♥ 10♥ vs. Flush draw

\# outs ____

%____ vs. %____

A♥ 10♥ vs. Open ender

\# outs ____

%____ vs. %____

A♥ 10♥ vs. Overcards

\# outs ____

%____ vs. %____

7♥ 9♦ 9♥ 5♣

8♣ 8♠ vs. Full House

outs ____

%____ vs. %____

8♣ 8♠ vs. Three of a kind

outs ____

%____ vs. %____

8♣ 8♠ vs. Overpair

outs ____

%____ vs. %____

8♣ 8♠ vs. Flush draw

outs ____

%____ vs. %____

8♣ 8♠ vs. Open ender

outs ____

%____ vs. %____

8♣ 8♠ vs. Overcards

outs ____

%____ vs. %____

A A vs. Set

\# outs ____

%____ vs. %____

A A vs. Two Pair

\# outs ____

%____ vs. %____

A A vs. Top pair

\# outs ____

%____ vs. %____

A A vs. Overpair

\# outs ____

%____ vs. %____

A A vs. Open ender

\# outs ____

%____ vs. %____

A A vs. Gut shot + Overcard

\# outs ____

%____ vs. %____

K♣ 10♥ 4♦ 8♠

10♦ 10♣ vs. Set

\# outs ____

%____ vs. %____

10♦ 10♣ vs. Two Pair

\# outs ____

%____ vs. %____

10♦ 10♣ vs. Top pair

\# outs ____

%____ vs. %____

10♦ 10♣ vs. Overpair

\# outs ____

%____ vs. %____

10♦ 10♣ vs. Open ender

\# outs ____

%____ vs. %____

10♦ 10♣ vs. Gut shot + Overcard

\# outs ____

%____ vs. %____

K♣ 10♥ 4♦ 8♠

Q♣ J♣ vs. Set

outs ____

%_____ vs. %_____

Q♣ J♣ vs. Two Pair

outs ____

%_____ vs. %_____

Q♣ J♣ vs. Top pair

outs ____

%_____ vs. %_____

Q♣ J♣ vs. Overpair

outs ____

%_____ vs. %_____

Q♣ J♣ vs. Open ender

outs ____

%_____ vs. %_____

Q♣ J♣ vs. Gut shot + Overcard

outs ____

%_____ vs. %_____

K 10 vs. Set

outs ____

%____ vs. %____

K 10 vs. Two Pair

outs ____

%____ vs. %____

K 10 vs. Top pair

outs ____

%____ vs. %____

K 10 vs. Overpair

outs ____

%____ vs. %____

K 10 vs. Open ender

outs ____

%____ vs. %____

K 10 vs. Gut shot + Overcard

outs ____

%____ vs. %____

4♣ 4♠ 2♠ 6♣

K♠ Q♠ vs. Overpair

outs ____

%____ vs. %____

8♦ 8♠ vs. Overpair

outs ____

%____ vs. %____

K♣ K♦ vs. Overpair

outs ____

%____ vs. %____

8♣ 7♣ vs. Overpair

outs ____

%____ vs. %____

5♥ 5♦ vs. Overpair

outs ____

%____ vs. %____

A♠ 5♠ vs. Overpair

outs ____

%____ vs. %____

4♣ 4♠ 2♠ 6♣

K♠ Q♠ vs. Nut FD

outs ____

%____ vs. %____

8♦ 8♠ vs. Nut FD

outs ____

%____ vs. %____

K♣ K♦ vs. Nut FD

outs ____

%____ vs. %____

8♣ 7♣ vs. Nut FD

outs ____

%____ vs. %____

5♥ 5♦ vs. Nut FD

outs ____

%____ vs. %____

K♣ 10♠ 5♠ 6♦

K♥ K♦ vs. Set

outs ____

%____ vs. %____

K♥ K♦ vs. Two Pair

outs ____

%____ vs. %____

K♥ K♦ vs. Overpair

outs ____

%____ vs. %____

K♥ K♦ vs. T.P.T.K.

outs ____

%____ vs. %____

K♥ K♦ vs. Open ender + Flush draw

outs ____

%____ vs. %____

K♥ K♦ vs. Open ender

outs ____

%____ vs. %____

K♣ 10♠ 5♠ 6♦

8♠ 7♠ vs. Set

\# outs ____

%_____ vs. %_____

8♠ 7♠ vs. Two Pair

\# outs ____

%_____ vs. %_____

8♠ 7♠ vs. Overpair

\# outs ____

%_____ vs. %_____

8♠ 7♠ vs. T.P.T.K.

\# outs ____

%_____ vs. %_____

8♠ 7♠ vs. Open ender

\# outs ____

%_____ vs. %_____

Calling Odds

In poker there are good bets and there are bad bets. The real art is setting up bad bets for your opponents while only taking the good bets offered to you. There are two components to any bet, the odds of winning and the pay off odds. In order to decide what to do when presented with a bet, we need to know both. We might calculate that we will win a given bet only one time for every nine losses, but if we get one hundred times our bet when we win, this is a bet we should take every time.

Let's look at an example:

In the above example, the Villain bets his last two chips into a pot of four chips. We can see that we are getting a chance to win all six chips for the two we are asked to put into the pot. This is a ratio of six in the pot to two in the call. We would write this as 6:2. In the interest of simplicity, we can simplify this 6:2 ratio to 3:1 to keep the numbers smaller. All that matters is the ratio. We could do this same simplification for a bet of $200 into a $400 pot or even a bet of $133 into a pot of $266.

For the rest of the example, we will think in the reduced or simplified ratio because keeping the numbers simple allows us to more easily do the mental math.

Even though we only play out a given situation once, we really care what happens on average. An easy way to think about these situations is to imagine that we call the bet several times in a row and we win or lose in the exact proportion to what the odds dictate we should. After playing out the hand several times, we add up all the wins and losses.

Let's pretend we know we will win this bet exactly 25% of the time. This is 75%-25% or a ratio of 3:1. This says we will lose three times and win once on average. We will look at four trials in this case. We use four trials because it is the smallest number that lets us keep the ratios of wins and losses right.

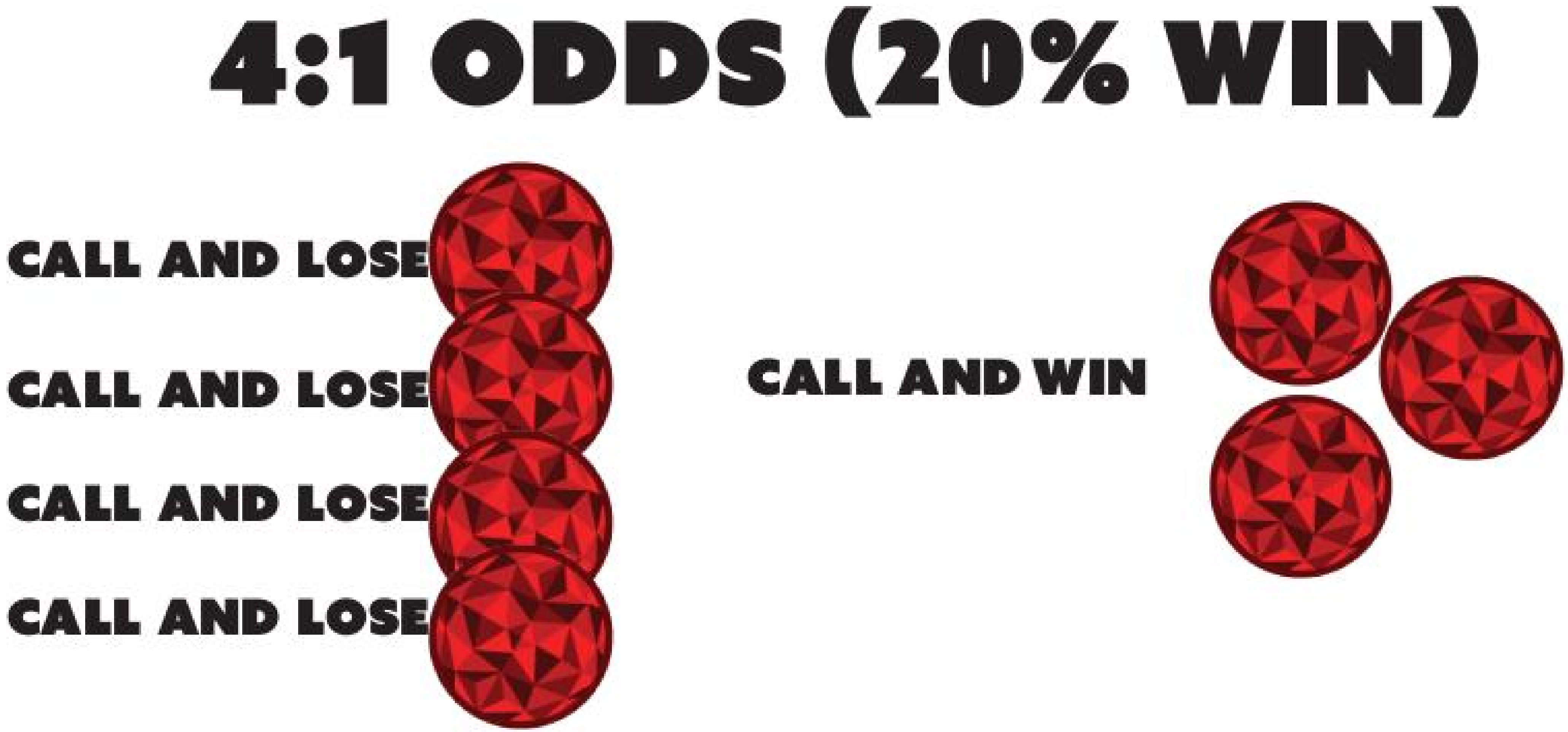
If we were to call this bet four different times, we would lose three times for a total loss of three chips. On the fourth time, we win, and we would get three chips from the pot. This one win of three chips would pay for all three of the losses. Because on average we neither win nor lose, this is our break even chances of winning. Playing out the scenario four times is illustrated below.

We just saw that getting 3:1 on our call, the break even percent of winning is 3 losses to 1 win, or 75% losses and 25% wins. What if we actually won this hand 50% of the time?

1:1 ODDS (50% WIN)

Looking above illustration, if we win 50% of the time, our ratio is 50%-50% or 1:1. The smallest number of trials we can do to keep the ratios right is two. Play it out twice to see the results: once losing and once winning. We will suffer a single one chip loss and also get three chips from the pot for our one win. Over the two trials we win more than we lose. Profiting two chips over the two trials means this is a great bet. We should take it every chance we can get.

What if we only win this hand 20%? We know this is less than our break even percentage (25% was break even). Looking to the ratio, 80% losses and 20% wins means 4:1 odds. We should play this out five times to keep the ratios right. Illustrated below is four losses to one win:



Over the five trials, we lose four chips and only win three. We can see that we are slowly losing money because the payoff does not justify the risk. We are losing one chip over five trials or on average losing 0.2 chips every time we make this call.

These small losses are often disguised in the luck of Hold'em, but they are silent killers. Avoid these small losses and instead inflict them on your opponent and you will win at poker.

Ratios and Percentages

We often need to convert the pot-to-call ratio into a percentage. This is easiest when the numbers in our ratio are both whole numbers like 3:1 (which is 75%:25%) or 2:1 (which is 66%:33%). These two ratios act as milestones when trying to calculate ratios like 2.5:1 and other less friendly numbers.

Here is a chart with lots of common ratios in poker. The conversion to needed outs is also listed. In the first grouping, the whole number ratios 5:1 through 1:1 are listed. The second grouping shows the percentages in increments of 10% from 90%-10% through 50%-50%. The final grouping combines the two tables.

5:1	84%-16%	(7 outs)
4:1	80%-20%	(9 outs)
3:1	75%-25%	(12 outs)
2:1	66%-33%	(15 outs)
1:1	50%-50%	(23 outs)

9.0:1	90%-10%	(5 outs)
4.0:1	80%-20%	(9 outs)
2.3:1	70%-30%	(14 outs)
1.5:1	60%-40%	(18 outs)
1.0:1	50%-50%	(23 outs)

9.0:1	90%-10%	(5 outs)
5.0:1	84%-16%	(7 outs)
4.0:1	80%-20%	(9 outs)
3.0:1	75%-25%	(12 outs)
2.3:1	70%-30%	(14 outs)
2.0:1	66%-33%	(15 outs)
1.5:1	60%-40%	(18 outs)
1.0:1	50%-50%	(23 outs)

Knowing these whole number ratios like 2:1 or 70%-30% allows us to guess at ratios like 2.5:1 when they occur. Since 2.3:1 is 70%-30% and 3.0:1 is 75%-25%, we know 2.5:1 is in between 70% and 75%. You can pick either one depending on how optimistic or pessimistic you want to be. The actual answer is 71%, so both are very reasonable approximations.

Hunting Method and Bracketing

A second way to think about calling odds avoids having to do much math with the bigger numbers that occur in large pots. Look at the amount you are asked to call, and start hunting for that amount of money around the table.

In this example, we are asked to call $75.

We look around the table for piles of \$75. There is one pile of \$75 that we always have: the bettor's \$75. Next we look at the pot. There is another \$75 pile in there. In fact, once we find one \$75 in the pot, there is about \$50 in change. This \$50 is two-thirds of a \$75. We have found 2⅔ on our call. We now know we are getting 2⅔:1. What is that as a percentage?

We can use a bracketing method. If we round 2⅔:1 up to 3:1 we know that is 75%-25%. If we round 2⅔:1 down to 2:1 then we know that is 66%-33%. Our ratio of 2⅔:1 must be between 25% and 33%.

Since 2⅔ is closer to 3 than to 2, our final percentage should be closer to the 25% than the 33%. Estimate this to "just under 30%." The actual number is 28%.

Most of the time, we will be able to bracket around the simple-to-remember ratios of 2:1, 3:1, and 4:1. This puts easy milestones at 33%, 25%, 20% and covers everything from pot-sized bet (2:1) through ⅓ pot-sized bet (4:1).

Your Percentage of the Pot Method

The final technique is asking ourselves, “What percentage of the final pot is my call?” Remember that the final pot includes our call.

Let’s do an example with realistic numbers.

In our head, we say the bet of $70 plus our call of $70 is $140. The original pot was $170 so that sum is about $300. We want our call of $70 as a percentage of $300. If you can divide $70 by $300 in your head, then just do that to get 23%.

If you can't easily do that math in your head, an estimation technique would be to think four times $70 is $280. This is pretty close to $300 so we will use $280. We now have a ratio of $280:$70 or 4:1, and we know that is 80%-20%. Our call is 20% of the final pot. Even though we rounded the pot from $310 to $300 and then down to $280 for convenience, we got within 3% of the actual value. Do not be afraid to make these convenient estimations.

In the following exercises, fill in the blank. The answer key is exact, but feel free to round your answers to convenient numbers.

Pot is: 100

villain bets: 50

Call is % 25 of total

Pot is: 100 Villain bets: 50 ______ : 1 on the call	Pot is: 100 Villain bets: 75 ______ : 1 on the call
Pot is: 100 Villain bets: 20 ______ : 1 on the call	Pot is: 100 Villain bets: 100 ______ : 1 on the call
Pot is: 40 Villain bets: 30 ______ : 1 on the call	Pot is: 55 Villain bets: 35 ______ : 1 on the call

Pot is: 70

Villain bets: 20

_______ : 1 on the call

Pot is: 66

Villain bets: 41

_______ : 1 on the call

Pot is: 90

Villain bets: 65

_______ : 1 on the call

Pot is: 12

Villain bets: 12

_______ : 1 on the call

Pot is: 5

Villain bets: 10

_______ : 1 on the call

Pot is: 300

Villain bets: 125

_______ : 1 on the call

Answers: page 222

Pot is: 100
Villain bets: 50
Call is %____ of total

Pot is: 100
Villain bets: 75
Call is %____ of total

Pot is: 100
Villain bets: 20
Call is %____ of total

Pot is: 100
Villain bets: 100
Call is %____ of total

Pot is: 40
Villain bets: 30
Call is %____ of total

Pot is: 55
Villain bets: 35
Call is %____ of total

Pot is: 70
Villain bets: 20
Call is %____ of total

Pot is: 66
Villain bets: 41
Call is %____ of total

Pot is: 90
Villain bets: 65
Call is %____ of total

Pot is: 12
Villain bets: 12
Call is %____ of total

Pot is: 5
Villain bets: 10
Call is %____ of total

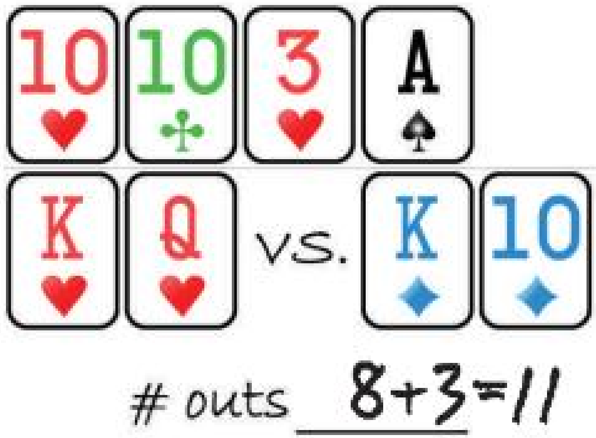
Pot is: 300
Villain bets: 125
Call is %____ of total

Calculating Percentages and Odds

The next exercise is not introducing any new skills, it is only combining them. We are counting outs and writing down the equity percentages and the wins to losses ratio.

The wins to losses ratio is rarely round numbers. Try to get it into X:1 form. Getting X so it is a nice round decimal like: 0.5, 0.33, 0.8 is ideal.

In this example, we start at 24%:76%. We recognize this is very close to 25%:75% and then divide each side by 25 to get the 1:3 ratio.



% 24 vs. % 76

1 : 3

Sometimes, it is easier to use the hunting technique for division. If we start with 70%-30% we would start hunting for "30's." We see two of them in 70 and then there is 10 left over. This 10 over 30 is ⅓ or 0.33 so we can say 2.33:1.

Q♥ J♥ 6♥ 9♣

A♥ Q♦ vs. 10♥ 9♥

outs ______

%______ vs. %______

______ : ______

Q♠ K♠ 8♠ K♦

A♥ K♥ vs. 7♠ 6♠

outs ______

%______ vs. %______

______ : ______

K♠ A♠ 4♠ K♦

Q♠ J♠ vs. 6♠ 7♠

outs ______

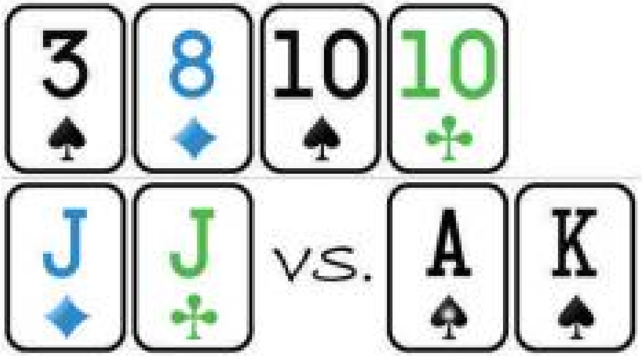
%______ vs. %______

______ : ______

outs ______

%______ VS. %______

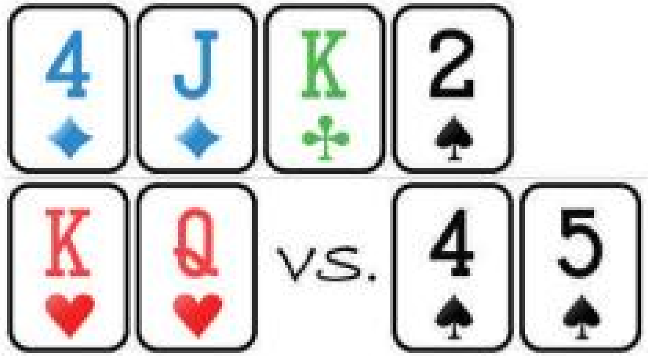
______ : ______



outs ______

%______ VS. %______

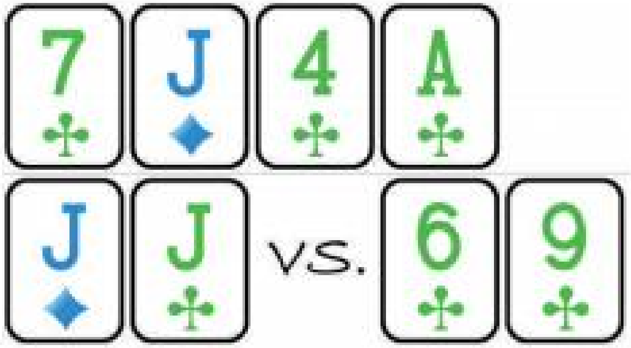
______ : ______



outs ______

%______ VS. %______

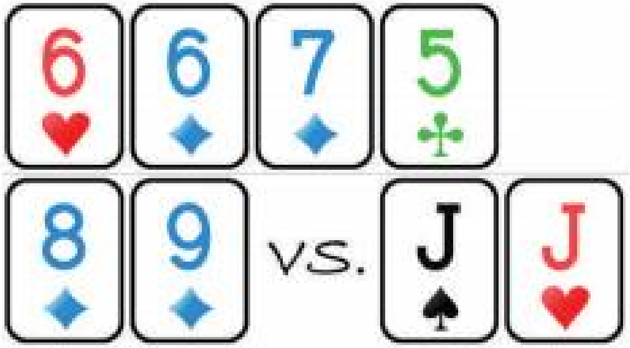
______ : ______



outs ______

% ______ VS. % ______

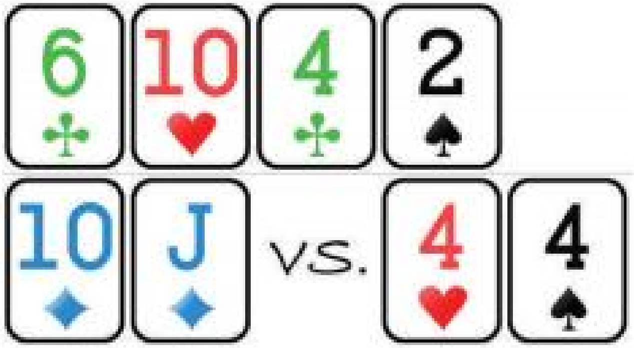
______ : ______



outs ______

% ______ VS. % ______

______ : ______



outs ______

% ______ VS. % ______

______ : ______

5♥ 10♦ Q♥ 5♠

K♥ A♥ vs. Q♣ J♣

outs ______

%______ vs. %______

______ : ______

10♠ 8♣ 6♦ Q♥

Q♠ J♠ vs. A♦ Q♦

outs ______

%______ vs. %______

______ : ______

8♦ 7♦ 6♣ 5♣

K♦ J♦ vs. 9♣ 9♠

outs ______

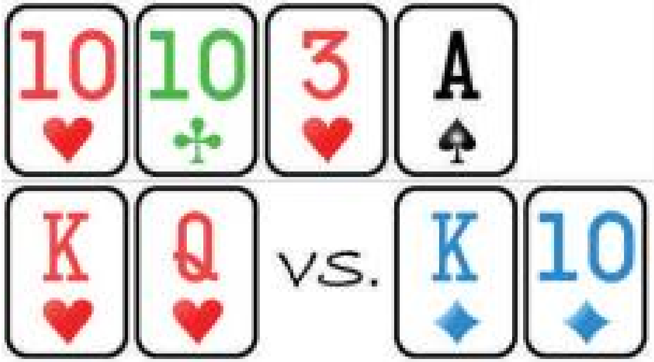
%______ vs. %______

______ : ______

outs ______

%______ vs. %______

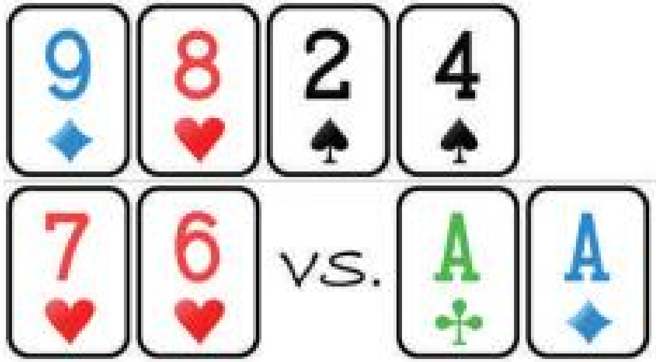
______ : ______



outs ______

%______ vs. %______

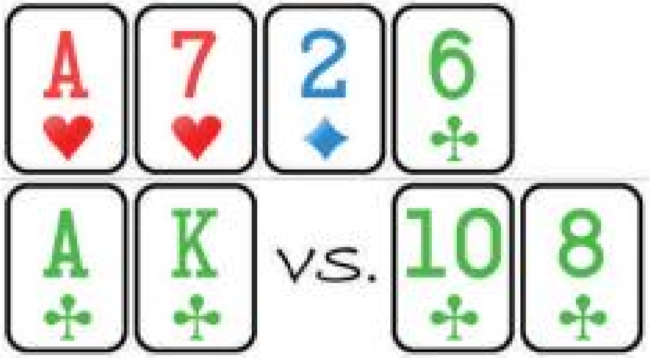
______ : ______



outs ______

%______ vs. %______

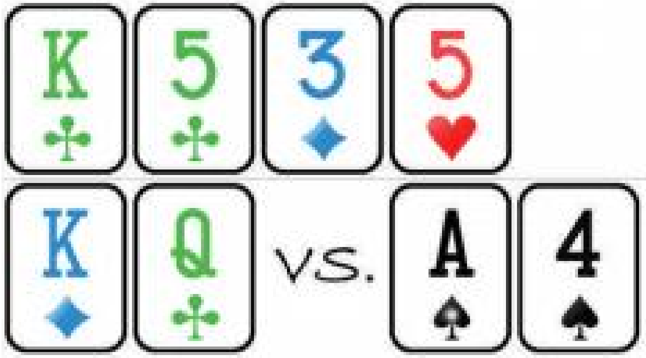
______ : ______



outs ______

%______ vs. %______

______ : ______



outs ______

%______ vs. %______

______ : ______

outs ______

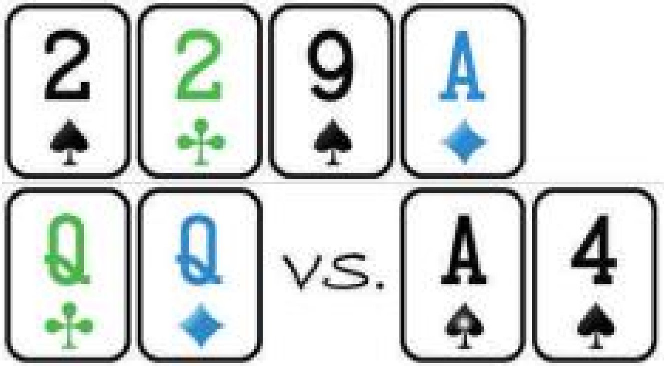
%______ vs. %______

______ : ______

outs ________

%________ vs. %________

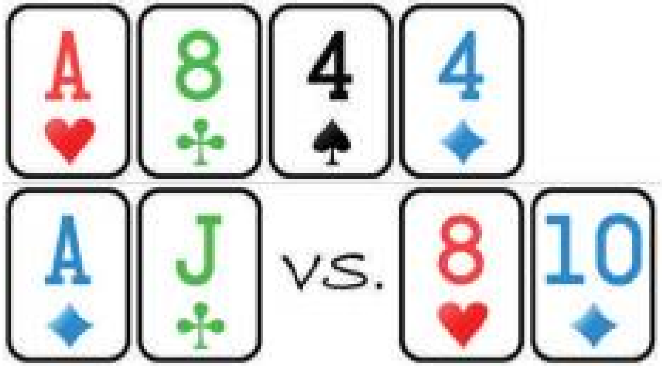
________ : ________



outs ________

%________ vs. %________

________ : ________



outs ________

%________ vs. %________

________ : ________

8♥ 3♥ Q♠ 3♠

K♥ Q♥ vs. J♠ 10♠

outs ______

%______ vs. %______

______ : ______

10♠ 8♣ 3♦ 10♥

J♠ 8♠ vs. 10♣ K♣

outs ______

%______ vs. %______

______ : ______

7♦ 6♣ 3♦ 2♣

7♠ 7♥ vs. 5♠ 4♠

outs ______

%______ vs. %______

______ : ______

K♦ J♥ 7♥ 4♠

K♠ J♠ vs. A♥ 2♥

outs ______

%______ vs. %______

______ : ______

9♠ 4♠ 6♣ 3♠

6♠ 6♦ vs. A♠ K♠

outs ______

%______ vs. %______

______ : ______

6♠ 5♦ 6♣ 5♣

A♣ 10♣ vs. 6♥ 9♥

outs ______

%______ vs. %______

______ : ______

J♣ K♠ 5♦ 2♣

Q♦ A♦ vs. K♥ 9♥

outs ______

%______ vs. %______

______ : ______

9♦ 5♠ Q♦ 9♥

10♦ J♦ vs. A♠ 9♠

outs ______

%______ vs. %______

______ : ______

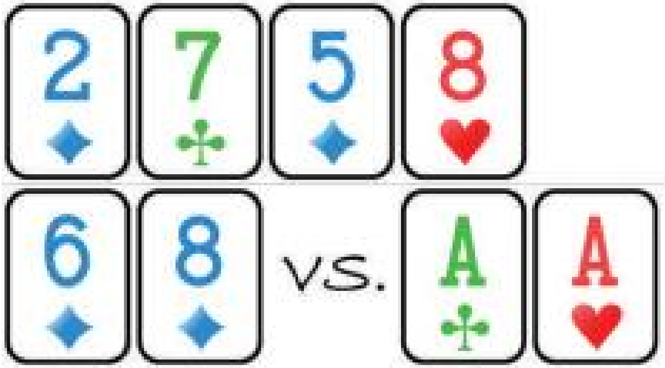
5♠ J♥ 6♣ K♦

Q♦ 10♦ vs. K♠ A♠

outs ______

%______ vs. %______

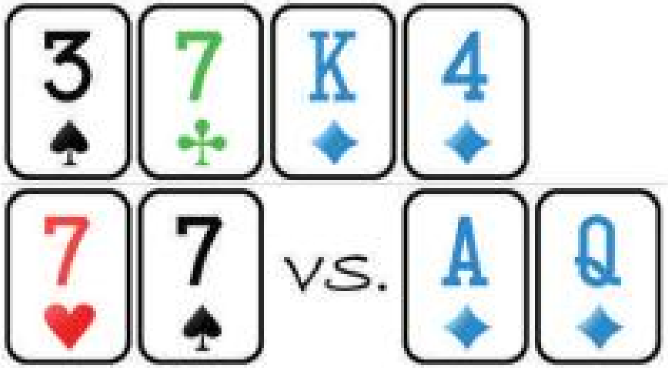
______ : ______



outs ______

% ______ vs. % ______

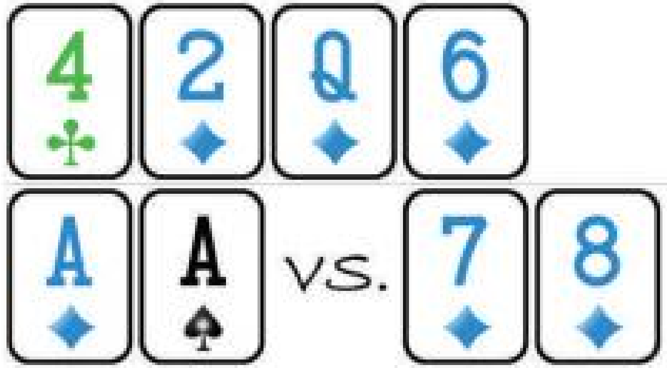
______ : ______



outs ______

% ______ vs. % ______

______ : ______



outs ______

% ______ vs. % ______

______ : ______

\# outs ______

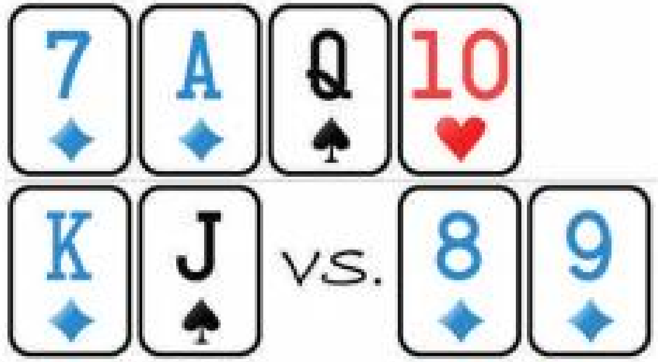
%______ vs. %______

______ : ______

\# outs ______

%______ vs. %______

______ : ______



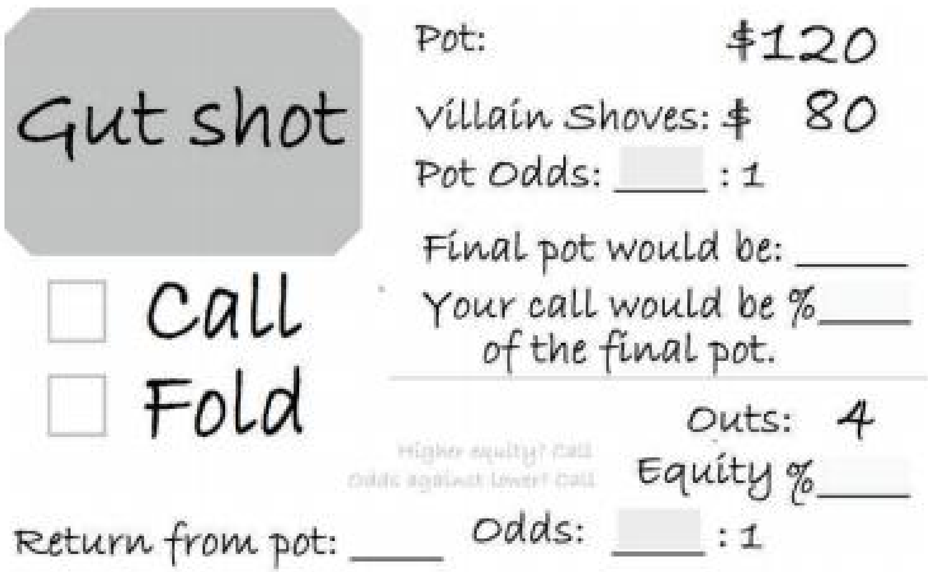
\# outs ______

%______ vs. %______

______ : ______

Drawing Decision on Turn: Percents or Odds

In this exercise, we use these odds and equity percentages for something that is critical at the table: a call or fold situation. In all of these cases, we are on the turn and the Villain has shoved into us. We assume we are behind but that we have a certain number of outs that will win for us. Each problem is a mini worksheet to draw attention to the numbers that dictate the answer.



Here we find ourselves with a gut shot, that means we have four outs. There are two ways to solve this problem, we need only do one.

For the first method, we calculate our pot odds, which are the darker boxes towards the middle of the problem. In the problem above, we are being asked to call $80. Using the hunting method, we find one "$80" in the Villain's shove. We find a second "$80" in the pot with $40 left over. That $40 is another half "$80" so we found 2.5 for our pot odds.

Are we going to win once for every two and a half losses? There are about 50 unseen cards. This is more than ten losers for every one of our four winners. Do not bother calculating this at the table since this is already a clear fold.

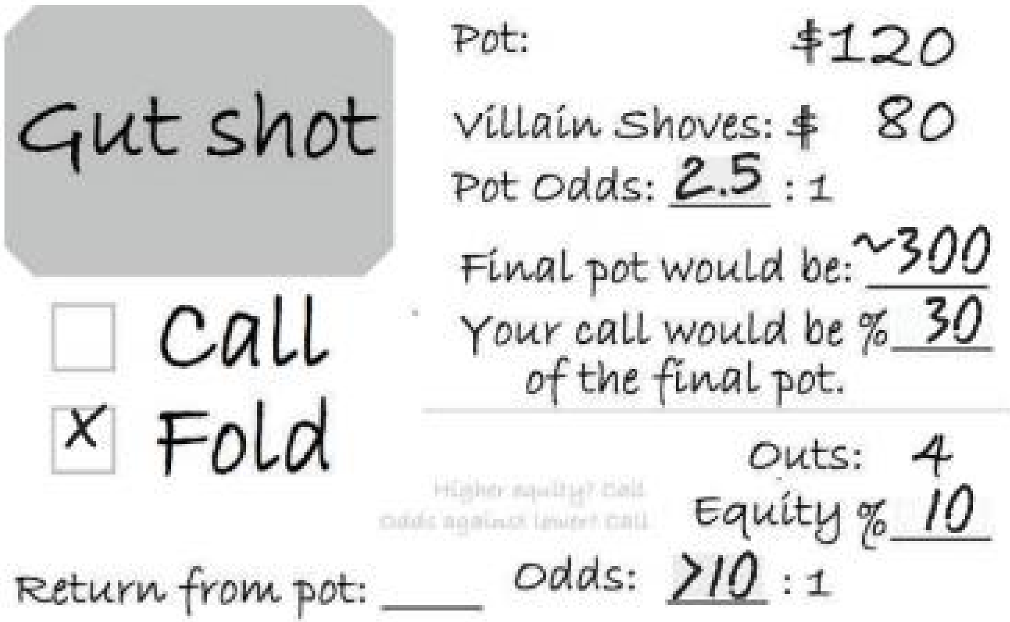
For practice away from the tables, we might work out these numbers to the brutal end. At the tables, once you know what your decision is, stop and take the action.

The second way of doing this problem is asking what percent of the final pot is our call? Our call of $80 out of a final pot of $280 would be a lot easier to calculate if the final pot was $240, so round the pot down. The rounded pot is three times the size of our call so our percentage is 33%. The pot was actually bigger so our call is a lower percentage. We nudge down to an even 30%. The actual percentage is 29%.

Next we compare our contribution to the pot to our equity. We have four outs, so that is about 8% plus 1% bonus for every four outs. Let's call it 10% because it easier to work with. We are being asked to put 30% of the money into the pot and collect 10% of it at the end. This sounds like a terrible idea. We should fold.

Notice that the two relevant numbers to this decision are the lighter boxes on the right. Most people prefer the percentage method, but both are on the worksheet. Use what you like or practice both to help decide.

There is a new calculation in this exercise: return from the pot. This is tells us how much you would win or lose on average if you made the call. This number gives us an idea of how good or bad the call is.



Using the percentage method, the return from the pot is easy. In this case the final pot is about $300. We will bring back 10% of the final pot: $30. Since we are putting in $80 and only getting back $30 on average, calling is a terrible idea. Every time we make this bad call on average we are losing $50.

Gut shot

[ ] Call

[X] Fold

Pot: $120

Villain Shoves: $ 80

Pot Odds: 2.5 : 1

Final pot would be: ~300

Your call would be % 30 of the final pot.

Outs: 4

Equity % 10

Higher equity? Call

Odds against lower? Call

Return from pot: $30 Odds: >10 : 1

For now, this number is just a curiosity, but it will be come essential later. If this return is greater than the amount of the shove, we should call. If it is exactly equal, it is just a gamble where you don't really lose or win over time.

Open ender + Flush draw

- [ ] Call
- [ ] Fold

Pot: 275

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity %____

Return from pot: ____ Odds: ____ : 1

Gut shot

- [ ] Call
- [ ] Fold

Pot: $120

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity %____

Return from pot: ____ Odds: ____ : 1

Pocket pair below TP

- [ ] Call
- [ ] Fold

Pot: $100

Villain Shoves: $ 30

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity %____

Return from pot: ____ Odds: ____ : 1

Flush draw

- [ ] Call
- [ ] Fold

Pot: $120

Villain Shoves: $ 30

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity %____

Return from pot: ____ Odds: ____ : 1

Flush draw

- [ ] Call
- [ ] Fold

Pot: $200

Villain Shoves: $ 60

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity %_____

Return from pot: _____ Odds: ____ : 1

Pocket pair below TP

- [ ] Call
- [ ] Fold

Pot: $ 55

Villain Shoves: $ 35

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity %_____

Return from pot: _____ Odds: ____ : 1

Open ender + Flush draw

- [ ] Call
- [ ] Fold

Pot: $125

Villain Shoves: $ 90

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity %_____

Return from pot: _____ Odds: ____ : 1

Flush draw

- [ ] Call
- [ ] Fold

Pot: $ 98

Villain Shoves: $ 60

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity %_____

Return from pot: _____ Odds: ____ : 1

Flush draw

- [ ] Call
- [ ] Fold

Pot: $200

Villain Shoves: $ 50

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____

Odds: ____ : 1

Pair + Flush draw

- [ ] Call
- [ ] Fold

Pot: $ 50

Villain Shoves: $ 40

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: 14

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____

Odds: ____ : 1

Gut shot

Pot: $180

Villain Shoves: $ 40

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

☐ Call

☐ Fold

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____

Odds: ____ : 1

Open ender

Pot: $300

Villain Shoves: $125

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

☐ Call

☐ Fold

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____

Odds: ____ : 1

Open ender + Flush draw

Pot: $400

Villain Shoves: $250

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

☐ Call

☐ Fold

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____

Odds: ____ : 1

Pocket pair below TP

Pot: $400

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

☐ Call

☐ Fold

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____

Odds: ____ : 1

Open ender

☐ Call
☐ Fold

Pot: $320
Villain Shoves: $200
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 8
Higher equity? Call
Odds against lower? Call
Equity % ____

Return from pot: ____ Odds: ____ : 1

Gut shot + Flush draw

☐ Call
☐ Fold

Pot: $320
Villain Shoves: $200
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 13
Higher equity? Call
Odds against lower? Call
Equity % ____

Return from pot: ____ Odds: ____ : 1

Flush draw

☐ Call
☐ Fold

Pot: $ 70
Villain Shoves: $ 40
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 9
Higher equity? Call
Odds against lower? Call
Equity % ____

Return from pot: ____ Odds: ____ : 1

Overcards

☐ Call
☐ Fold

Pot: $ 90
Villain Shoves: $ 40
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 6
Higher equity? Call
Odds against lower? Call
Equity % ____

Return from pot: ____ Odds: ____ : 1

Nut FD

☐ Call
☐ Fold

Pot: $100

Villain Shoves: $ 50

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____ Odds: ____ : 1

Gut shot

☐ Call
☐ Fold

Pot: $ 45

Villain Shoves: $ 20

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % ____

Return from pot: ____ Odds: ____ : 1

Implied Odds on the Turn

We have been making decisions on the turn where the opponent was all-in. Most bets on the turn do not leave either player all-in. When there is still money left in the stacks, the player who is drawing to the best hand can make a call with the hope of getting more money into the pot when he hits his outs.

There is no mathematical answer to "If I hit my flush, will Villain call my shove on the river?" The only thing math can do is ensure there is enough money in the stacks so it is *possible* for Villain to pay us off. Inducing this payoff and knowing how often it will come is the art of poker. We only do the math here to know if it is possible to get paid off.

Here is an example. The Villain makes a pot sized bet and has four times that bet left in his stack.

POT:

VILLAIN BETS:

REMAINING STACK AFTER CALL

One way to look at this is as follows. If we are on a draw that hits 20% of the time, roughly a flush or straight draw, then we will lose four bets chasing this draw for the one time it hits. When we hit, we will get the two units in the pot for sure. Over the course of these five trials, that means on average we are losing two chips, or 0.4 chips per try.

We need to make up those two chips when we hit just to break even. The Villain sometimes will give us the remaining four chips in his stack when we hit. If we can get those four chips more than half the time when we hit, we are going to profit.

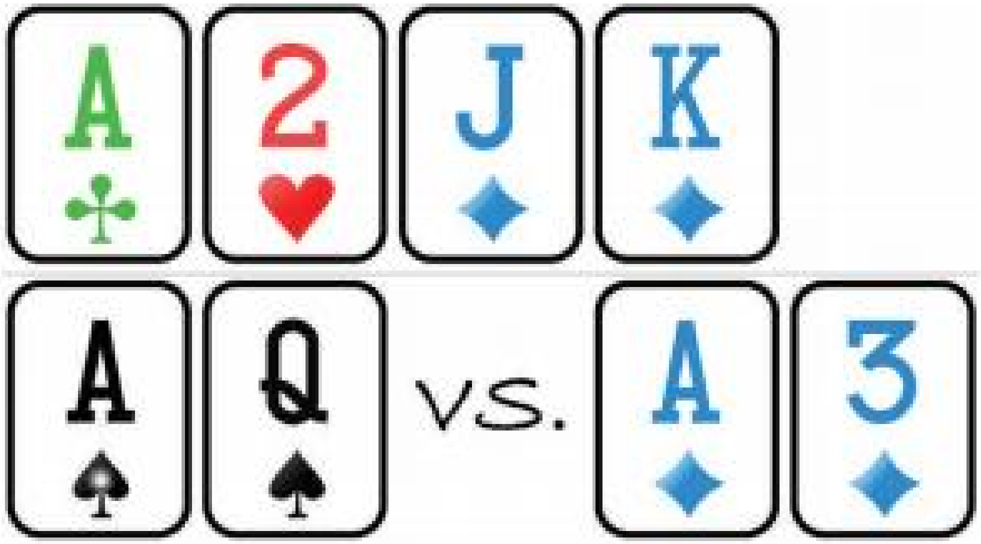
To state this a second way, if we call, the final pot will be three chips and we have 20% equity in the pot. We are putting in 33% of the final pot. Because we put 33% of the money in and only collect 20% back, we lose 13% of the three chip pot. Doing the math exactly we see that three times 0.13 is 0.4 chips.

We are losing 0.4 chips per trial. We have five trials so we are losing two chips over the five trials and we need to make that up. The four chips left in the stacks will do that, if we can get Villain to put them in when we hit.

Let's do this a third way, this time with the hunting method. We would say that we know our draw will brick four times for every hit. We look around for four times our call. We see twice our call in the current pot and four times the call in the remaining stacks. This means we can profit two units when we hit if we get it all.

These are all different ways of saying the same thing. Use the thought process that is easiest for you. The size of the pot and the actual numbers will dictate what is easiest for you to do at the table.

Here is out next worksheet:



Pot: $ 100

Villain bets $ 80

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____
of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

We already know how to fill in most of the parts of this worksheet, but we will work through it again.

First the pot odds: $180 for $80. We find two "$80" for $160. That is $20 left over and $20 is a quarter of the call of $80. So we found 2.25 times our call in the pot. We enter that number.

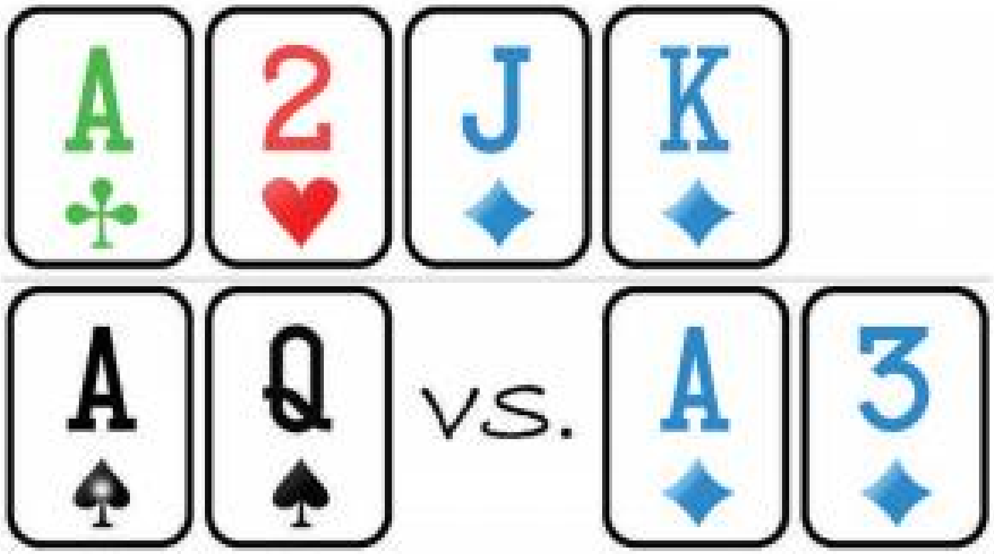
The final pot will be $80 times two. $160, plus the original pot of $100 for $260.

Now we want to get our call of $80 as a percentage of the pot of $260. We know calling a pot sized bet means we put in 33% of the pot. This was a little less than a pot sized bet, so we can round it down to 30%. The actual number is 31%.

Counting our odds versus top pair top kicker, we have all the flush outs and pairing our kicker. That is nine plus three or twelve outs.

Turning outs into equity, we us the Rule of Two to double twelve and add a bonus percent for every four outs. That is 24% + 3% bonus for 27%.

Calculating the drawing odds, there is 73% losses for our 27% wins. This means there is about three losses for each win giving us odds of 3:1.



Pot: $ 100

Villain bets $ 80

Amount behind $ 200

Pot Odds: 2.25 : 1

Final pot would be: $260

Your call would be % 30
of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 27

Odds: 3 : 1

Profit : $ ___ Makeup: $ ___

☐ Call ☐ =EV ☐ Fold

This is actually a really close call. We are putting in 30% of the final pot and collecting 27%. Stated the other way, we are getting 2.25:1 on our money and the odds against are at 3:1. At the table, we would likely say our return from the pot is essentially what we are putting in: $80. Doing the math away from the table we are more precise and see it is $70 return since 27% of $260 is $70. Since we are putting $80 in and collecting $70, this means we are losing $10 on this call immediately.

The odds, located just above that, say we will suffer three losses for every one win. We take that loss of $10 and multiply it by the number of trials we are working with: three losses and one win. We get what we call makeup of $40. When we hit our outs, we have to makeup $40 to pay for those four $10 loses.

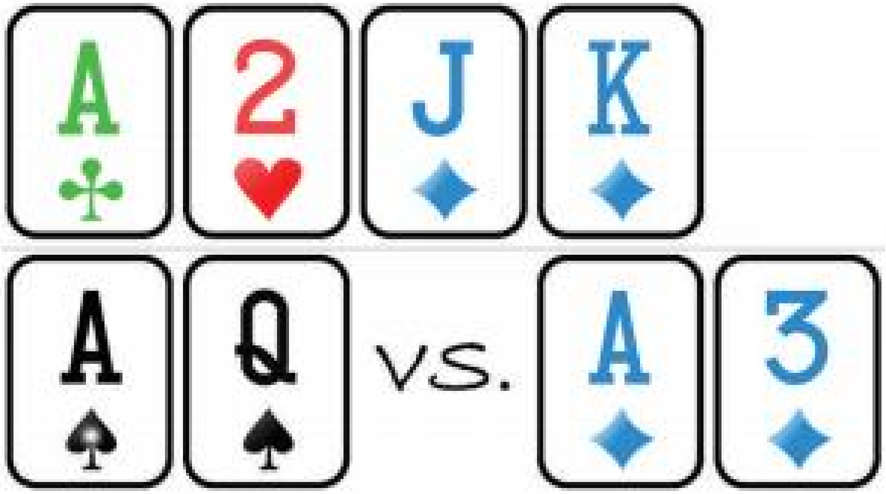
We look at the amount behind, $200. This $200 is bigger than our required makeup of $40, so calling is at least an option. When we were doing problems earlier the Villain was all-in, so the amount behind was zero. This meant they could not pay our makeup when we hit. Sometimes there is money behind, but the amount behind is not enough to pay our makeup so it is a clear fold also.

The question of us being able to make that $40 on the times we hit is beyond math. Knowing the math gives you the numbers; poker sense can make the assessment of the likelihood of getting paid off.

Check the box if you would call or fold or if you think it does not really matter because you will break even. This is a judgment call in situations where there is enough money left to pay your makeup.

In this specific example, if we put Villain on a top pair with better kicker, then ask, "If we spike our two pair on the river will we get at least an additional $40 considering that the pot is already $260?" Most people would say this a virtual guarantee.

We would also ask, "If we hit our flush, will Villain pay us off?" Some Villains would actually check-fold to a rivered flush, so this is less of a guarantee. If we bet $100 when our flush comes, will the Villain call at least 40% of the time? Most players would think so. If we bet $200 will Villain call at least 20% of the time? Again, most players would think so.



Pot: $ 100

Villain bets $ 80

Amount behind $ 200

Pot Odds: 2.25 : 1

Final pot would be: $260

Your call would be % 30 of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 27

Odds: 3 : 1

Profit : $-10 Makeup: $40

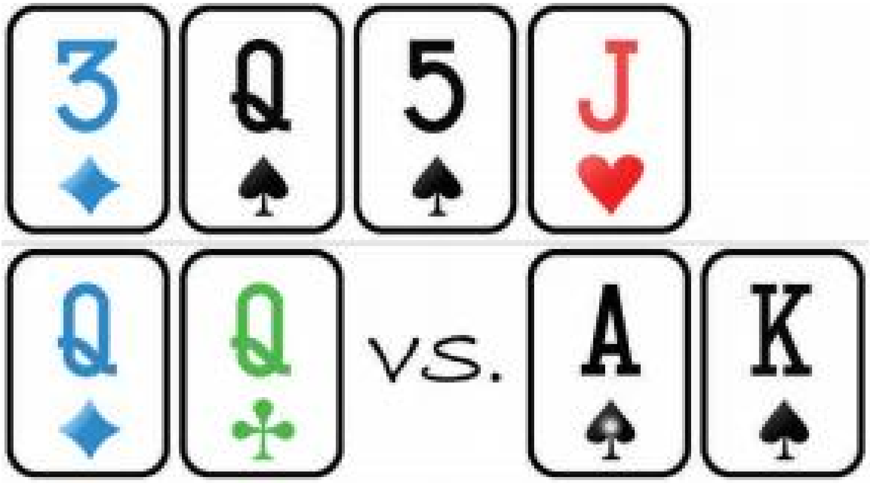
[x] Call [ ] =EV [ ] Fold

The next question should be will we pay him off if we miss. We don't have the action leading up to this decision, but under most circumstances that would have gotten us to this place, we would not pay off with top pair no kicker.

Because we will know when our hand has improved but Villain will not, we would make this call.

Without knowing the action to this point, the math can only tell us if this is a clear fold because there are not the implied odds to justify a call. The math can only tell us the proper implied exist, but not if they justify a call.

Let's do a second problem. In this case we are going to put up our draw versus the best possible hand for this board. If we can justify a call against the current nuts, then it is usually worth making the call no mater what Villain holds.



Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

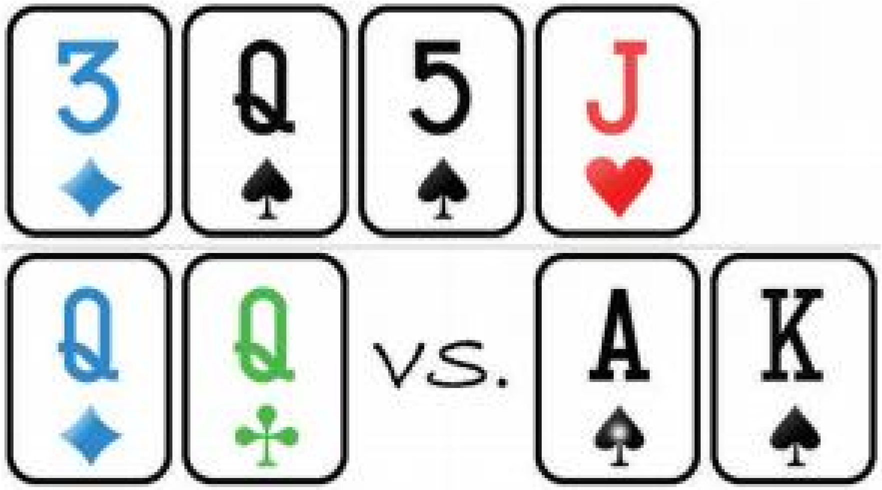
☐ Call ☐ =EV ☐ Fold

Let's calculate pot odds first. The Villain is betting essentially pot, so we are getting 2:1 on our call. The final pot is $230 and the call would be 33% of the final pot.

Counting flush outs, we have only seven since the board pairing flush cards are false outs. Then we also have the non-flush Tens for another three outs. These are all nut draws that can overtake even the strongest hand on the current board. A total of ten clean outs is 20% plus two bonus percent is 22%. It is easier just to call this 20% though. This is a conservative estimate and makes the math easier.

For the odds, if we are 20% to win, we are 80% to lose. This is a 4:1 ratio.

Since we are putting in 33% of the money and only taking out 20%, we are losing money on this deal immediately. We might be able to get a win by calling this bet and making a hand and then getting more money in the pot. In a real situation, we might also consider making a raise here. That is a different kind of math, and we will get to it in something called fold equity.



Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: 3 : 1

Final pot would be: 225

Your call would be % 33 of the final pot.

Outs: 10

Higher equity? Call.
Odds against lower? Call.

Equity % 20

Odds: 4 : 1

Profit : $30 Makeup: $150

☐ Call ☐ =EV ☒ Fold

To find out how much we are losing on this call immediately, we know we put in 33% and take back 20%. That means a loss of 33% - 20% or 13% of the final turn pot.

Thirteen percent is not a nice number to work with. We will do this calculation in two easier pieces: 10% and 3%. Ten percent of $230 is $23. The remaining 3% is about a third of this $23. That is about seven dollars. Add that on, and we are losing about $30 on this call. We will miss four times for every win. This means over the five trials, we have to make up $150 (5 * $30 = $150) on that one time we hit.

The Villain only has $75 left, that means even under the best scenario where we get paid off every time we hit, we are taking the worst of it against this particular holding and should fold if we knew this is what he had.

A♣ 2♥ J♦ K♦

A♠ Q♠ vs. A♦ 3♦

Pot: $ 100

Villain bets $ 80

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: _____

Your call would be % ____ of the final pot.

Outs: _____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

9♣ 10♥ 4♥ 6♠

K♠ 10♠ vs. J♣ Q♣

Pot: $ 75

Villain bets $ 75

Amount behind $ 150

Pot Odds: ____ : 1

Final pot would be: _____

Your call would be % ____ of the final pot.

Outs: _____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

A♠ A♣ 5♥ 3♥

A♦ J♦ vs. K♥ Q♥

Pot: $ 35

Villain bets $ 20

Amount behind $ 150

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call

Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

A♠ 4♦ 7♠ 5♠

A♥ Q♥ vs. K♠ K♣

Pot: $ 75

Villain bets $ 45

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call

Odds against lower? Call

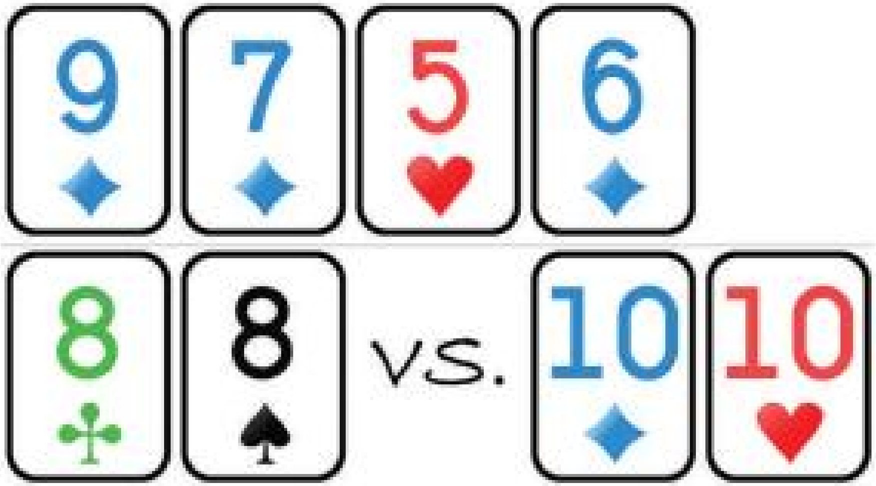
Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Answers: page 230



Pot: $ 60

Villain bets $ 60
Amount behind $ 300

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

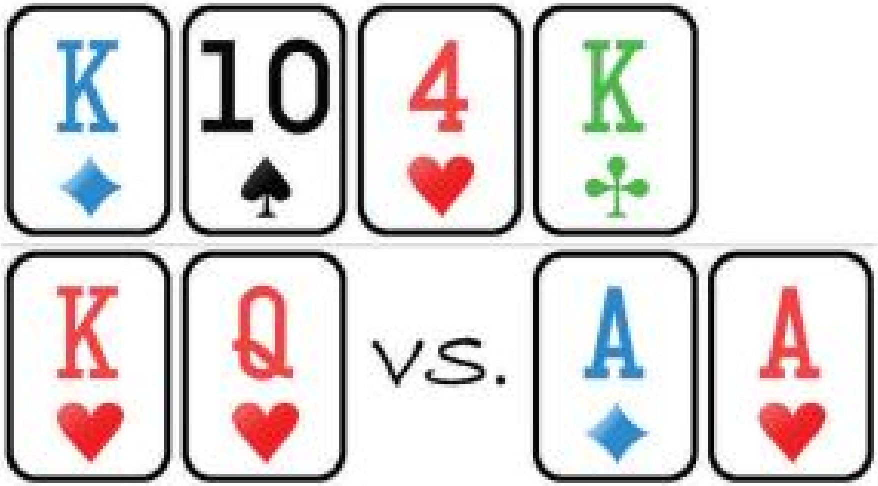
Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold



Pot: $ 110

Villain bets $ 70
Amount behind $ 300

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

7♦ 2♠ J♠ 3♥

7♣ 7♥ vs. A♠ K♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

9♥ 7♥ 7♣ 3♠

7♠ 8♠ vs. 8♥ 10♥

Pot: $ 70

Villain bets $ 45

Amount behind $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

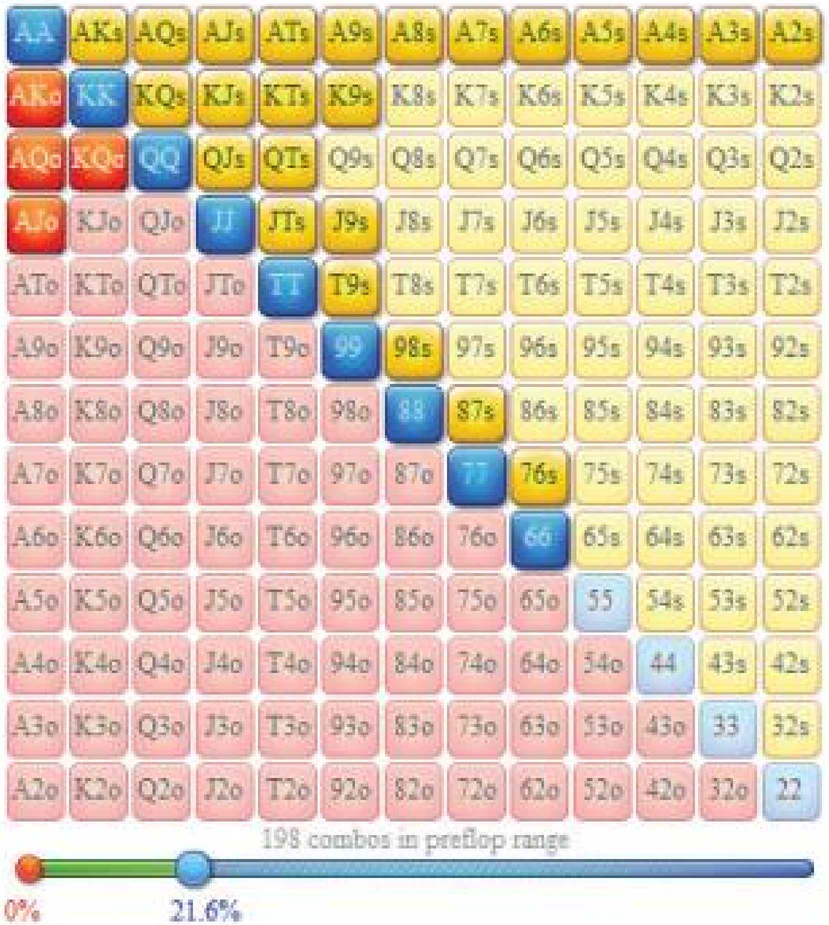
Counting Combos

We know what our hand is, but we do not know what the Villain has. We can guess that he holds certain hands, like a set or top pair. Some hands are rare, like sets, and some are relatively common, like top pair. We count combos to estimate the likelihood of each holding. The set of likely hands for the Villain to hold is called his range.

This book is not about constructing a range for the Villain. It is about doing the math after you have decided on that range. Read How to Read Hands by Ed Miller (buy it at http://RedChipPoker.com) for ideas on how to construct ranges.

Out of necessity, we will be constructing ranges to work with but do not claim them to be realistic. We just need something to work with.

For simplicity in these exercises, we will assume Villain has only hands from this range:

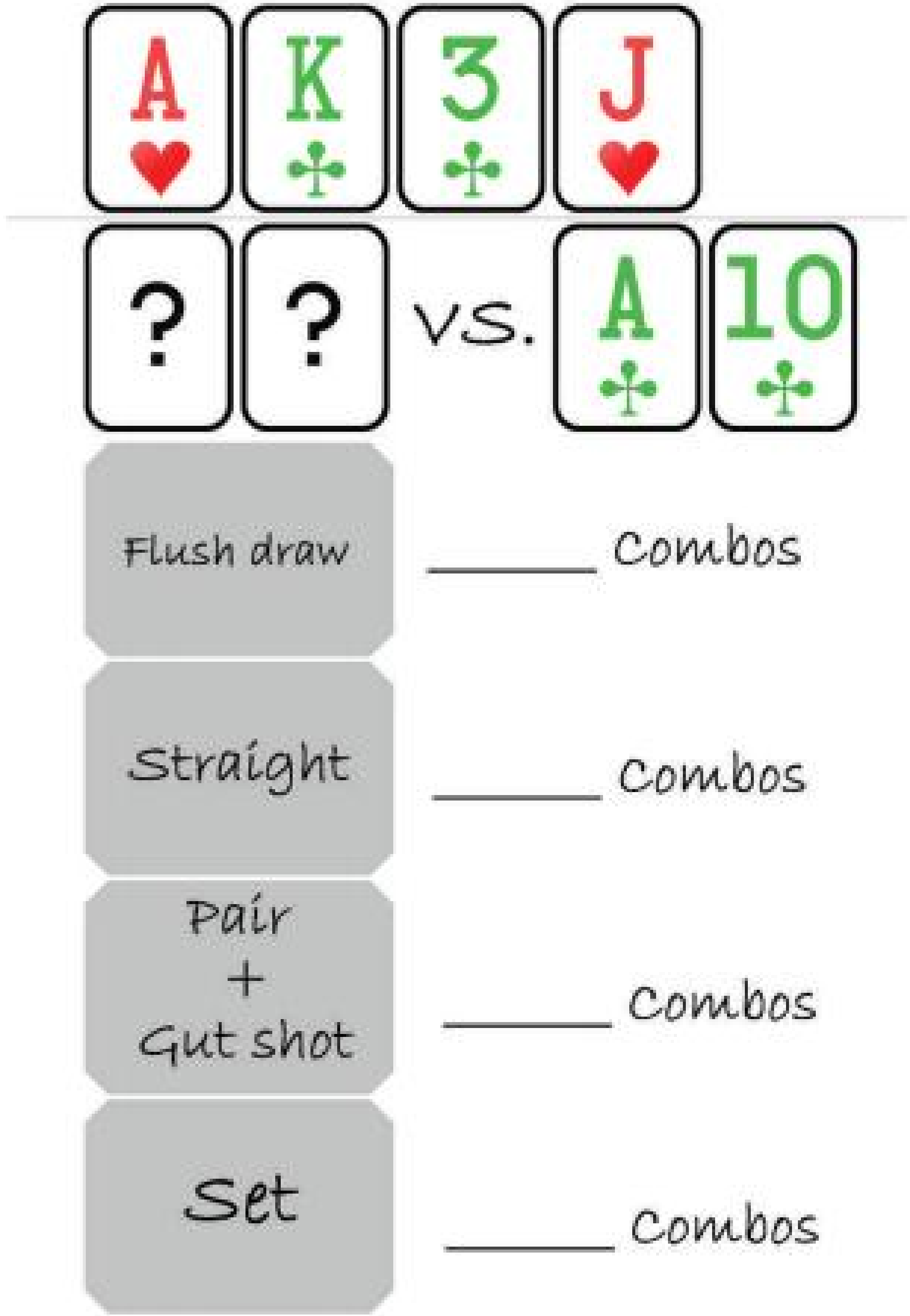


This is Ed Miller's opening range from the early positions as outlined in his video How to Beat $2-$5 Anywhere. This can be found at

http://RedChipPoker.com

in the May 2014 Pro archive. Remember the suited cards are above the diagonal.

Here is the new worksheet.



We need to count how many of each hand type is possible for Villain to have.

Let's look at the Club flush draws. We are looking for any flush draw in that range that does not have an Ace, King, Ten or Trey (since they are on the board). The Ace and King are in most of the flush draws, so there are actually not that many, just five.

Heart flush draws are a little more numerous because King high flush draws are not blocked. There are eight flush draws in Hearts for thirteen total.

Flush draw combos are the hardest to count. In the Appendix there is a method for counting combos quickly that is a decent approximation. This appendix is a reprint from the strategy book Poker Plays You Can Use, also available at http://RedChipPoker.com

Straights are easier to count since there is only QT. The stated range only includes suited QT so there are four combinations. We hold a blocker, meaning Villain can not hold QcTc, so there are actually only three suited combos for him. This is only one combination blocked, but that was 25% of the possible straights.

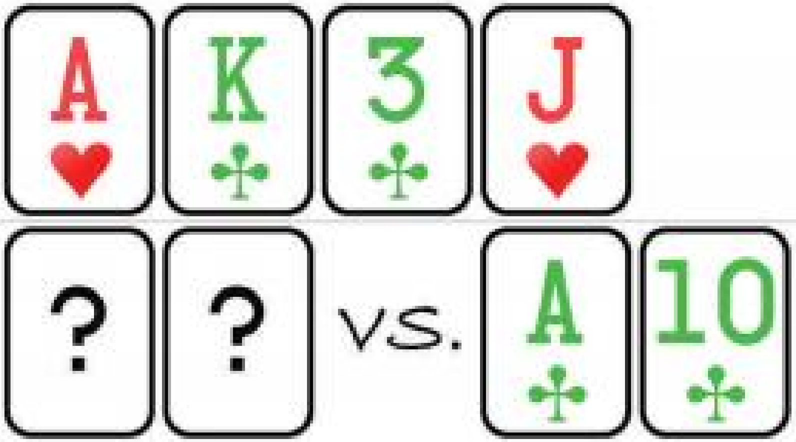
Finding the pairs plus gut shots is a bit more challenging. Any hand with a Queen or a Ten and another Broadway card has a gut shot plus a pair. Looking at a computer tool, there are 39.

Sets are easy to count. If the board is unpaired and we hold no blockers, there are three sets per card on the board. If we hold one of that card's rank, then there is only one way for Villain to have a set.

This means there is one set of Aces, three of each of the other sets. The only wrinkle here is we don't think the Villain would play pocket Treys, so there are just seven combos of sets on this board.

If we think Villain could have any pair plus gut shot draws, there are lots of them. We will rarely be concerned about an accurate count, but getting an intuition by counting combos over and over is important.

Since this counting of combos is difficult to do exactly, consider a computer tool like Flopzilla to count the combinations. Fill in the worksheets with Flopzilla to get the intuition of the relative frequency of each part of the range.

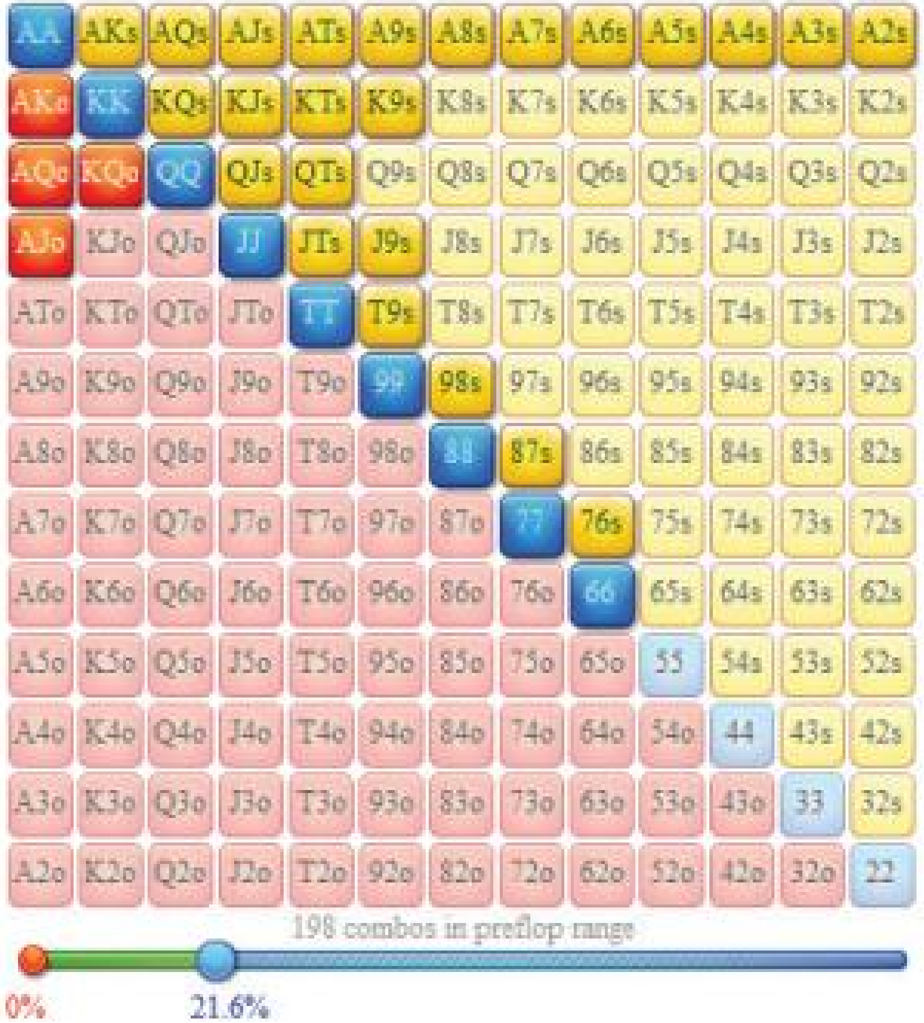


Flush draw ______ Combos

Straight ______ Combos

Pair + Gut shot ______ Combos

Set ______ Combos



A♣ 6♠ 10♦ 2♠

? ? vs. A♦ K♦

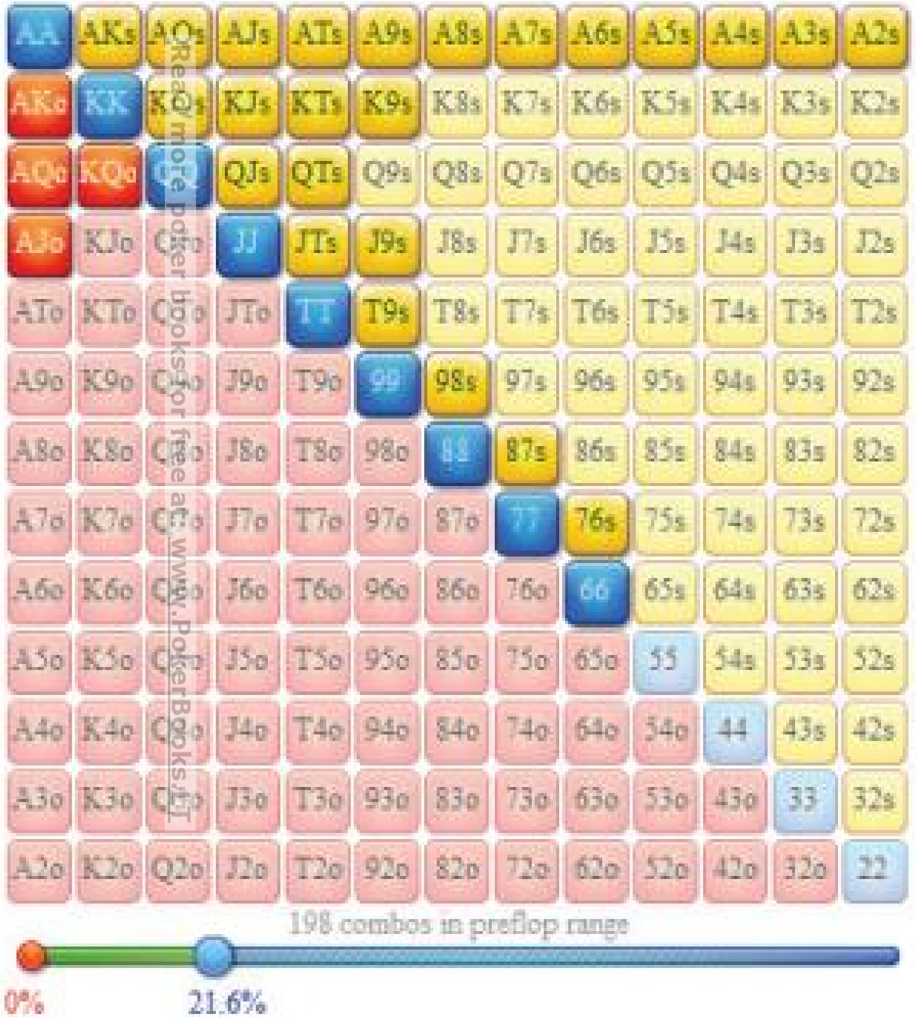
Flush draw	______ Combos
Three of a kind	______ Combos
Open ender	______ Combos
Two Pair	______ Combos

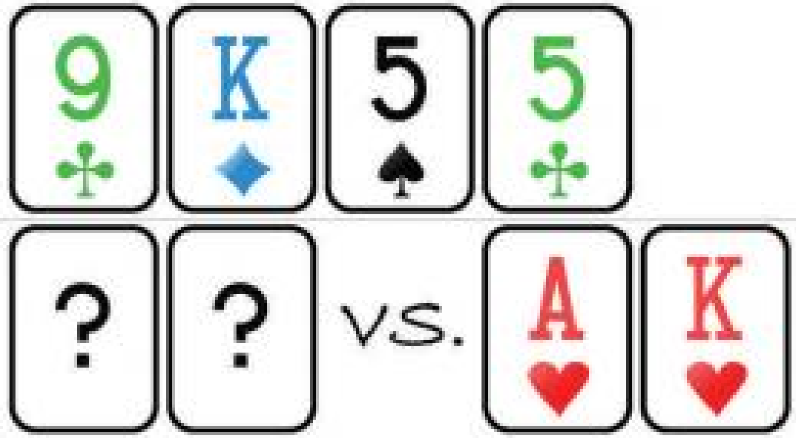
6♠ 5♦ 6♣ J♥

? ? vs. K♣ K♠

Full House	______ Combos
Three of a kind	______ Combos
Two Pair	______ Combos
Pocket pair below TP	______ Combos

Answers: page 232





Full House	______ Combos
Overpair	______ Combos
Two Pair	______ Combos
Top pair	______ Combos

4♠ 4♣ 10♥ 5♣

? ? vs. J♦ J♣

Full House	______ Combos
Overpair	______ Combos
Top pair	______ Combos
Three of a kind	______ Combos

J♥ 8♥ J♣ 4♠

? ? vs. A♠ J♠

Full House	______ Combos
Overpair	______ Combos
Full House	______ Combos
Three of a kind	______ Combos

Hand Versus Range, All-In

We can estimate the value of our hand versus any given holding. We know how to count the combinations of hands in the Villain's range. Now we combine the value of each hand and frequency of each hand to choose our action.

In these problems the Villain has shoved so we are not concerned about implied odds.

To accomplish this section you will need to fill out the familiar forms that calculate the profit of a hand versus a hand. For instance the first hand versus hand in this section will be AJo versus KQs. The small worksheet calculates that this is a break even scenario with $0 profit. We would then enter this profit on the separate combo counting worksheet on the facing page. Next we find the profit versus a set and versus two pair. Once combos and profit are both calculated, we multiply them out. Once multiplied, we sum. This final total represents the profit or loss if we played out every possibility once. If this total is positive, we should make the call. If it is negative, we should not.

It can happen that some hands in the Villain's range give us a win, some a loss. We want to know what happens overall.

3♥ K♦ A♥ 9♠

? ? vs. K♥ Q♥

Top pair	30	Combos	x	0	Profit	=	0
Set	7	Combos	x	-30	Profit	=	-280
Two Pair	11	Combos	x	-30	Profit	=	-330

☐ Call ☐ =EV ☒ Fold Total: -610

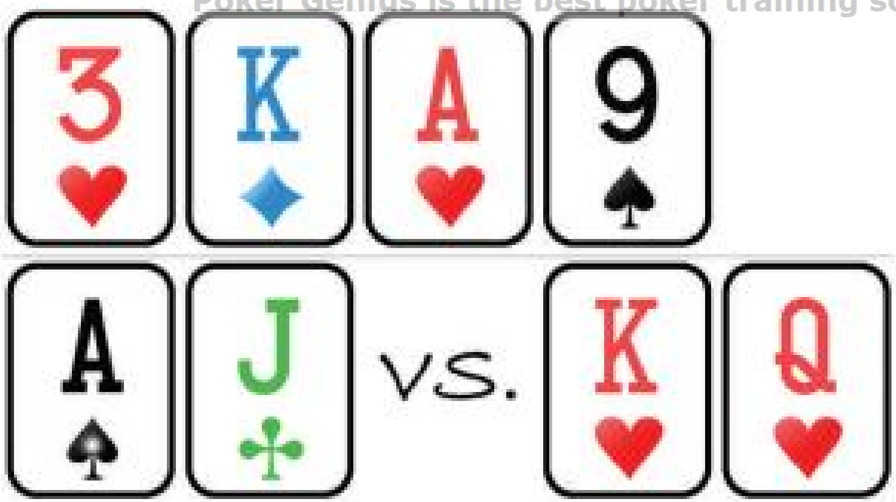
We see that we lose $610 taking this line if we play against every hand in the range once. This means over the 48 possible combinations, we on average lose about $13 on an $80 call.

This loss is small enough relative to the size of the pot that players do not notice it in the natural variance of poker. These small losses add up. Players that call with the flush draw in this situation do not lose because "they never get there." They lose because it is a bad bet and the odds are against them.

A simple short cut was the possible here. If we expect this is likely to be a fold, start with the weakest part of the range. If we can not profitably call against the weakest hand, then the rest of the math does not matter, just fold.

If our intuition is such that this is likely to be a call, start with the strongest part of the range. If we are good to call against the strong hands, the weak hands they might show up with are just a bonus.

What about bluffs? If we want to factor in bluffs and semi-bluffs into the Villain's range, the math is exactly the same as any other holding. If we spend the rest of our low limit poker career assuming that big bets on the turn and river are never bluffs, we will do just fine. Remember Rule two from Miller's The Course: Stop paying them off.



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

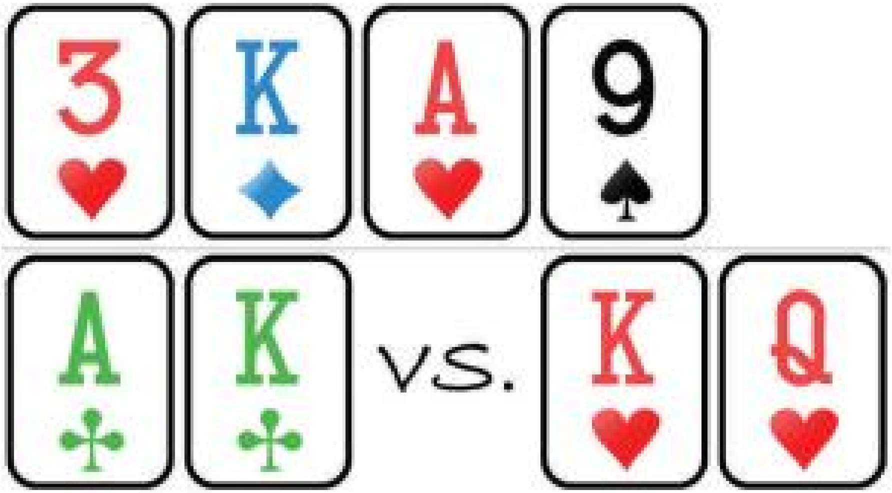
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____
of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

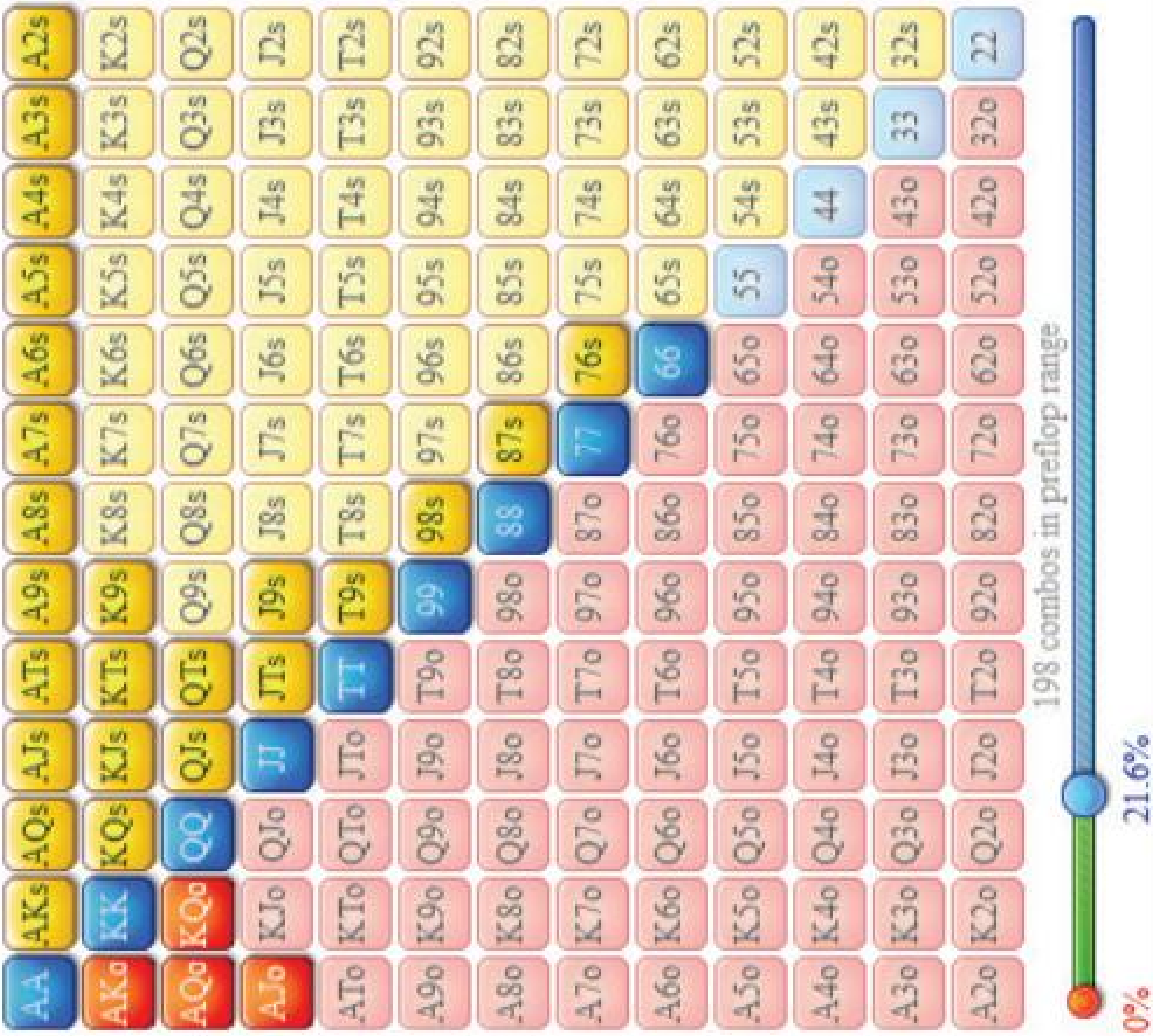
Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

Answers: page 234


198 combos in preflop range
0%
21.6%

Top pair ______ Combos x ______ Profit = ________

Set ______ Combos x ______ Profit = ________

Two Pair ______ Combos x ______ Profit = ________

☐ Call ☐ =EV ☐ Fold Total: ________

4♦ 3♣ 9♣ 3♥

A♣ J♣ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

4♦ 3♣ 9♣ 3♥

K♦ K♣ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

4♦ 3♣ 9♣ 3♥

10♠ 10♥ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

4♦ 3♣ 9♣ 3♥

K♠ 9♠ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

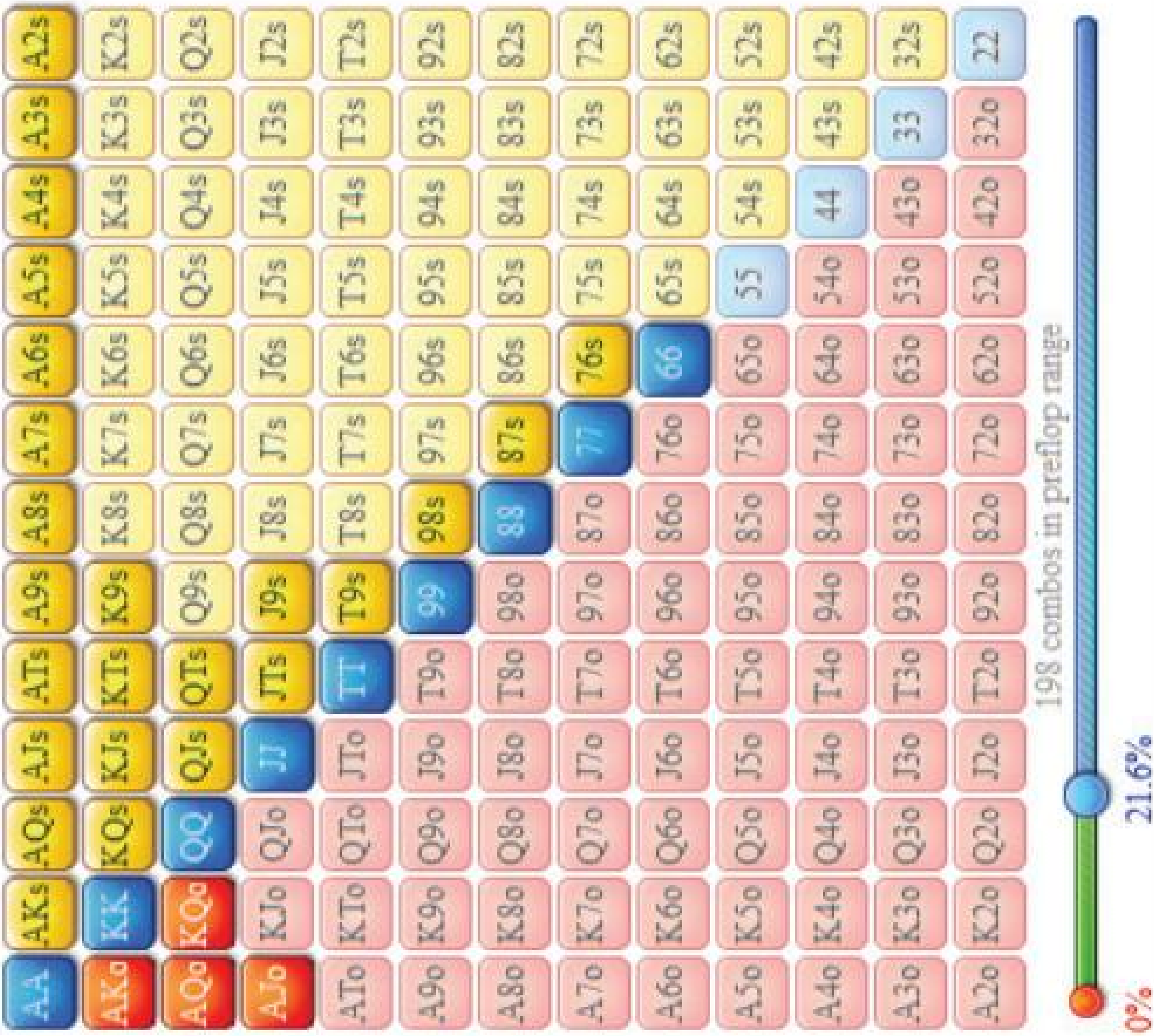
Higher equity? Call
Odds against lower? Call

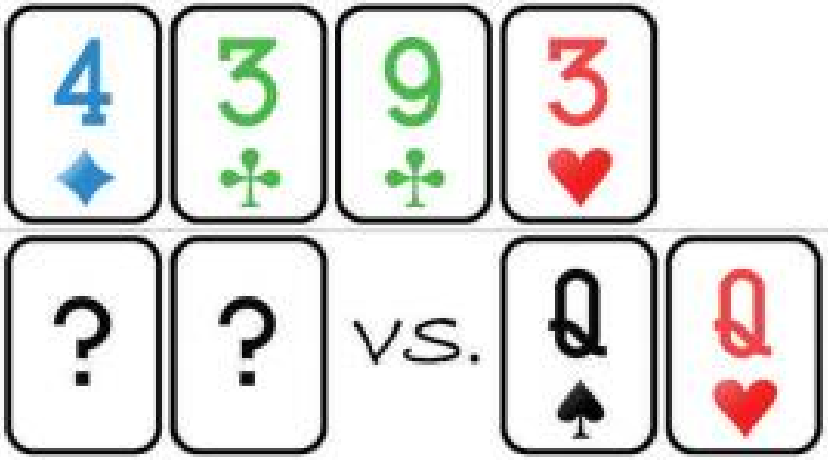
Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%



Flush draw	______	Combos	X	______	Profit	= ________
Overpair	______	Combos	X	______	Profit	= ________
Weaker Overpair	______	Combos	X	______	Profit	= ________
Top pair	______	Combos	X	______	Profit	= ________

☐ Call ☐ =EV ☐ Fold Total: ________

4♥ 8♠ 10♦ 2♣

9♥ J♥ vs. 8♣ 10♣

Pot: $ 170

Villain Shoves: $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____
of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

4♥ 8♠ 10♦ 2♣

10♥ J♥ vs. 8♣ 10♣

Pot: $ 170

Villain Shoves: $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____
of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

Pot: $ 170

Villain Shoves: $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

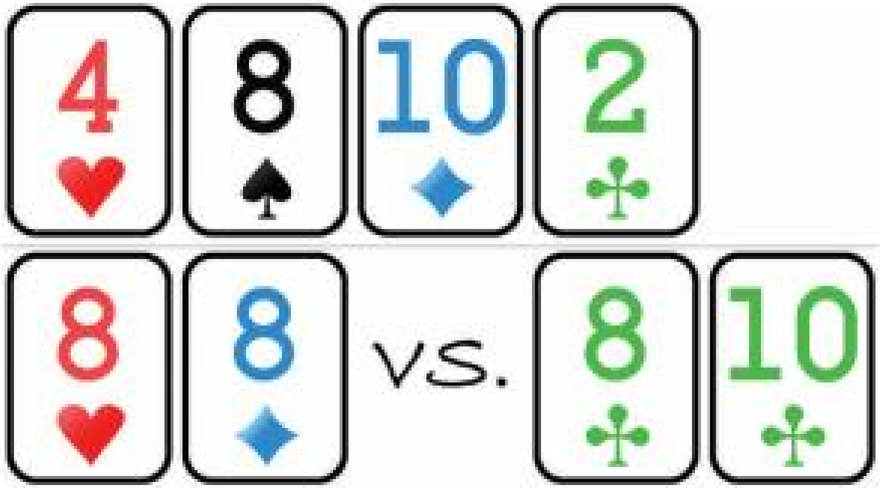
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 170

Villain Shoves: $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

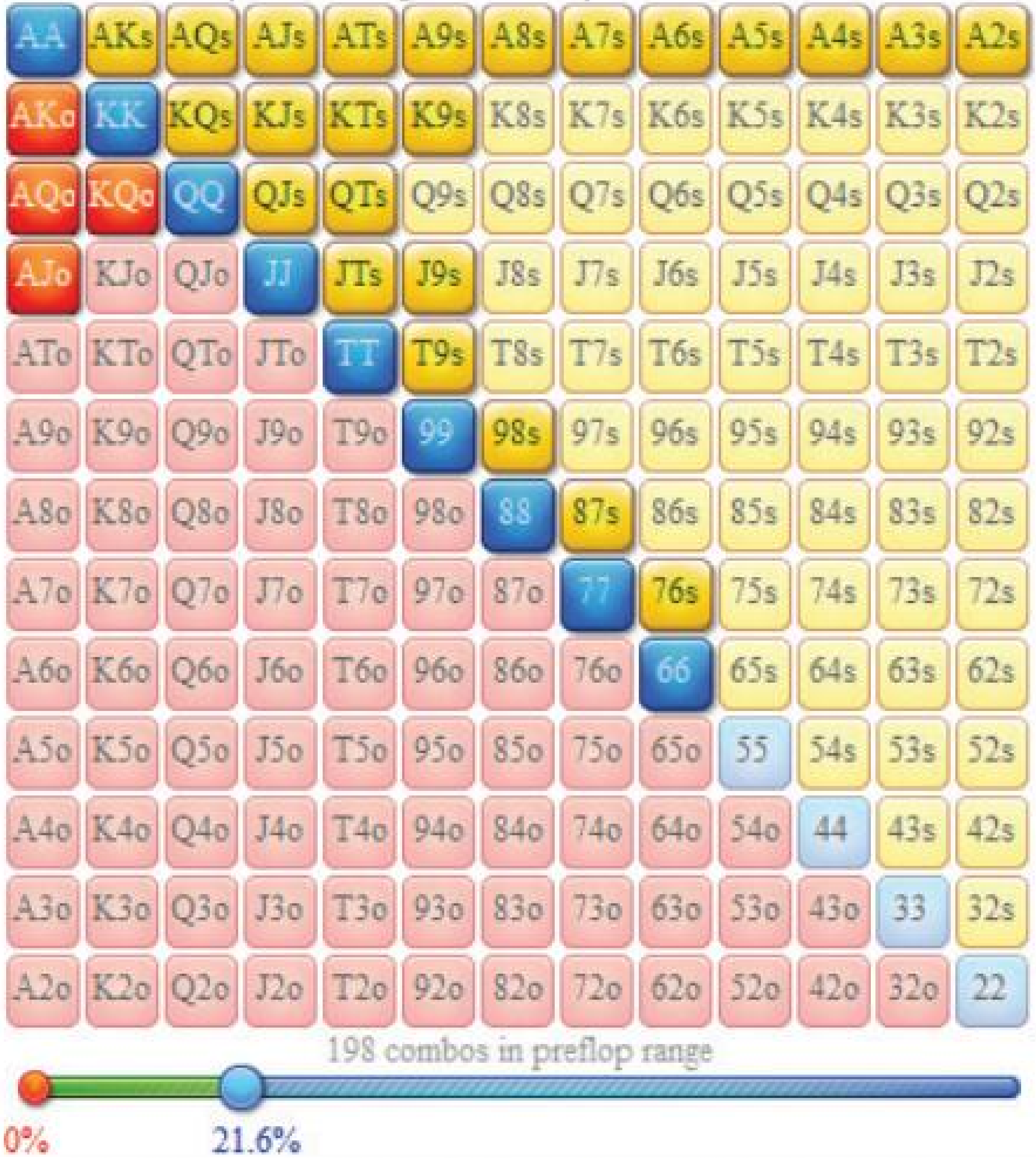
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

4♥ 8♠ 10♦ 2♣

? ? vs. 8♣ 10♣

Open ender	______ Combos	x	______ Profit	=	________
Top pair	______ Combos	x	______ Profit	=	________
Overpair	______ Combos	x	______ Profit	=	________
Set	______ Combos	x	______ Profit	=	________

☐ Call ☐ =EV ☐ Fold Total: ________

2♣ 6♥ 6♦ 6♠

6♣ A♣ vs. Q♣ Q♠

Pot: $ 140

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be % ______ of the final pot.

Outs: ______

Higher equity? Call
Odds against lower? Call

Equity % ______

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

2♣ 6♥ 6♦ 6♠

7♣ 7♦ vs. Q♣ Q♠

Pot: $ 140

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be % ______ of the final pot.

Outs: ______

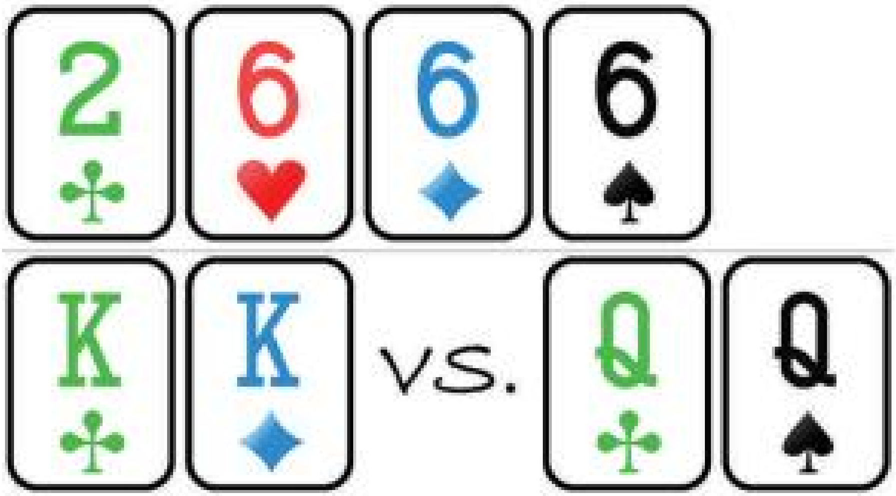
Higher equity? Call
Odds against lower? Call

Equity % ______

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 140

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

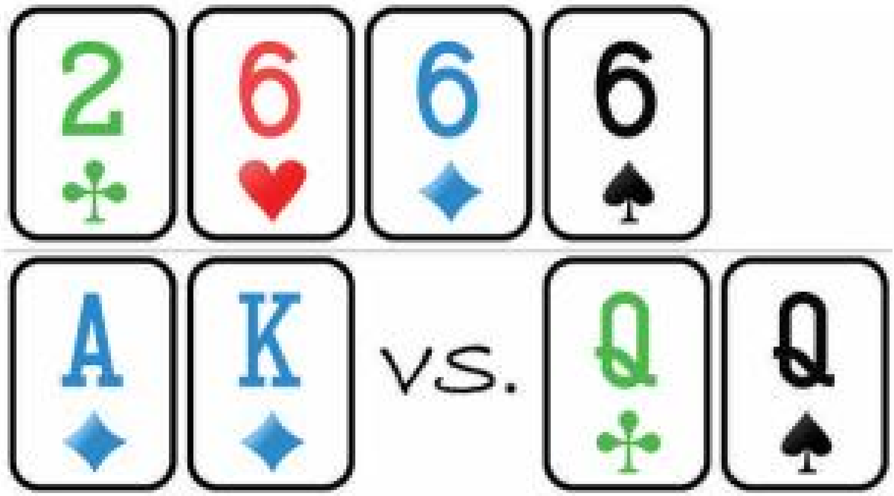
Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold



Pot: $ 140

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

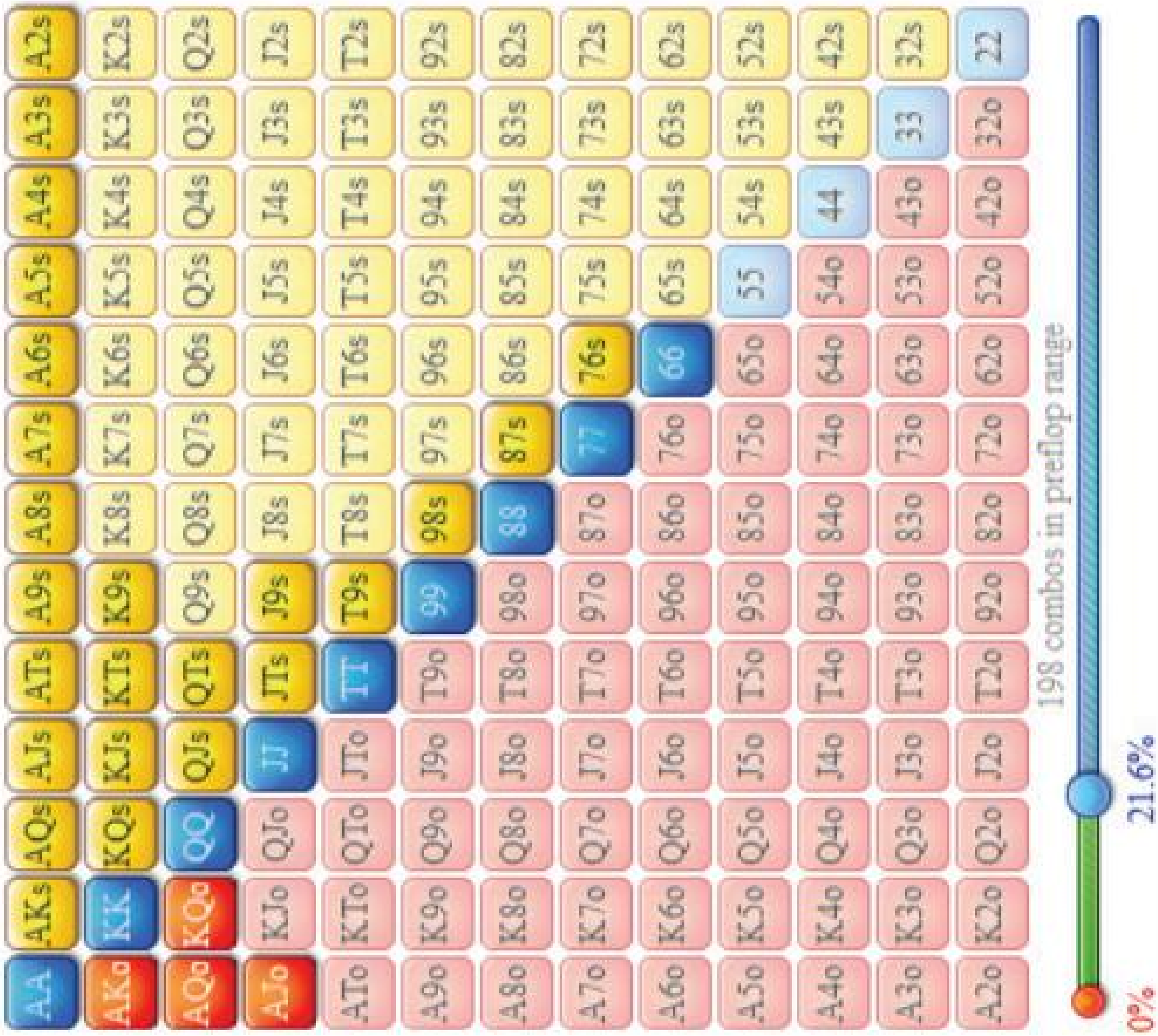
Higher equity? Call
Odds against lower? Call

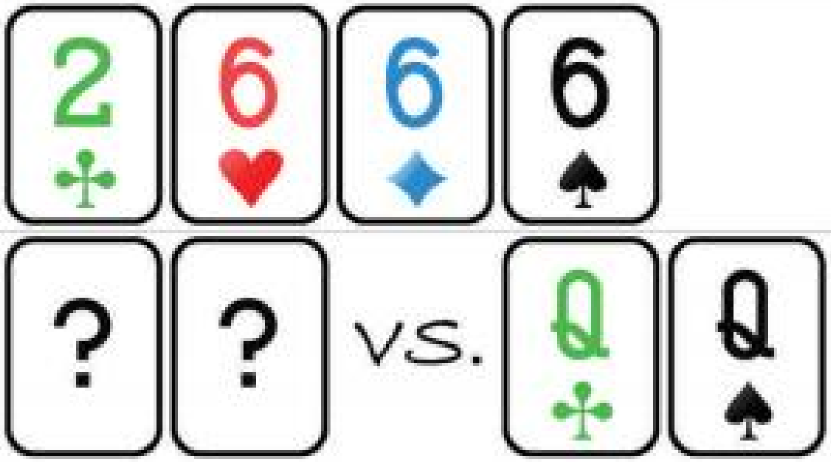
Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold


198 combos in preflop range
0%
21.6%



Monster	______	Combos	x	______	Profit	= ________
Weaker Overpair	______	Combos	x	______	Profit	= ________
Overpair	______	Combos	x	______	Profit	= ________
Nut No Pair	______	Combos	x	______	Profit	= ________

☐ Call ☐ =EV ☐ Fold Total: ________

Hand Versus Range, Implied Odds

In this section we are using a very similar worksheet as before. In the earlier sections, the Villain shipped all of his money in on the turn. In this section he bets but has more money left for a river bet.

The call decision is more complicated when there is still money left to bet on the next street. The money left behind after the bet and call is referred to as implied odds. We never know if Villain is willing to put that money in the pot later, so we need to guess.

Here is an example of a completed worksheet for the next section. We will use this to estimate the profit or loss of this hand versus hand match-up including the implied odds.

Pot:	$	60
Villain bets	$	45
Amount behind	$	120

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 13

Higher equity? call
Odds against lower? call

Equity % 30

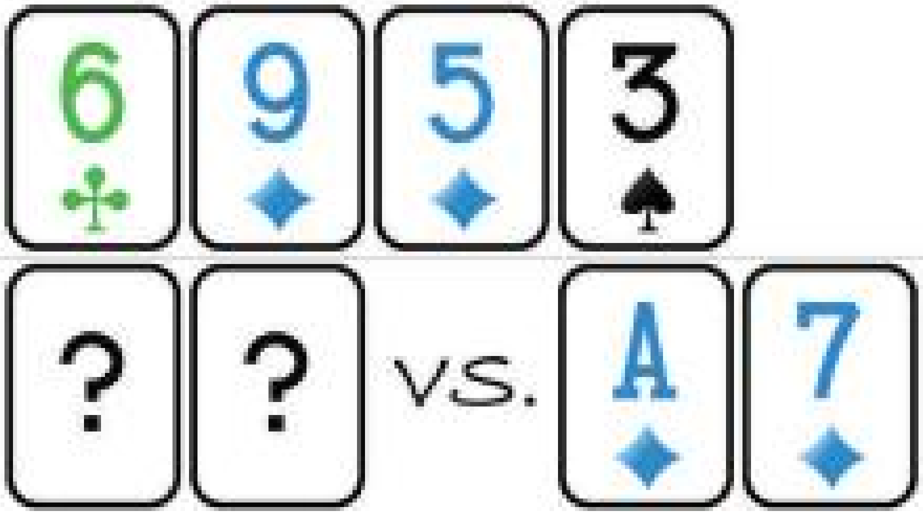
Odds: 2.33 : 1

Profit : $0 Makeup: $0

[x] Call [ ] =EV [ ] Fold

The $0 profit means we are breaking even every time we make this call. If the Villain were all-in, this would be a pointless call since we neither win nor lose on average with the call. However, after we make this call, there is $120 in implied odds. Because the Villain has such a strong hand, we think we will get the remaining $120 most of the time when we hit our hand. Let's be a little conservative and say that sometimes he will fold to the obvious flush. Discount and say we will only make $100 when we hit.

We hit 30% of the time, so on average we make $30 with this call in implied odds. This is our average profit for this match-up of set versus combo draw. We put this guessed number in the profit for the combo counting sheet.



Overpair	______ Combos	×	______ Profit	=	________
Straight	______ Combos	×	______ Profit	=	________
Set	______ Combos	×	30 Profit	=	________
Dominated draw	______ Combos	×	______ Profit	=	________

☐ Call ☐ =EV ☐ Fold Total: ________

We need to be realistic about this guess. Sometimes you will hit your draw and the Villain will not have a strong enough hand to pay you off. In this case, your profit from implied odds might be zero.

Let's look at another hand for Villain on the same board.

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 38

Higher equity? call
odds against lower? call

Equity % 86

Odds: 0.16 : 1

Profit : $84 Makeup: $-13

[x] Call [ ] =EV [ ] Fold

In the above match-up, the Villain bet into us with a dominated draw. Because we have such huge equity here, this $45 call into a $105 pot already profits us $84. Barring bluffs, the only way more money is likely to go in is when the flush comes on the River.

The flush will hit about 15% of the time and we will get the Villain's entire stack every time. This 15% of the remaining $120 is about $20 more on average. In the combo counting worksheet we will note that this match-up is worth about $100 ($84 + $20) on average.

When making these estimates, be sure to account for situations where you will pay off the Villain and count that as negative profit.

Note that when we are ahead, the number of outs is huge. It is often better to calculate the outs from Villain's point of view in these cases, but the answer key will show the large number of outs.

8♦ 2♠ 3♦ 7♠

J♣ J♦ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit: $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

8♦ 2♠ 3♦ 7♠

9♣ 8♣ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit: $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

8♦ 2♠ 3♦ 7♠

3♥ 3♣ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Answers: page 248

8♦ 2♠ 3♦ 7♠

7♦ 8♦ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

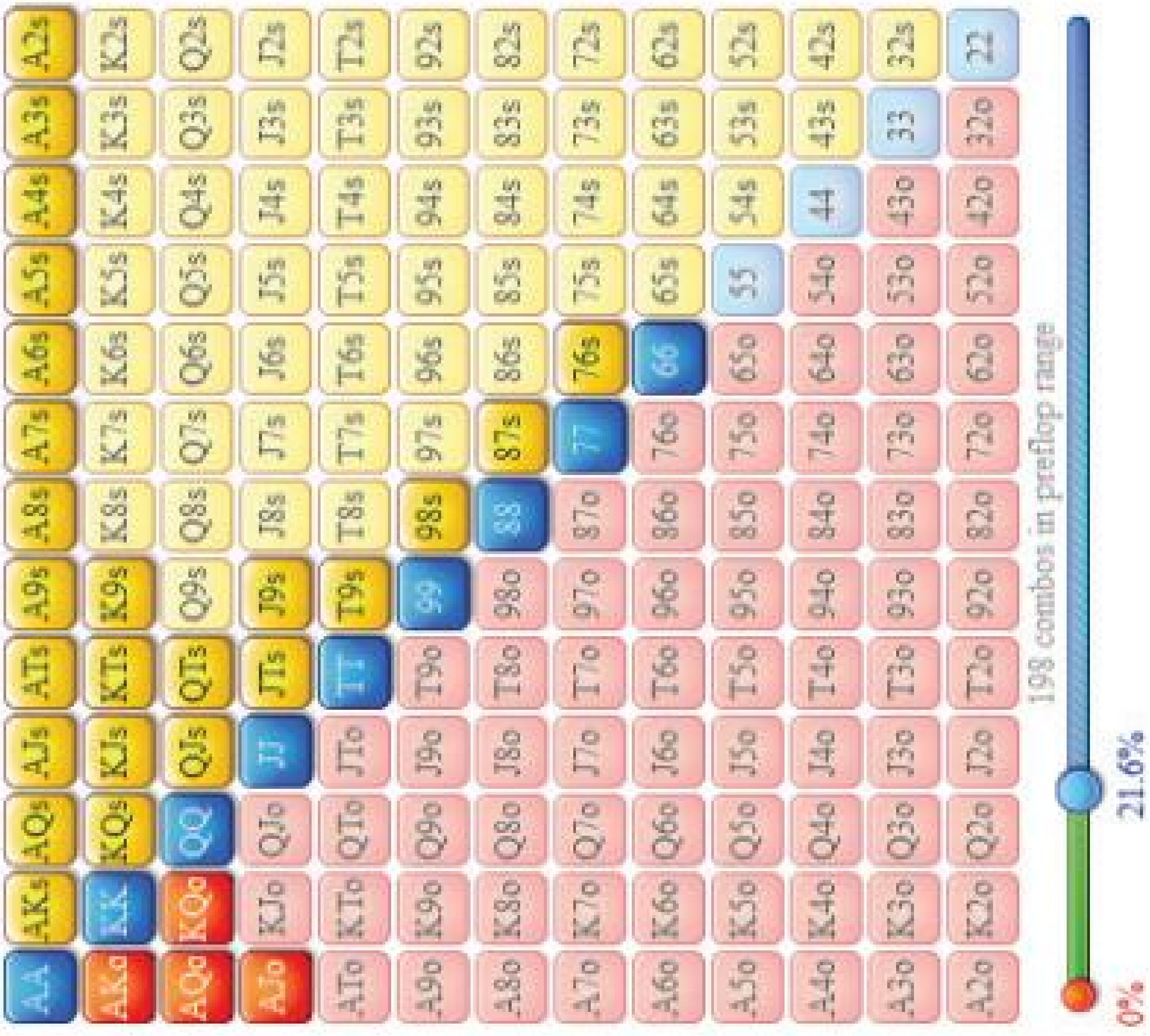
Higher equity? Call
Odds against lower? Call

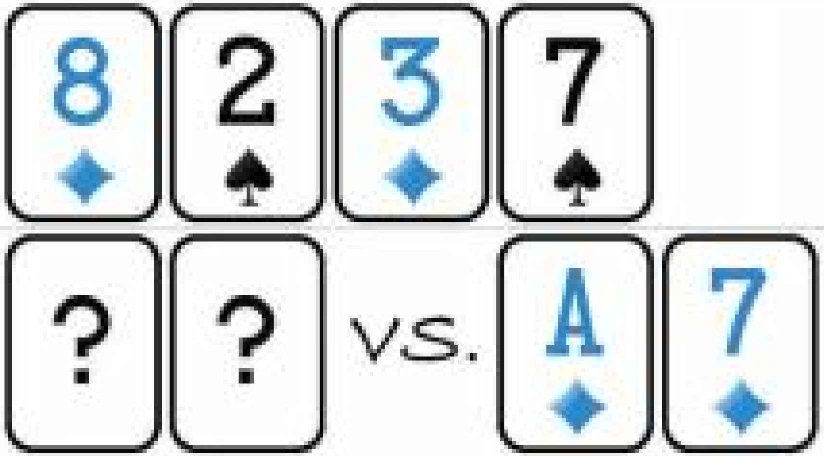
Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

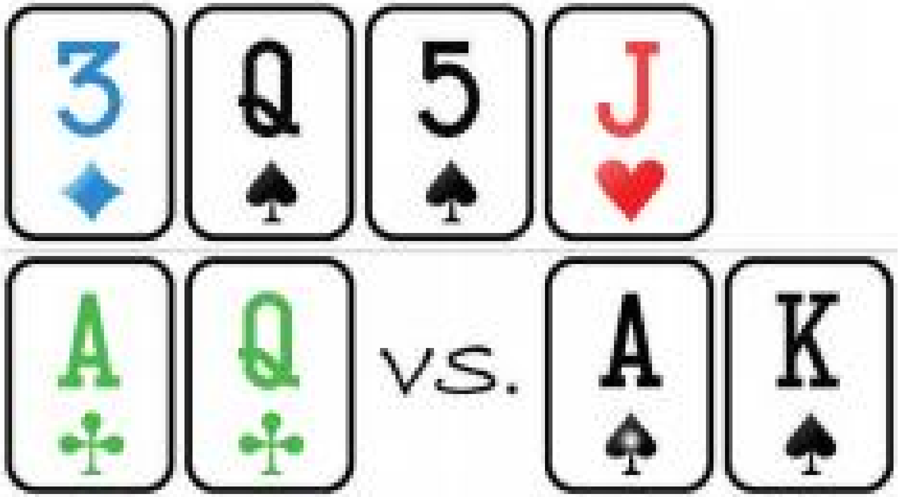
☐ Call ☐ =EV ☐ Fold


198 combos in preflop range
0%
21.6%



Overpair	______ Combos	X	______ Profit	=	________
Top pair	______ Combos	X	______ Profit	=	________
Set	______ Combos	X	______ Profit	=	________
Two Pair	______ Combos	X	______ Profit	=	________

☐ Call ☐ =EV ☐ Fold Total: ________



Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be % ______ of the final pot.

Outs: ______

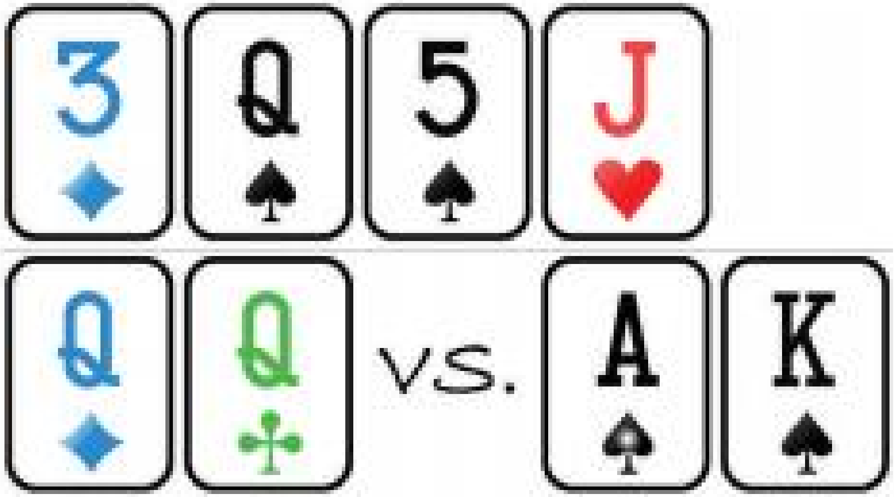
Higher equity? call
Odds against lower? call

Equity % ______

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be % ______ of the final pot.

Outs: ______

Higher equity? call
Odds against lower? call

Equity % ______

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

3♦ Q♠ 5♠ J♥

Q♦ J♦ vs. A♠ K♠

Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? call
odds against lower? call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

3♦ Q♠ 5♠ J♥

K♥ K♦ vs. A♠ K♠

Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

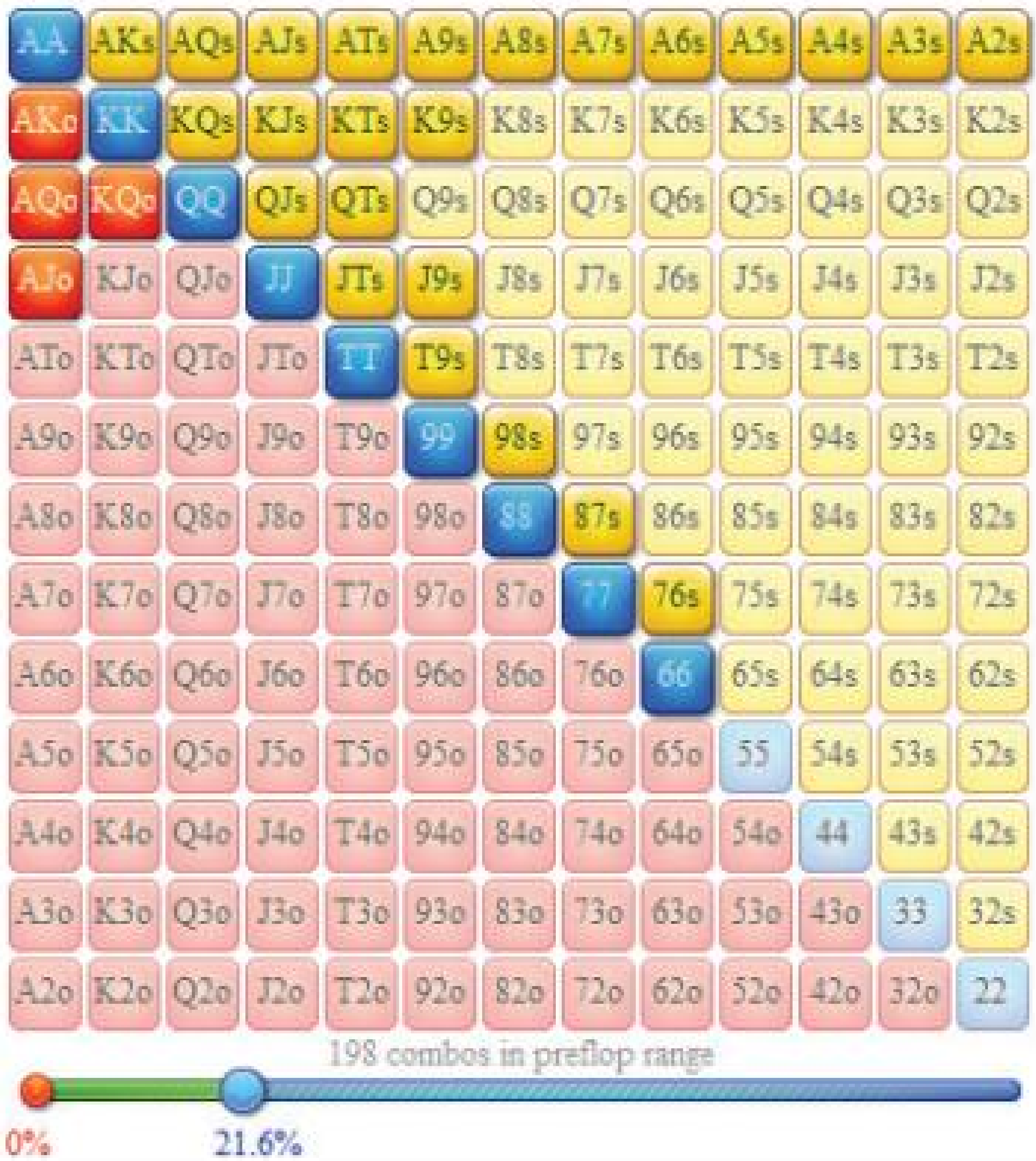
Higher equity? call
odds against lower? call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

3♦ Q♠ 5♠ J♥

? ? vs. A♠ K♠

Top pair ______ Combos x ______ Profit = ________

Set ______ Combos x ______ Profit = ________

Two Pair ______ Combos x ______ Profit = ________

Overpair ______ Combos x ______ Profit = ________

☐ Call ☐ =EV ☐ Fold Total: ________

6♣ 9♦ 5♦ 3♠

J♣ J♠ vs. A♦ 7♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

6♣ 9♦ 5♦ 3♠

7♣ 8♣ vs. A♦ 7♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 60

Villain bets $ 45
Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 60

Villain bets $ 45
Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

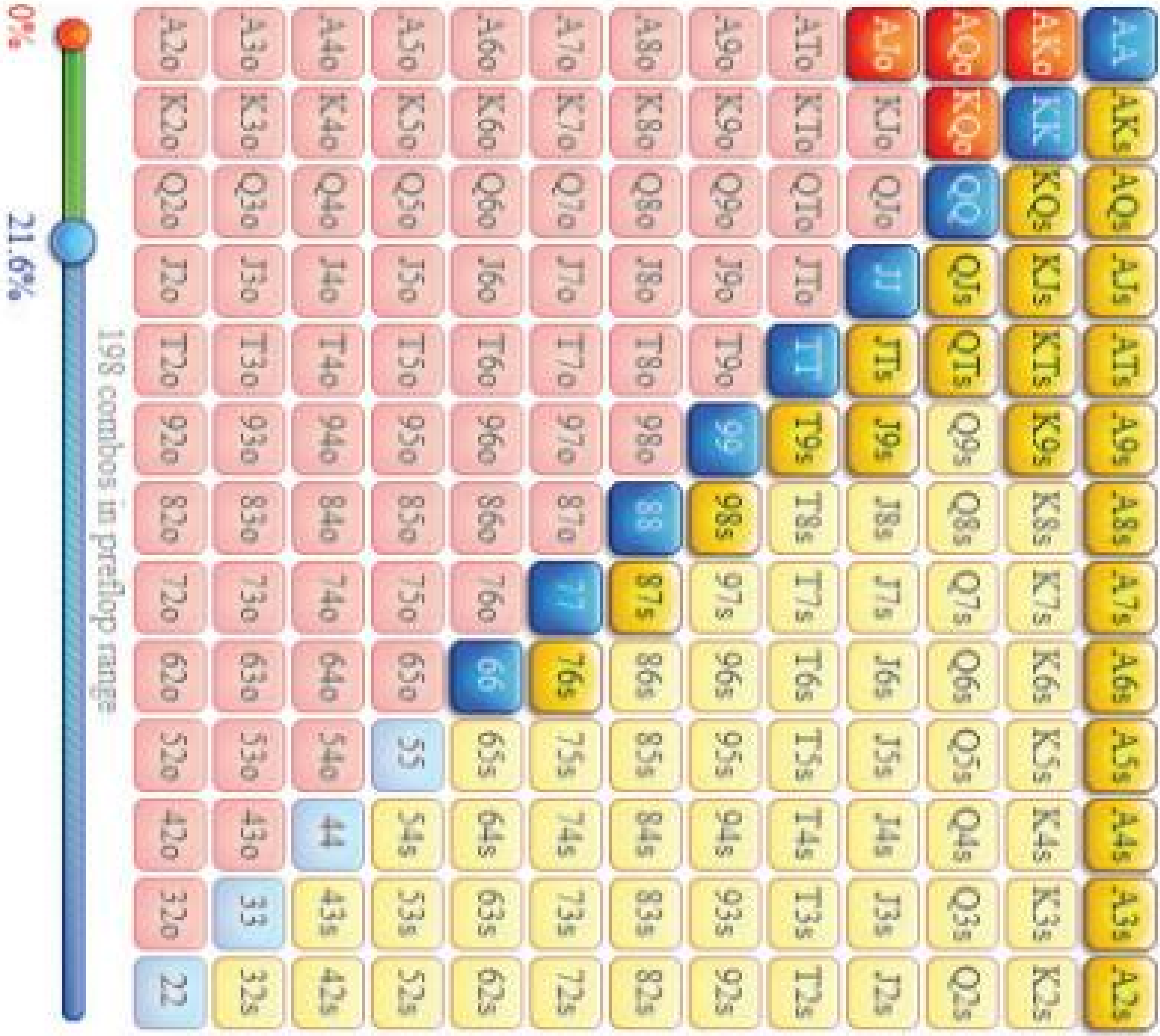
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold


0%
21.6%
198 combos in preflop range

6♣ 9♦ 5♦ 3♠

? ? vs. A♦ 7♦

Overpair	______	Combos	x	______	Profit	= ________
Straight	______	Combos	x	______	Profit	= ________
Set	______	Combos	x	______	Profit	= ________
Dominated draw	______	Combos	x	______	Profit	= ________

☐ Call ☐ =EV ☐ Fold Total: ________

FLOP MATH

Equity on the Flop

The equities on the flop are calculated with the Rule of Two or Rule of Four depending on if a turn bet is expected. If you expect to face a bet on the turn, use the Rule of Two as we have been doing already for turn math. If you expect to get the next two cards for the calling the flop bet, use the Rule of Four.

The Rule of Four says to count your outs and multiply by four to get your percent chance of winning. There are refinements to this rule that we will cover later.

Calculations on the flop are more complicated than on the turn because there are two chances to hit the needed outs. If the needed out comes on the turn, there is still a chance for the river to change things again. There are cards that can come on the turn that will add more outs on the river. These are often called "outs to outs" or back door equity. Mathematically they are just a few percent change in equity, but strategically they can mean a lot more.

As an example of back door draws, imagine there are three different suits on the flop. Matching one of the suits on the turn and then again on the river makes a flush possible. This flush is called a back door flush.

You can also have back door straight draws. If your hand combined with the board makes three to a straight, the turn and river can combine to make a straight. So if you have pocket Sixes on an A57 board, you still can get a straight.

We simplify back door draws by saying there is a bonus 4% for back door flushes and 2%-4% for back door straights. Three cards to a straight get the 4% bonus, for instance 456. Three cards that have one gap that must be filled gets a 3% bonus, for instance 679. Three cards that have two specific gaps that must be filled get a 2% bonus, for instance 8TQ or AKJ.

On most boards there is chance for the turn and river to bring three of a kind or other perfect run outs. These are very rare and do not change equities enough to be worth accounting for. We will only look for the major back door draws of flushes and straights. These bonus equity amounts are only for the hand that is behind and counting outs, not for the hand in the lead.

If we are drawing to a straight or a flush and suspect that the Villain could get a full house with a single card then we need to account for that. This would happen when a player has three of a kind or two pair. This player is said to have a redraw.

A set has seven redraw outs on the turn and then an additional ten on the turn to get a full house. We need to discount our draw's equity to account for the redraw. Reduce the draw's equity by 30% *of the total equity*. To do this, calculate your draw's equity versus a simple top pair or overpair and take the 30% off for being against a set. Note that you do not subtract 30%, you reduce by 30%. Similarly, the draw loses 15% of the total equity versus two pair. If you suspect the made hand has either two pair or a set, reduce by 20%.

Some outs are only a marginal improvement, like making a single low pair or a single pair becoming two pair. The Villain usually has similar redraws against these small improvements. Because of this, we give back 4% percent. This is a small adjustment that does not apply to strong draws like straights and flushes, only to two pair and pair outs.

If a set is against a straight or a flush, they have seven outs on the turn and then ten on the river since they might pair the turn card also. This can be thought of as 17 outs and use the Rule of Two to arrive at 34% equity.

Add-ons to the Rule of Four

Back door flush draws add 4% to their equity

Back door straight draws add 2% to 4% to their equity

Draws give back 30% *of their equity* to sets

Draws give back 15% *of their equity* to two pair

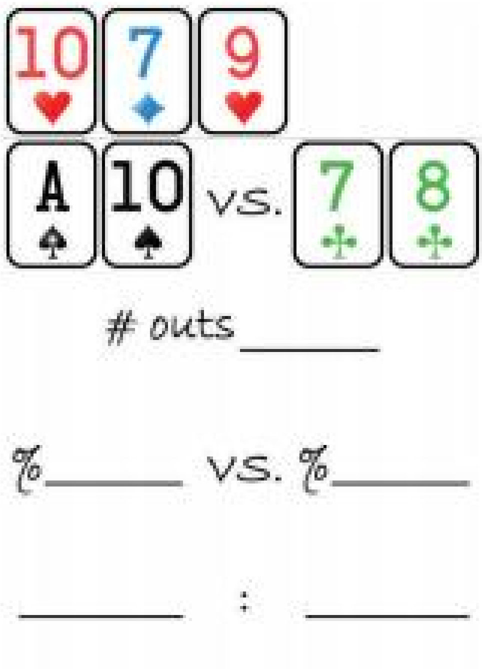
Draws give back 20% *of their equity* to sets and two pair range

Small improvements should discount 4% at end

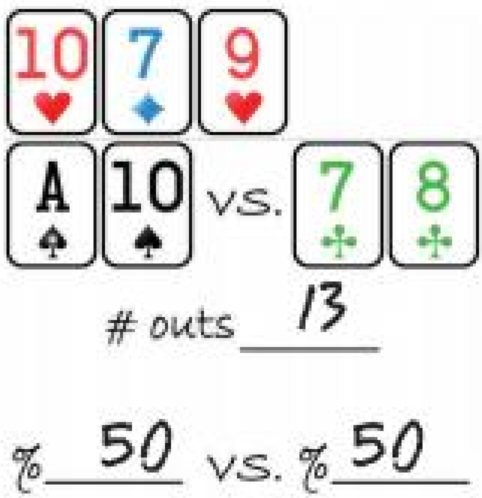
Sets that need to boat have 7 outs on the flop then 10 on river. Call this 17 outs and use Rule of Two to say 34% to boat by the river.

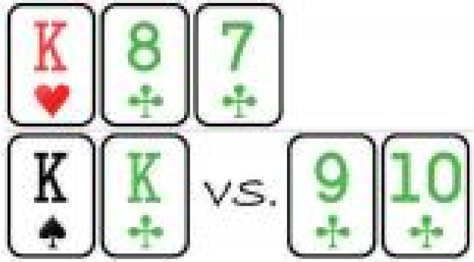
Pocket pairs that need to boat or pair the board are similar to the sets.

Let's give these a try.



In the above, we have all the straight outs for eight outs. Trip outs are another two outs, and two pair outs are three more outs. Thirteen outs times four is 52%. The two pair outs are not strong, so we should give back 4% making our equity 48%. The actual equity is 46%. We can keep it simple by rounding this to 50% equity. Fifty percent equity is 1:1 odds.





outs ______

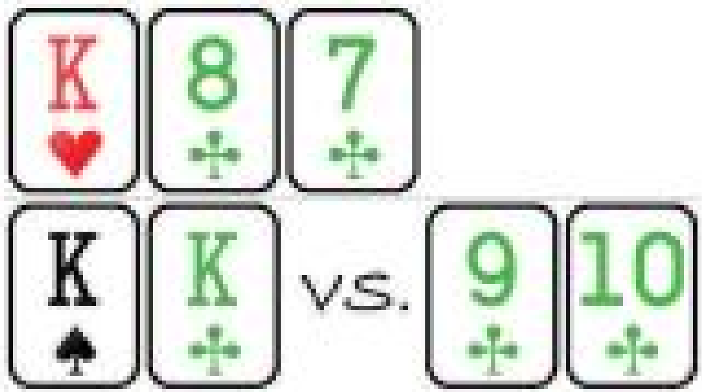
%______ vs. %______

______ : ______

This is a best draw versus best hand situation. There is the added feature that the set has a back door flush against our draw. More importantly, the King of Clubs also acts as a blocker to the flush. We will compensate for the blocker and redraw.

Our outs are eight flush cards plus six straight cards. We have the luxury of knowing our flush is blocked. This is fourteen outs, the Rule of Four says to multiply by four. Our 14 outs is 56%.

Against a set, we need to give back 30% of our total equity. Thirty percent can be a challenge to calculate, so we can break it down into a simpler problem. Ten percent of 56% is 5%. We need to give back this 5% three times. This is a discount of 15%. That takes us from 56% to 40% equity. The actual equity is 41%.

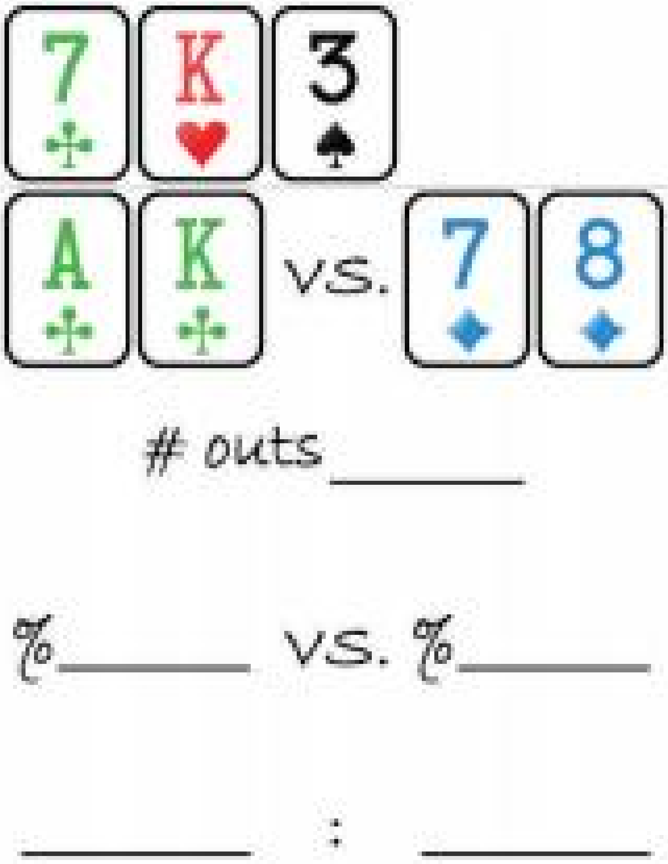


outs 14

% 60 vs. % 40

1.5 : 1

Here is one more below.



The pair of Kings is ahead, so we count outs for the 78s hand. Our outs are two Sevens and three Eights. That is five outs or 20%. The two pair outs are weak, so we need to give back a couple of percent, call it 16%. Flopzilla puts us at 18%.

A♦ 5♣ 6♦

A♣ K♣ vs. 7♣ 8♣

outs ______

%______ vs. %______

______ : ______

10♥ 7♦ 9♥

A♠ 10♠ vs. 7♣ 8♣

outs ______

%______ vs. %______

______ : ______

6♠ 5♦ 4♣

J♣ J♥ vs. 7♠ 7♥

outs ______

%______ vs. %______

______ : ______

A♣ Q♦ J♣

A♠ K♠ vs. Q♠ 9♠

outs ______

%______ vs. %______

______ : ______

7♣ K♥ 3♠

A♣ K♣ vs. 7♦ 8♦

outs ______

%______ vs. %______

______ : ______

7♠ 7♥ 10♦

7♣ 8♦ vs. 8♥ 9♥

outs ______

%______ vs. %______

______ : ______

outs ______

% ______ vs. % ______

______ : ______

outs ______

% ______ vs. % ______

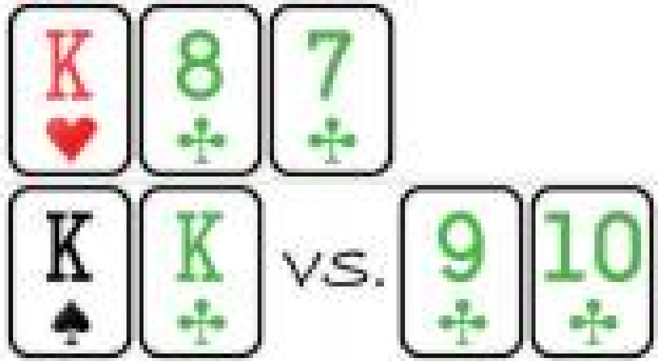
______ : ______

outs ______

% ______ vs. % ______

______ : ______

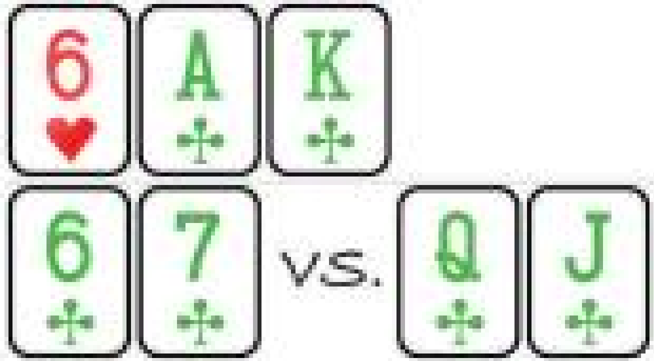
8♣ 9♦ 2♥ A♦ K♣ vs. 7♠ 6♠ # outs ______ % ______ vs. % ______ ______ : ______	5♥ 10♥ 7♣ Q♠ J♣ vs. 9♣ 9♦ # outs ______ % ______ vs. % ______ ______ : ______	7♥ 9♠ 5♦ 7♠ 7♦ vs. 9♣ 9♦ # outs ______ % ______ vs. % ______ ______ : ______
9♦ 4♥ 9♥ A♥ A♦ vs. Q♠ Q♣ # outs ______ % ______ vs. % ______ ______ : ______	2♠ 5♣ 9♥ A♣ 2♣ vs. 6♣ 7♣ # outs ______ % ______ vs. % ______ ______ : ______	9♣ Q♠ A♠ A♣ Q♣ vs. 9♦ 9♥ # outs ______ % ______ vs. % ______ ______ : ______



outs ______

% ______ vs. % ______

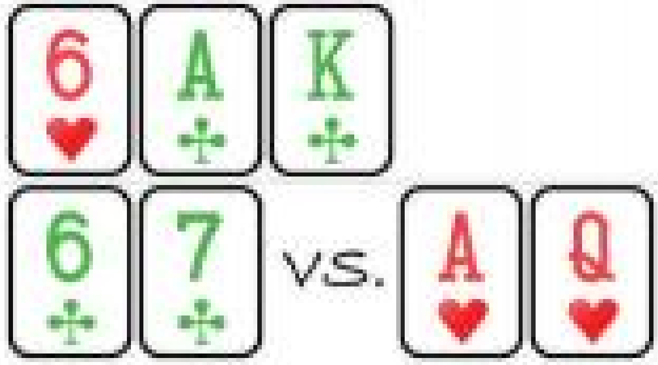
______ : ______



outs ______

% ______ vs. % ______

______ : ______



outs ______

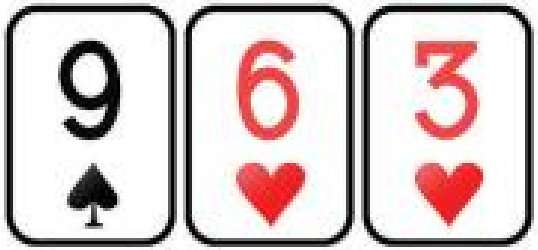
% ______ vs. % ______

______ : ______

Hand Versus Hand Type

In these exercises, we know our hand and guess the Villain's hand type. Sometimes all the hands of a given guess will have the same equity, sometimes they will not. Choose whatever specific hand for the Villain you want. Do not worry if it is a different choice than the answer key makes. As before, write the hand in the two empty boxes on the line marked "outs."

Let's do an example:



%_____ vs. %_____

Our set is the current nuts, but we want to know how it does against a combination draw: 4h5h.

Counting outs, it is nine flush outs plus six straight outs for 15 outs. Rule of Four says to multiply by four to get 60%. This draw is against a set, so we need to discount this 60% by 30%. Ten percent of 60 is 6. Triple that to get the full discount of 18%. That puts us at 42% for the draw. Flopzilla confirms this for 5h4h. The other hand of this description, 7h8h, has 40% equity. The 5h4h has a little more equity because it can make a straight flush that will not be beaten by a redraw.

Calculating our hand versus a variety of hands on the same board will give us an idea how our hand holds up against a variety of possible holdings by the Villain.

9♠ 6♥ 3♥

9♣ 9♦ vs. Open ender + Flush draw

outs ____

%____ vs. %____

9♣ 9♦ vs. Open ender

outs ____

%____ vs. %____

9♣ 9♦ vs. Flush draw

outs ____

%____ vs. %____

9♣ 9♦ vs. Overpair

outs ____

%____ vs. %____

9♣ 9♦ vs. Pocket pair below TP

outs ____

%____ vs. %____

9♣ 9♦ vs. Set

outs ____

%____ vs. %____

3♣ 8♣ 7♣

9♣ 10♣ vs. Better Flush

\# outs ____

% ______ vs. % ______

9♣ 10♣ vs. Worse Flush

\# outs ____

% ______ vs. % ______

9♣ 10♣ vs. Nut FD

\# outs ____

% ______ vs. % ______

9♣ 10♣ vs. Set

\# outs ____

% ______ vs. % ______

9♣ 10♣ vs. Overpair

\# outs ____

% ______ vs. % ______

9♣ 10♣ vs. Pair + Flush draw

\# outs ____

% ______ vs. % ______

A♣ K♣ vs. Set

outs ____

% ____ vs. % ____

A♣ K♣ vs. Two Pair

outs ____

% ____ vs. % ____

A♣ K♣ vs. Top pair

outs ____

% ____ vs. % ____

A♣ K♣ vs. Weaker Overpair

outs ____

% ____ vs. % ____

A♣ K♣ vs. Dominated draw

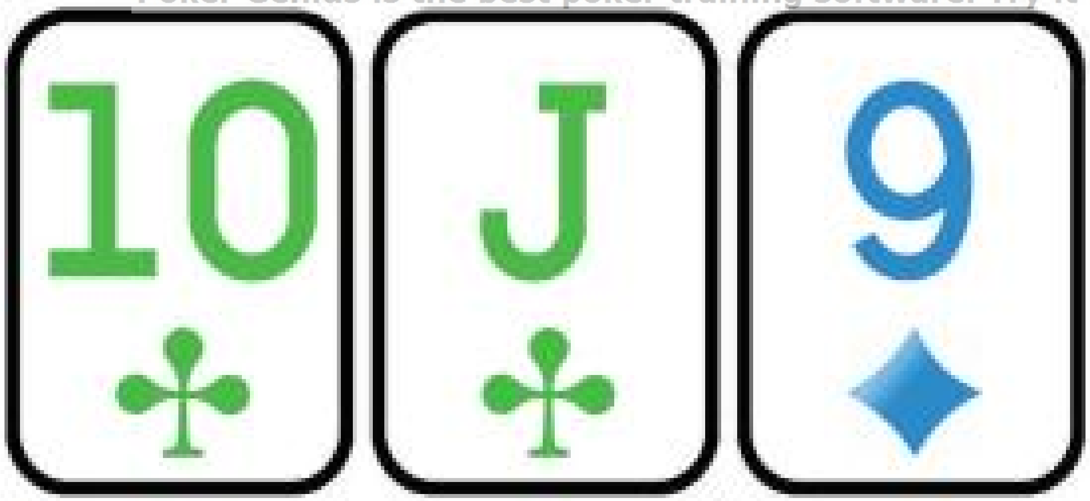
outs ____

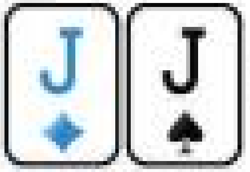
% ____ vs. % ____

A♣ K♣ vs. Open ender

outs ____

% ____ vs. % ____

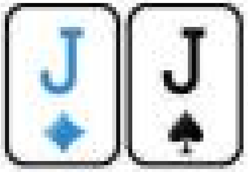




vs. Straight

outs

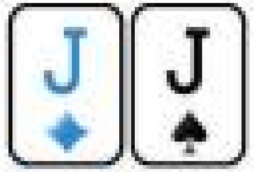
% ______ vs. % ______



vs. Pair + Open ender

outs

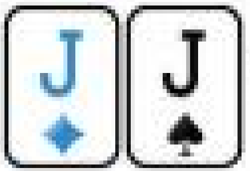
% ______ vs. % ______



vs. Flush draw

outs

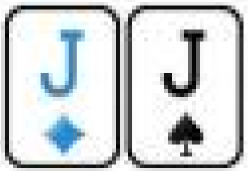
% ______ vs. % ______



vs. Open ender + Flush draw

outs

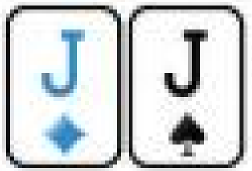
% ______ vs. % ______



vs. Two Pair

outs

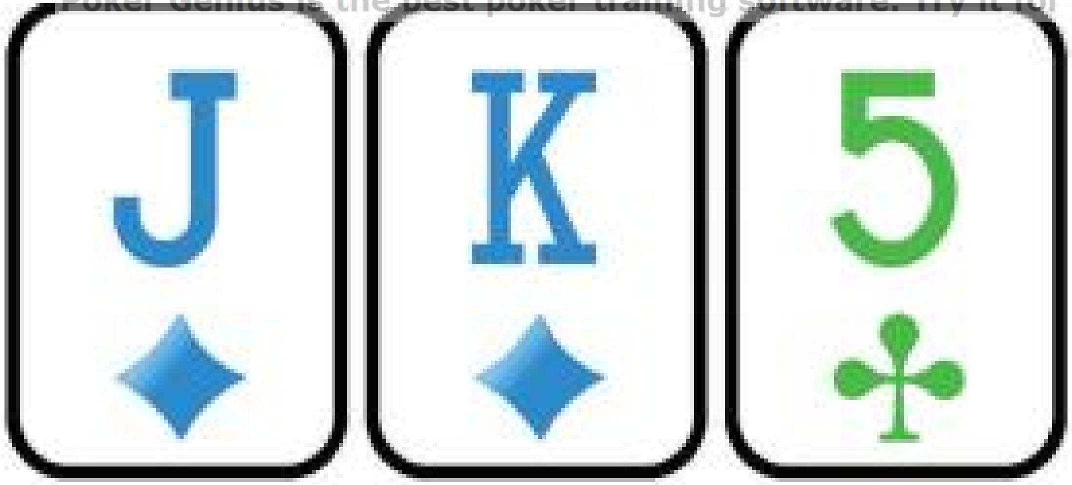
% ______ vs. % ______



vs. Pair + Gut shot

outs

% ______ vs. % ______



A♠ A♣ vs. Flush draw

\# outs ____

%____ vs. %____

A♠ A♣ vs. Open ender

\# outs ____

%____ vs. %____

A♠ A♣ vs. Gut shot

\# outs ____

%____ vs. %____

A♠ A♣ vs. Set

\# outs ____

%____ vs. %____

A♠ A♣ vs. Two Pair

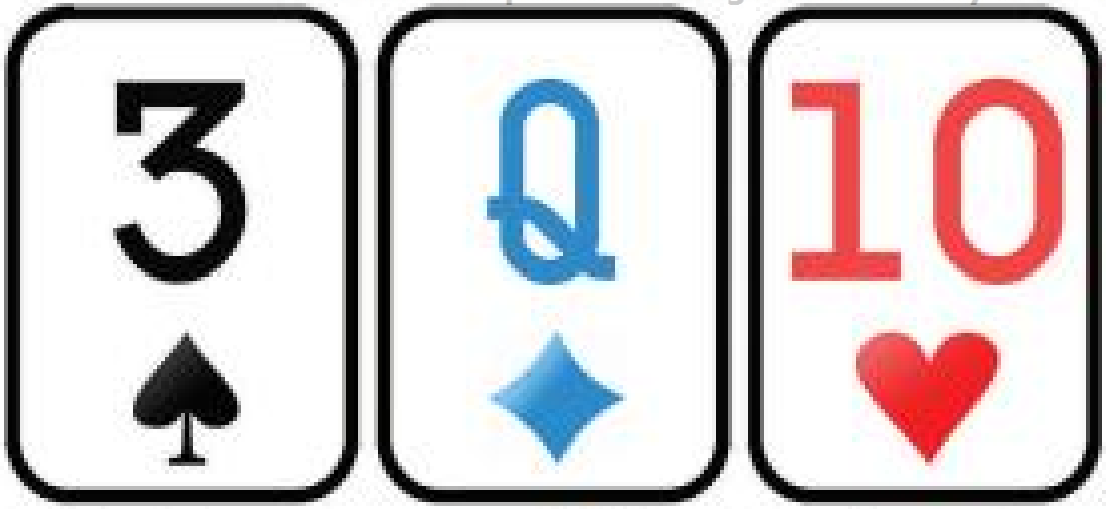
\# outs ____

%____ vs. %____

A♠ A♣ vs. Top pair

\# outs ____

%____ vs. %____



10♠ 9♠ vs. Top pair

\# outs ____

%______ vs. %______

10♠ 9♠ vs. Two Pair

\# outs ____

%______ vs. %______

10♠ 9♠ vs. Set

\# outs ____

%______ vs. %______

10♠ 9♠ vs. Open ender

\# outs ____

%______ vs. %______

10♠ 9♠ vs. Overcards

\# outs ____

%______ vs. %______

10♠ 9♠ vs. Overpair

\# outs ____

%______ vs. %______

J♣ 9♣ A♠

A♣ 2♣ vs. T.P.T.K.

outs ____

%____ vs. %____

A♣ 2♣ vs. Gut shot

outs ____

%____ vs. %____

A♣ 2♣ vs. Open ender

outs ____

%____ vs. %____

A♣ 2♣ vs. Set

outs ____

%____ vs. %____

A♣ 2♣ vs. Two Pair

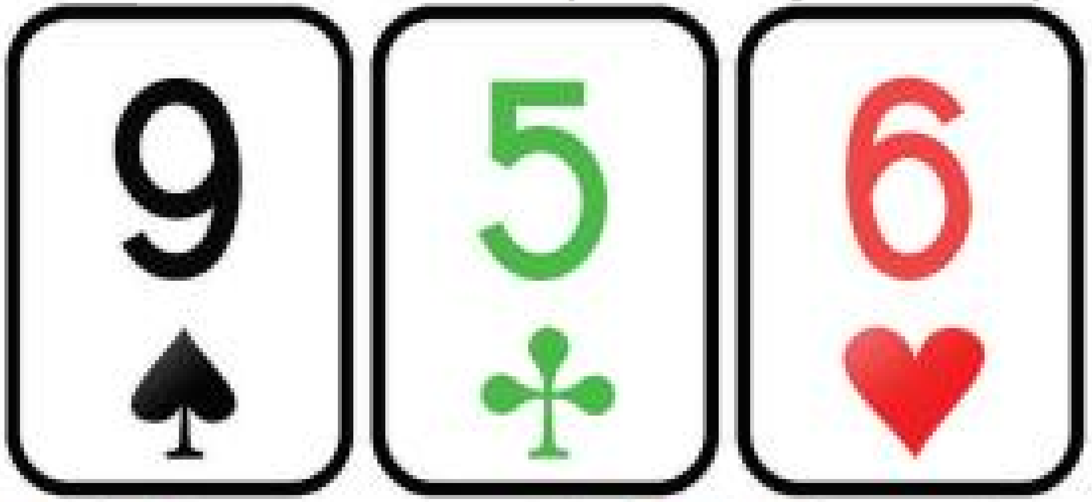
outs ____

%____ vs. %____

A♣ 2♣ vs. Pocket pair below TP

outs ____

%____ vs. %____



J♦ J♣ vs. Overpair

outs ____

%____ vs. %____

J♦ J♣ vs. Weaker Overpair

outs ____

%____ vs. %____

J♦ J♣ vs. Straight

outs ____

%____ vs. %____

J♦ J♣ vs. Pair + Gut shot

outs ____

%____ vs. %____

J♦ J♣ vs. Overcards

outs ____

%____ vs. %____

J♦ J♣ vs. Set

outs ____

%____ vs. %____

6♥ Q♠ Q♦

A♠ A♦ vs. Three of a kind

\# outs ____

%______ vs. %______

A♠ A♦ vs. Full House

\# outs ____

%______ vs. %______

A♠ A♦ vs. Weaker Overpair

\# outs ____

%______ vs. %______

A♠ A♦ vs. Pocket pair below TP

\# outs ____

%______ vs. %______

A♠ A♦ vs. No pair, No draw, < Ace high

\# outs ____

%______ vs. %______

A♠ A♦ vs. Nut No Pair

\# outs ____

%______ vs. %______

3♠ 9♦ 7♠

8♠ 10♠ vs. Overpair	8♠ 10♠ vs. Top pair	8♠ 10♠ vs. Two Pair
# outs ____	# outs ____	# outs ____
%____ vs. %____	%____ vs. %____	%____ vs. %____
8♠ 10♠ vs. Set	8♠ 10♠ vs. Nut FD	8♠ 10♠ vs. Dominated draw
# outs ____	# outs ____	# outs ____
%____ vs. %____	%____ vs. %____	%____ vs. %____

3♥ 10♠ 9♠

10♥ 9♥ vs. Open ender

outs ____

%____ vs. %____

10♥ 9♥ vs. Open ender + Flush draw

outs ____

%____ vs. %____

10♥ 9♥ vs. Flush draw

outs ____

%____ vs. %____

10♥ 9♥ vs. Overpair

outs ____

%____ vs. %____

10♥ 9♥ vs. Set

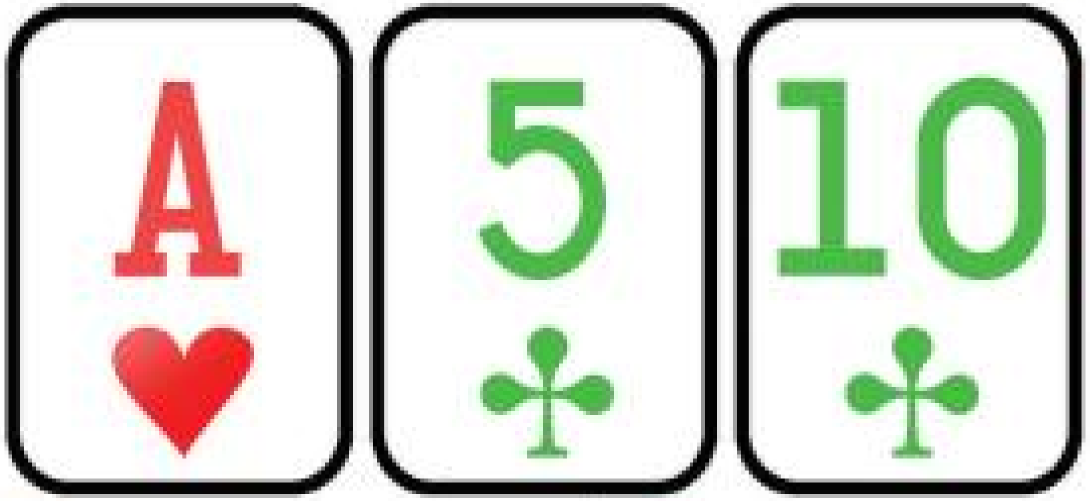
outs ____

%____ vs. %____

10♥ 9♥ vs. T.P.T.K.

outs ____

%____ vs. %____



K♦ K♠ vs. Top pair # outs ____ %____ vs. %____	K♦ K♠ vs. Gut shot # outs ____ %____ vs. %____	K♦ K♠ vs. Pair + Flush draw # outs ____ %____ vs. %____
K♦ K♠ vs. Set # outs ____ %____ vs. %____	K♦ K♠ vs. Nut FD # outs ____ %____ vs. %____	K♦ K♠ vs. Pocket pair below TP # outs ____ %____ vs. %____

Hand Versus Hand Facing a Flop Shove

In this section, we are making a call or fold decision when facing a shove on the flop. Draws have a lot more value on the flop because they will get both cards for the same price.

The set is ahead and the draw can only win with a flush. Notice this is an overbet, one of the few times so far that we will be getting less than 2:1 on our call.

Find the pot odds first. When we start hunting for "$50" we find only our Villain's bet. There is $30 in the pot. What percentage is $30 of $50? Double each and we have 60/100. That is 60% or 0.6 times the bet. This means we hunted up 1.6:1 on our call.

The final pot will be $130. What percent is $50 of the final pot? The fraction 50/130 is ugly to work with. Lets change the final pot to be $125 instead of $130.

We can divide everything by $25. That makes $50 divided by $25 into 2 and $125 divided by 25 into 5. This 2/5 is 40%.

Because we are going to discount our equity for being against a set, we get to count all nine flush outs. Nine outs using the Rule of Four gives us 36%. Because we are against a set, we need to give back 30% of the full amount. This is just the way the math works out.

Calculating 30% of 36% might be too difficult. Lets discount 33% instead. One third of 36% is a 12% discount leaving 24% total equity. The exact equity is 25%.

This puts our odds at 75%-25% or 3:1 on the call. These odds are much worse than the pay off of 1.6:1, so it is a clear fold. In the same way, we look at the fact that we put 40% of the money into the final pot and we only collect 25% of it back. We must fold.

Even though we already know we will fold, what is the profit or loss on calling? Since we are donating 40% to the pot and collecting back 25%, that means we are losing 40%-25% or 15% of the final pot.

To do the final calculation of profit by calling, $120 is a nicer number than $125. To get 15% of $120 we will use two steps: Calculate 10% then 5%. Our 10% of $120 is $12. To get the 5% we take half of this $12. We add $12 and $6 to get $18. We are losing about $20 on average when we make this call against the set.

Pot: $ 30

Villain Shoves: $ 50

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 55

Villain Shoves: $ 40

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

2♦ 4♣ 9♠

J♠ J♦ vs. Q♣ Q♥

Pot: $ 120

Villain Shoves: $ 130

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

4♠ 6♣ 3♠

6♠ A♠ vs. 5♥ 5♣

Pot: $ 60

Villain Shoves: $ 90

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

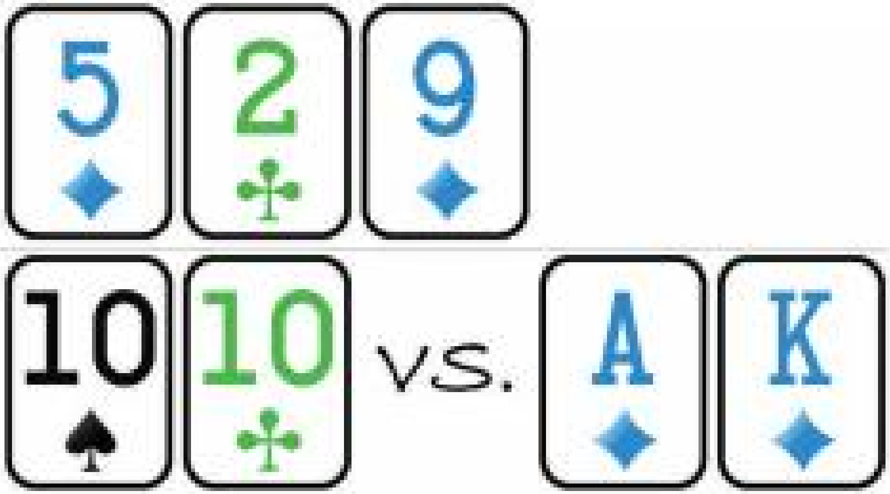
Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

Left	Right
Board: 6♠ 5♦ 6♣	Board: 5♣ J♣ K♠
5♥ 5♠ vs. 6♥ 7♥	K♣ A♣ vs. 5♥ 5♦
Pot: $ 150	Pot: $ 25
Villain Shoves: $ 150	Villain Shoves: $ 20
Pot Odds: ____ : 1	Pot Odds: ____ : 1
Final pot would be: ____	Final pot would be: ____
Your call would be % ____ of the final pot.	Your call would be % ____ of the final pot.
Outs: ____	Outs: ____
Higher equity? Call / Odds against lower? Call	Higher equity? Call / Odds against lower? Call
Equity % ____	Equity % ____
Odds: ____ : 1	Odds: ____ : 1
Profit : $ ____	Profit : $ ____
☐ Call ☐ =EV ☐ Fold	☐ Call ☐ =EV ☐ Fold



Pot: $ 75

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

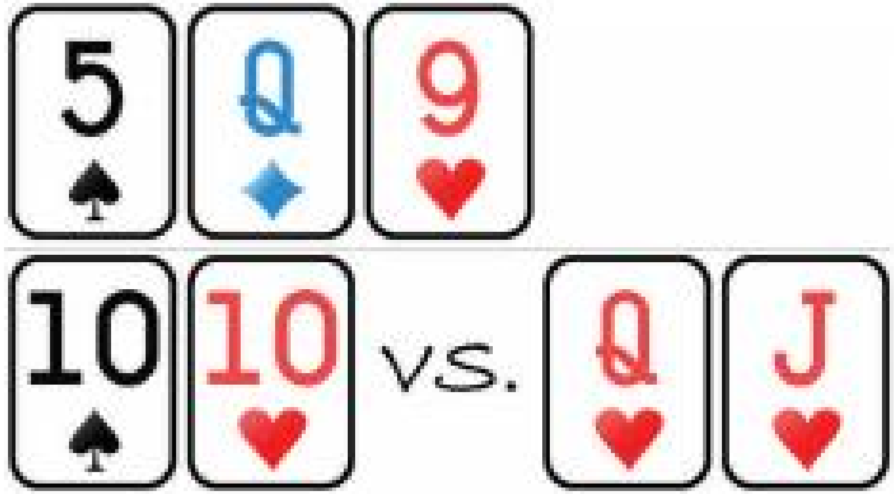
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 120

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

5♠ J♥ 6♣

7♥ 8♥ vs. K♦ J♦

Pot: $ 105

Villain Shoves: $ 95

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

K♦ 2♦ 7♣

7♦ 8♦ vs. A♦ Q♦

Pot: $ 60

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

5♦ 8♥ 3♠

7♣ 7♥ vs. A♣ Q♣

Pot: $ 60

Villain Shoves: $ 60

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

7♣ K♦ 4♦

A♥ A♦ vs. Q♦ J♦

Pot: $ 55

Villain Shoves: $ 40

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

4♣ 2♦ Q♦

Q♠ Q♣ vs. A♦ 3♦

Pot: $ 25

Villain Shoves: $ 20

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: ______

Higher equity? Call
Odds against lower? Call

Equity %_____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

6♦ 10♠ 7♥

8♣ 9♣ vs. 6♣ 7♣

Pot: $ 30

Villain Shoves: $ 40

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: ______

Higher equity? Call
Odds against lower? Call

Equity %_____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

3♦ 5♠ 10♥

5♥ A♥ vs. J♦ J♣

Pot: $ 55

Villain Shoves: $ 45

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: _____

Higher equity? Call
Odds against lower? Call

Equity %_____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

A♣ 8♠ 2♣

K♣ A♥ vs. 8♣ 7♣

Pot: $ 40

Villain Shoves: $ 40

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %_____ of the final pot.

Outs: _____

Higher equity? Call
Odds against lower? Call

Equity %_____

Odds: ____ : 1

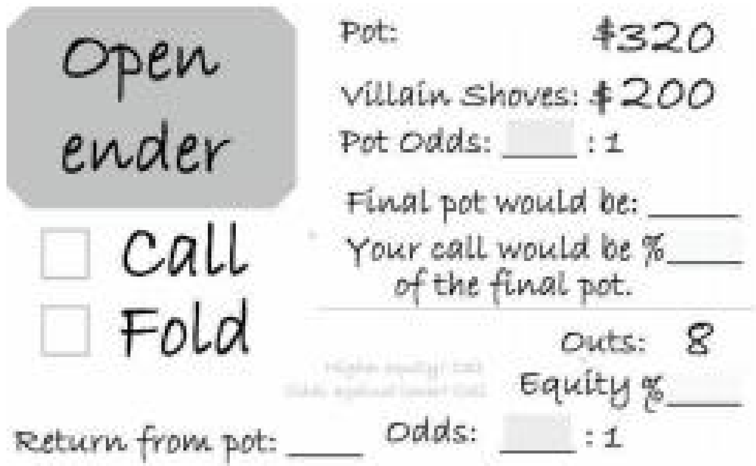
Profit : $____

☐ Call ☐ =EV ☐ Fold

Decision Versus a Hand Type

Shove on the Flop

The following problems are the exact ones we did before. The only difference is that now we are all-in on the flop instead of on the turn. Having two cards to come instead of one improves the draws, basically doubling their equity. This means many of hands that should have be folded on the turn should be called on the flop.

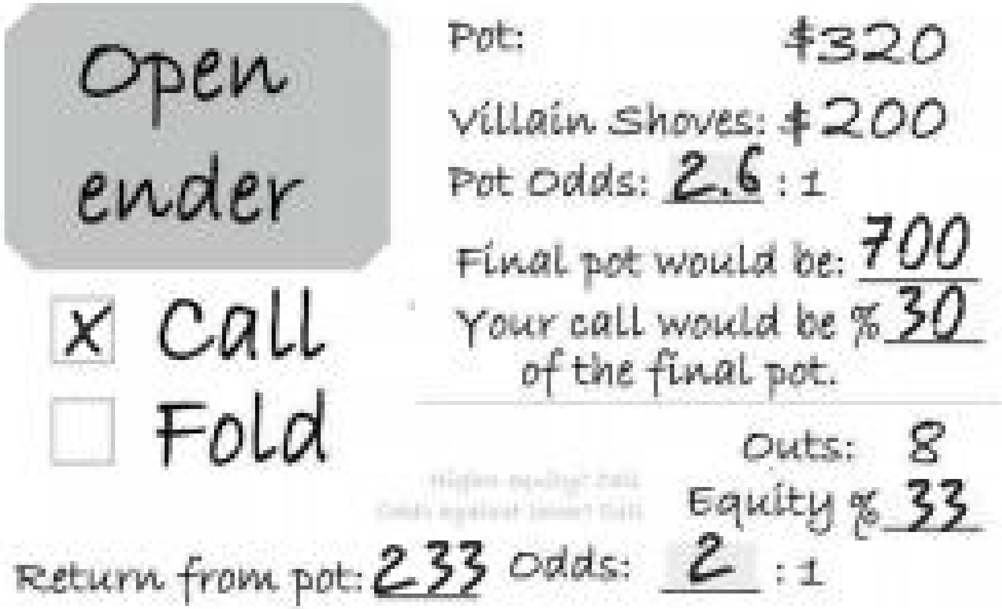


We need the pot odds. We hunt around for as many "$200" as we can find. There is $200 from the Villain's bet. There is $200 in the pot with $120 extra. What fraction of $200 is $120? Cut them in half and it is just like $60 and $100. That is 0.60 more that we were looking for. Add that up and we are getting 2.6:1 on our call.

The final pot will be $200 plus $200 is $400. Add the original pot of $320 to make $720. Lets call that $700. What percent is $200 of $700? This 2/7 is an ugly fraction to work with. If we don't know what 2/7 is, we can use the bracketing method by increasing and decreasing the denominator by one. The new fraction 2/6 is 1/3 is 33%. The other new fraction 2/8 is 1/4 is 25%. We know 2/7 must be between 25% and 33%. This is just an approximation, but the average of those is 29%, we can just call it 30%. The real number is 29%.

Our eight outs times four is 32%. This is basically 66%-33% which is 2:1 odds against.

Return from the pot is calculated by 33% of $700. For every three $100's, we get $100. The first $600 brings us to $200. The last $100 gives us another $33.



We should make this call, but it is very marginal. We are putting in $200 with the expectation that overall we will pull out $233. This call will make little money with huge swings. That is poker.

Open ender + Flush draw

- [ ] Call
- [ ] Fold

Pot: 275

Villain Shoves: $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 15

Equity %____

Return from pot: ____

Odds: ____ : 1

Gut shot

- [ ] Call
- [ ] Fold

Pot: $120

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 4

Equity %____

Return from pot: ____

Odds: ____ : 1

Pocket pair below TP

- [ ] Call
- [ ] Fold

Pot: $100

Villain Shoves: $ 30

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 2

Equity %____

Return from pot: ____

Odds: ____ : 1

Flush draw

- [ ] Call
- [ ] Fold

Pot: $120

Villain Shoves: $ 30

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 9

Equity %____

Return from pot: ____

Odds: ____ : 1

Flush draw

- [ ] Call
- [ ] Fold

Pot: $200

Villain Shoves: $ 60

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 9

Equity %____

Return from pot: ____

Odds: ____ : 1

Pocket pair below TP

- [ ] Call
- [ ] Fold

Pot: $ 55

Villain Shoves: $ 35

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: 2

Equity %____

Return from pot: ____

Odds: ____ : 1

Open ender + Flush draw

Pot: $125
Villain Shoves: $ 90
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 15
Equity % ____

Return from pot: ____ Odds: ____ : 1

☐ Call
☐ Fold

Flush draw

Pot: $ 98
Villain Shoves: $ 60
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 9
Equity % ____

Return from pot: ____ Odds: ____ : 1

☐ Call
☐ Fold

Flush draw

Pot: $200
Villain Shoves: $ 50
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 9
Equity % ____

Return from pot: ____ Odds: ____ : 1

☐ Call
☐ Fold

Pair + Flush draw

Pot: $ 50
Villain Shoves: $ 40
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 14
Equity % ____

Return from pot: ____ Odds: ____ : 1

☐ Call
☐ Fold

Answers: page 260

Gut shot

☐ Call
☐ Fold

Pot: $180
Villain Shoves: $ 40
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 4
Equity % ____
Odds: ____ : 1

Return from pot: ____

Open ender

☐ Call
☐ Fold

Pot: $300
Villain Shoves: $125
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 8
Equity % ____
Odds: ____ : 1

Return from pot: ____

Open ender + Flush draw

☐ Call
☐ Fold

Pot: $400
Villain Shoves: $250
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 15
Equity % ____
Odds: ____ : 1

Return from pot: ____

Pocket pair below TP

☐ Call
☐ Fold

Pot: $400
Villain Shoves: $ 100
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 2
Equity % ____
Odds: ____ : 1

Return from pot: ____

Open ender

☐ Call
☐ Fold

Pot: $320
Villain Shoves: $200
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 8
Equity % ____
Odds: ____ : 1

Return from pot: ____

Gut shot + Flush draw

☐ Call
☐ Fold

Pot: $320
Villain Shoves: $200
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be % ____ of the final pot.

Outs: 13
Equity % ____
Odds: ____ : 1

Return from pot: ____

Flush draw

☐ Call
☐ Fold

Pot: $ 70
Villain shoves: $ 40
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be %____ of the final pot.

Outs: 9
Equity %____

Return from pot: ____ Odds: ____ : 1

Overcards

☐ Call
☐ Fold

Pot: $ 90
Villain shoves: $ 40
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be %____ of the final pot.

Outs: 6
Equity %____

Return from pot: ____ Odds: ____ : 1

Nut FD

☐ Call
☐ Fold

Pot: $ 100
Villain shoves: $ 50
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be %____ of the final pot.

Outs: 12
Equity %____

Return from pot: ____ Odds: ____ : 1

Gut shot

☐ Call
☐ Fold

Pot: $ 45
Villain shoves: $ 20
Pot Odds: ____ : 1

Final pot would be: ____
Your call would be %____ of the final pot.

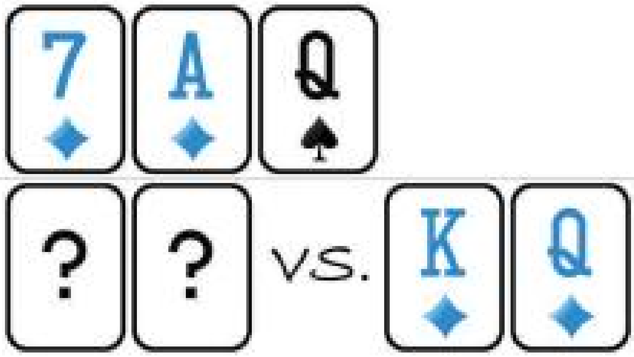
Outs: 4
Equity %____

Return from pot: ____ Odds: ____ : 1

Hand Versus Range After a Flop Shove

We are now going to combine flop all-in equities with combo counting. We already did this on the turn and the math is the same.

In this example, skipping the derivation of the profit and combo counts:



Top pair	45	combos	x	50	Profit	= 2500
Set	7	combos	x	0	Profit	= 0
Two Pair	9	combos	x	15	Profit	= 135
Dominated draw	4	combos	x	260	Profit	= 1000

X Call ☐ =EV ☐ Fold Total: 3600

We multiply out the number of combos by the expected profit to show how much that line is worth. The dominated flushes are rare but really do bring in a lot of money for us.

At the tables, if we think we are likely to call, we should look at the strongest part of the range. If we can justify a call versus the strongest part of the range, then the rest of the range will be even more profitable. There is no more need to do calculations.

Sets are the strongest part of this range. We see that at worst we break even versus the strongest part of the range. At the tables we would instantly call without doing any more math.

In much the same way, if we suspect that we are going to fold, we look to the weakest part of the range. If we must fold to the weakest part of the range, then no need to do the rest of the math.

This weighted average of all the parts of the range is difficult to do. You might want to use you spare chips to keep track of the running sum. For instance, in this case we said that top pair has 45 combos and a $50 profit for about $2500. We could put $25 off to the side to remember the $2500. We would probably call the set and two pair as break even. We would know the dominated draw is rare but worth essentially the whole pot. Add another $10 to remember the $1000. If we had negative numbers, those would be in a different pile. Which ever pile, negative or positive, is bigger would dictate the call of fold decision.

7♦ A♦ Q♠

A♥ K♥ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

7♦ A♦ Q♠

7♥ 7♣ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

7♦ A♦ Q♠

A♣ Q♣ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

Answers: page 362

7♦ A♦ Q♠

8♦ 9♦ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

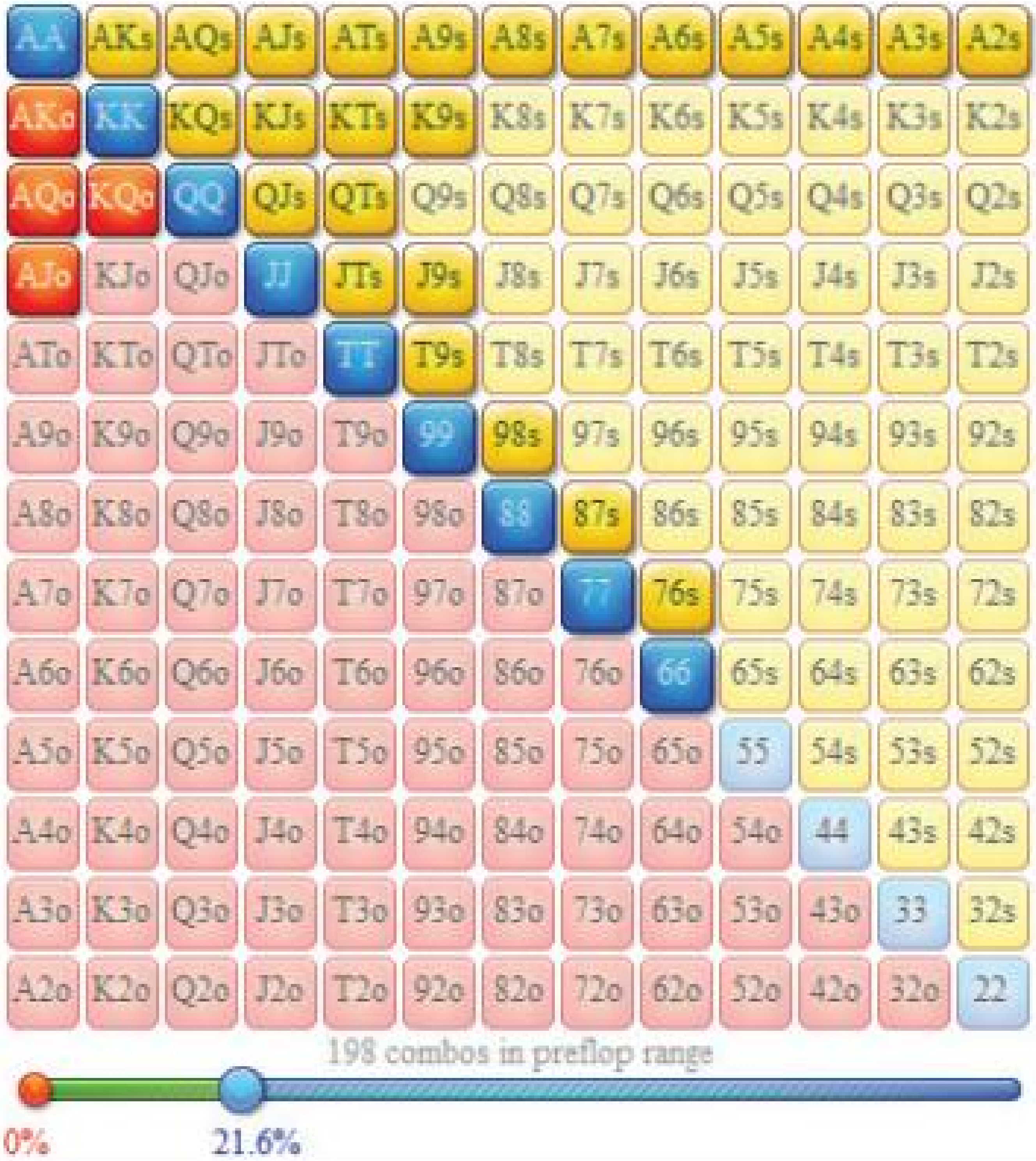
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold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AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
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A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
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A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

7♦ A♦ Q♠

? ? vs. K♦ Q♦

Top pair	______	Combos	x	______	Profit	= ______
Set	______	Combos	x	______	Profit	= ______
Two Pair	______	Combos	x	______	Profit	= ______
Dominated draw	______	Combos	x	______	Profit	= ______

☐ Call ☐ =EV ☐ Fold Total: ______

K♦ J♠ 9♠

K♥ J♥ vs. Q♣ 10♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

K♦ J♠ 9♠

K♥ K♣ vs. Q♣ 10♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity %____

Odds: ____ : 1

Profit : $____

☐ Call ☐ =EV ☐ Fold

K♦ J♠ 9♠

A♠ K♠ vs. Q♣ 10♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

K♦ J♠ 9♠

A♠ Q♠ vs. Q♣ 10♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

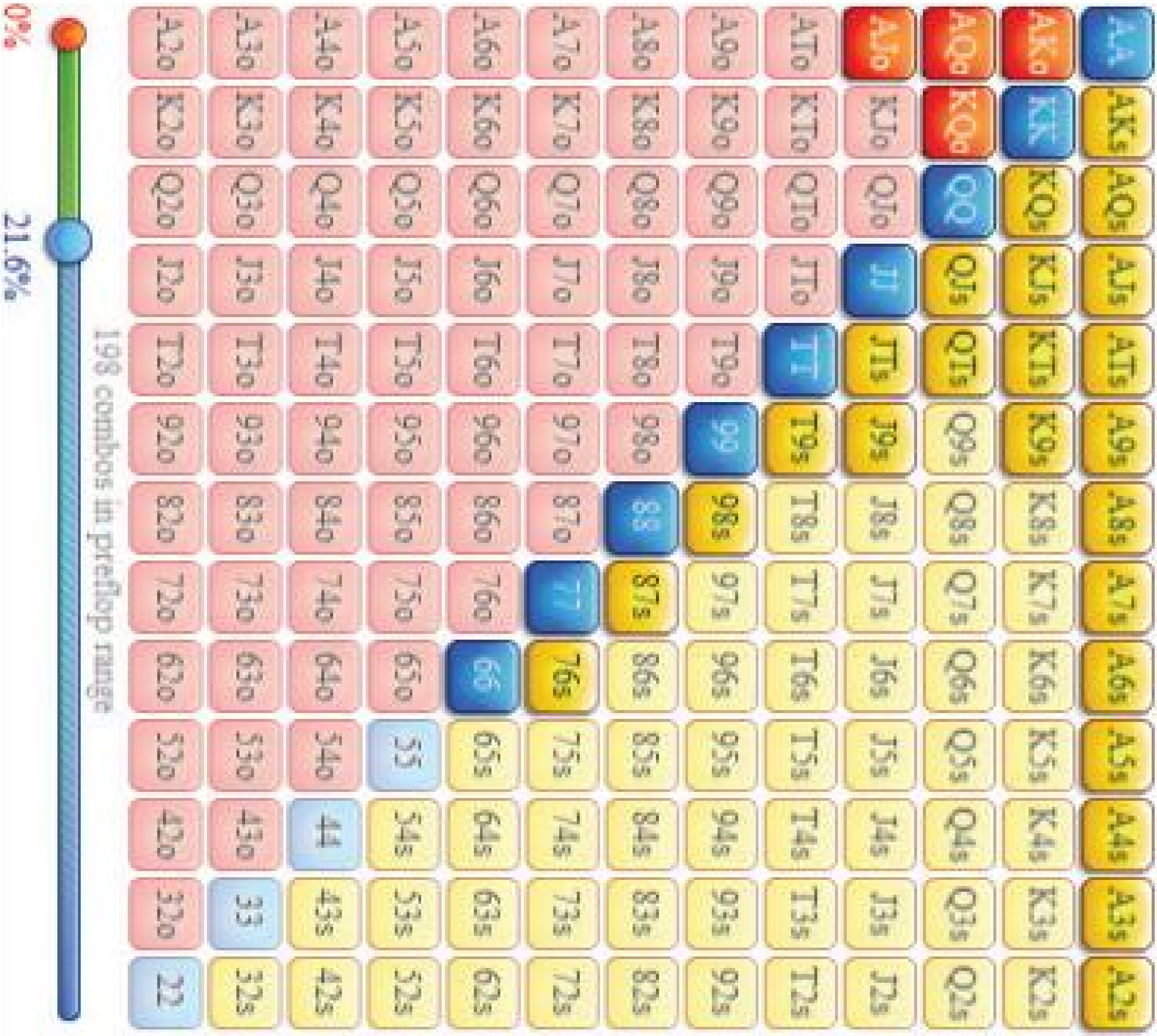
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold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198 combos in preflop range
0%
21.6%

K♦ J♠ 9♠

? ? vs. Q♣ 10♣

Two Pair	______	Combos	x	______	Profit	= ________
Set	______	Combos	x	______	Profit	= ________
Pair + Flush draw	______	Combos	x	______	Profit	= ________
Nut FD	______	Combos	x	______	Profit	= ________

☐ Call ☐ =EV ☐ Fold Total: ________

9♣ 3♠ 8♦

9♠ 9♦ vs. Q♦ Q♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold

9♣ 3♠ 8♦

J♠ 10♠ vs. Q♦ Q♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

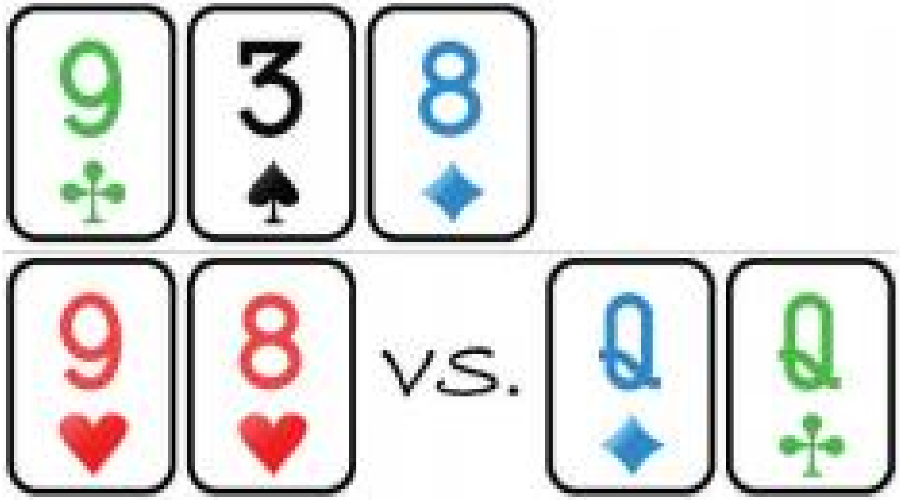
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____
of the final pot.

Outs: ____

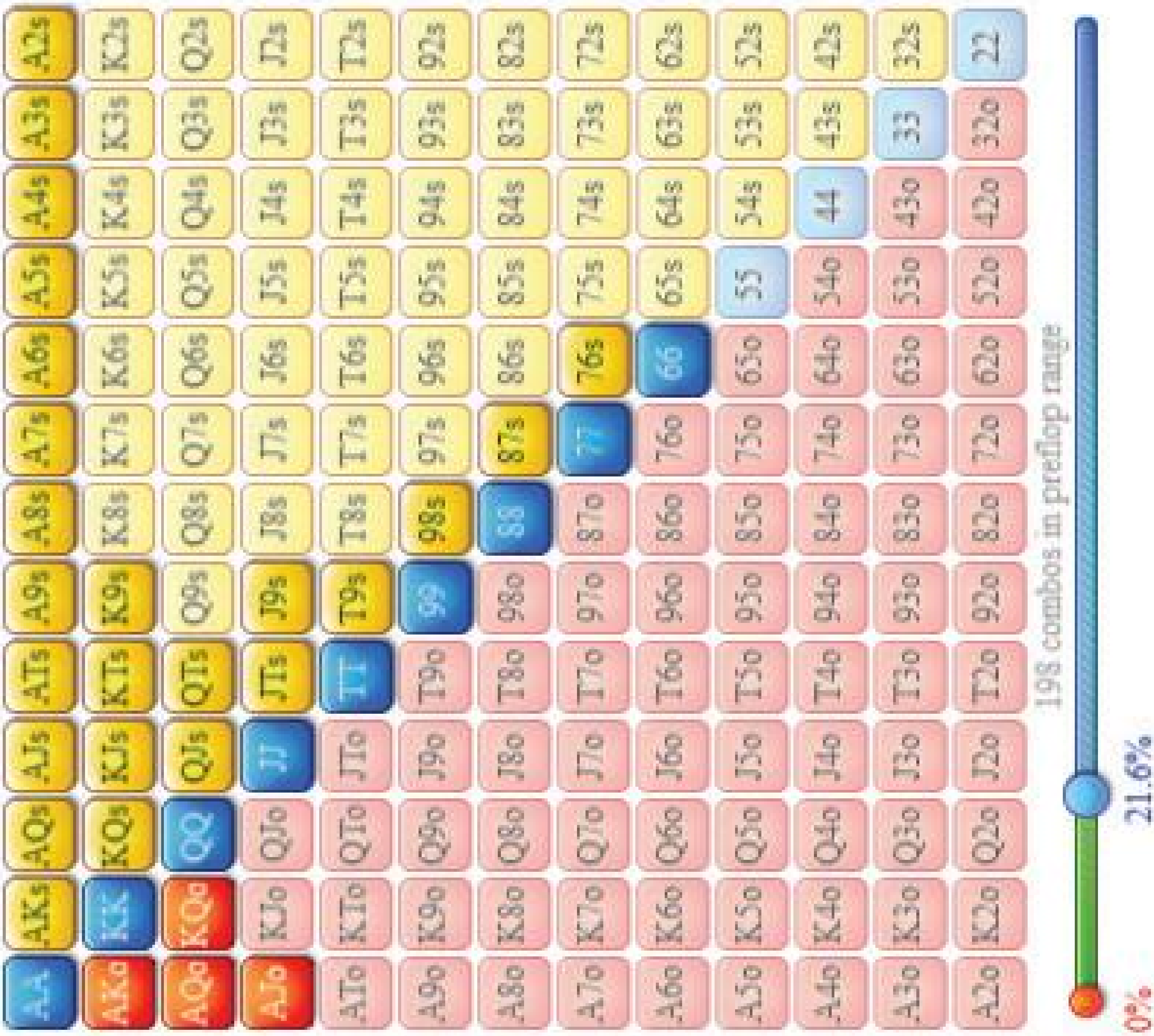
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____

☐ Call ☐ =EV ☐ Fold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A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
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A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

9♣ 3♠ 8♦

? ? vs. Q♦ Q♣

Set	______ Combos	x	______ Profit	=	________
Open ender	______ Combos	x	______ Profit	=	________
Two Pair	______ Combos	x	______ Profit	=	________

☐ Call ☐ =EV ☐ Fold Total: ________

Hand Versus Hand on the Flop with Implied Odds

In these exercises, we are no longer all-in on the flop. This means that we might not be getting the direct or immediate odds to make the call, but that if stacks are deep enough we can make up for that loss the times that we hit our card.

Earlier we did similar calculations on the turn. The flop is more complicated. We could call the flop and then get a free card on the turn, doubling our chances to hit. We could call the flop and then be faced with another bet on the turn. The flop call and turn call are independent decisions. These decisions must be thought about separately. It is frequently right to call the flop and fold the turn.

Because we do not know if we will get two cards for free when we call the flop bet, we should pessimistically assume there will be another bet on the turn when you miss, but a check when you hit. This means we will be using the Rule of Two instead of the Rule of Four, even though you are on the flop.

Just like before, the decision to call or fold is not as well covered mathematically because it is unclear if we will get paid off when we hit. The most we can do for sure is say that there is *not* enough in implied odds to draw against a given hand. We are also ignoring the other options of raising or bluffing since this is a math book, not a strategy book.

Pot: $ 45

Villain bets $ 40

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call

Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

For the pot odds, $40 is close enough to $45 to consider this a pot sized bet for 2:1 odds and thus our call is 33% of the final pot of $125.

We have lots of outs, not because we have an incredible draw, but because we are only trying to beat Ace high. We have eight outs for our straight. One of them is blocked so we are back down to seven outs. Our pair outs are good for six more outs. We have 13 outs total. This is a monster draw, and in a game we would might consider raising instead of calling. For the purposes of this book though we will look at the math of calling. Later in the book we will look at fold equity that might apply here if we were to shove.

Thirteen outs doubled by the Rule of Two is 26% plus 3% bonus percent for every four outs. That puts us at 29%, let's call that 30%. We use the Rule of Two because we are pessimistically assuming there will be another bet on the turn.

If we were to get a free card on the turn when we miss, our equity is much higher. Those same 13 outs by are multiplied by four to get 52% equity. Because some of the outs are relatively easily beaten, we need to give back about 4% but our back door flush is worth about 4% bonus. We call it 50% equity. Flopzilla puts us at 48% equity.

At the tables, we would take the possibility of a free card into our call. The higher the likelihood of getting a check on the turn, the more value this draw has.

The Rule of Four gave us 50% equity. Earlier using the Rule of Two, we came up with 30% equity because we assumed we only get one card for this flop call. We should use the more conservative 30% equity on the turn and just consider ourselves lucky if we get both the turn and river cards after calling this flop bet. With this 30% equity, we want to convert to odds. The ratio 70%-30% is 2.33:1 and that is the odds we were looking for.

With our call being 33% of the final pot, and our equity on just the turn being 30% this is a neutral call on the flop in terms of immediate odds. Since there is really no profit or loss immediately on the call, there is no makeup either. With the possibility of implied odds, this neutral call is one we should make. If we get a second free card on the turn, things are even better.

In reality, even though we have this equity, it might be hard to collect on it. For instance, even though the Jack of Diamonds is an out for us, we might fold when that card comes if an aggressive player bets into us.

These calculations of equity do not account for us having the poker sense to know when we hit our out. Doing the calculations with full knowledge of the board will help build our mathematical intuition so we can guess more intelligently in the face of uncertainty.

Let's try another one. In this example, we would abandon the math very quickly once we knew what we need to know. We will go through the mental math on this one as we would at the table. We will just do the math enough to make our decision.

We have nine outs to the flush plus a gut shot for another three. That is twelve outs, the Rule of Four puts us at 48% equity against a top pair kind of hand if we see the next two cards for this one price.

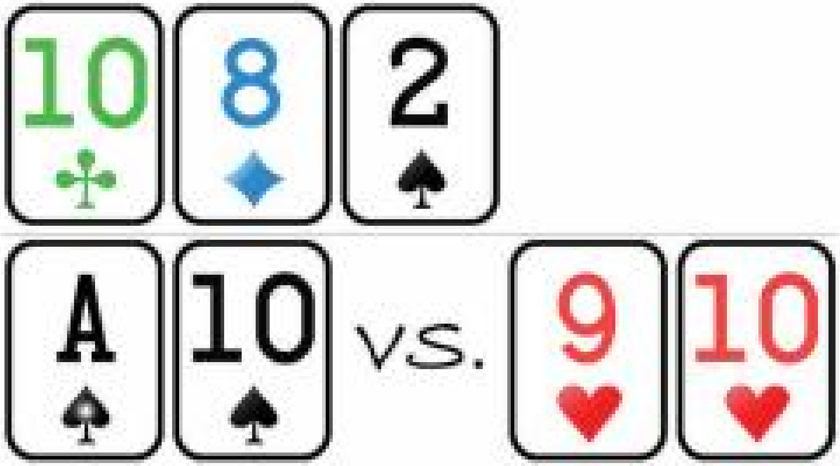
If we see only one card, the Rule of Two would put our twelve outs at 24% plus a 3% bonus for about 27%. It is a small loss compared to putting 33% into the final flop pot. This is fine because there is still money behind to justify the call.

Looking ahead, with only $30 behind, we will always call the turn bet if the Villain shoves the turn. We decide this with a useful shortcut. Notice that we would be asked to call a smaller amount ($30 on turn instead of $45) for a larger pot ($165 on the turn instead of $90). The flop call depended on a small amount of implied odds to work, but now with the reward bigger and the risk smaller, this is a clear call. Both of these calculations use the Rule of Two.

Another way to think about this is that Villain will always call our shove on the flop or the turn. This means that both sides will end up shipping this $45 bet and the remaining $30 in at some point. We see from the Rule of Four that each side has about 50% equity in the pot on the flop.

There was $45 in the pot before the flop. This money is considered "dead money" and it is what we are fighting for. Because both sides have a huge amount of equity in the pot, both sides will be compelled to fight for it. This happens in Hold'em that the dead money in the pot is large enough relative to the stacks that both players are compelled to go broke trying to recover their equity from the pot. Neither side is making a mistake, it is just the nature of the game.

Here is a final example that is common when we flop top pair, but expect that we are out kicked.



Pot: $ 85

Villain bets $ 60

Amount behind $ 90

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Let's go through the mental math. If we really think we are behind on the flop, we have three outs versus a better top pair. We can also assume that the Villain will ship the remaining amount on the turn. Three outs according to the Rule of Two gives us about 7% on the next card.

We want to skip ahead to the part where we calculate our required make up. Villain is 93% to 7%. Let's call that 90%-10%. We are going to have to pay for nine losses for the one hit on the turn. If we multiply the Villain's bet by nine, we get a huge number and the stacks are not that deep.

If we think we are very likely dominated, we just can not come back from that often enough to play on. Good hand reading can let us know when we are in those spots.

As we are doing these problems, we are getting to the point that we should be able to take shortcuts like this to plan our hand. The exercises are only a tool to become intimately familiar with the underlying math. Once we have built that intuition, we can start to improvise or just recall similar situations where you have already done the work.

8♦ 9♦ 8♥

7♠ A♠ vs. 10♥ J♥

Pot: $ 45

Villain bets $ 40

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

8♦ 9♠ 8♥

7♠ A♠ vs. 10♥ J♥

Pot: $ 45

Villain bets $ 40

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

10♠ 3♥ 6♥

A♣ 10♣ vs. 7♥ 8♥

Pot: $ 45

Villain bets $ 45

Amount behind $ 30

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Q♦ 8♣ 4♣

A♣ Q♣ vs. 9♦ 10♥

Pot: $ 30

Villain bets $ 25

Amount behind $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

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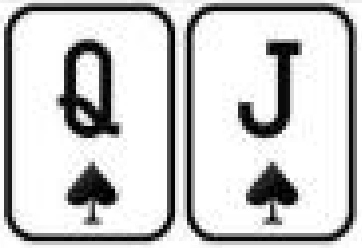
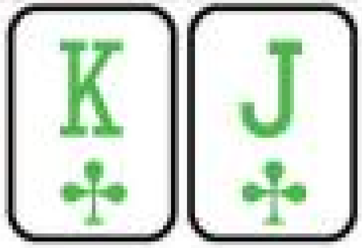


VS.



Pot: $ 45

Villain bets $ 35

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

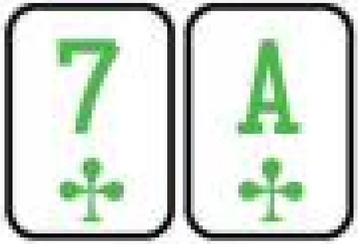
Higher equity? Call
Odds against lower? Call

Equity % ____

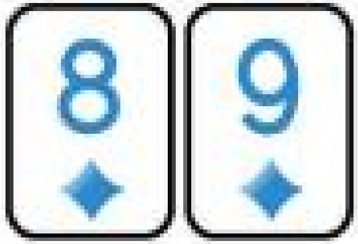
Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



VS.



Pot: $ 35

Villain bets $ 20

Amount behind $ 150

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

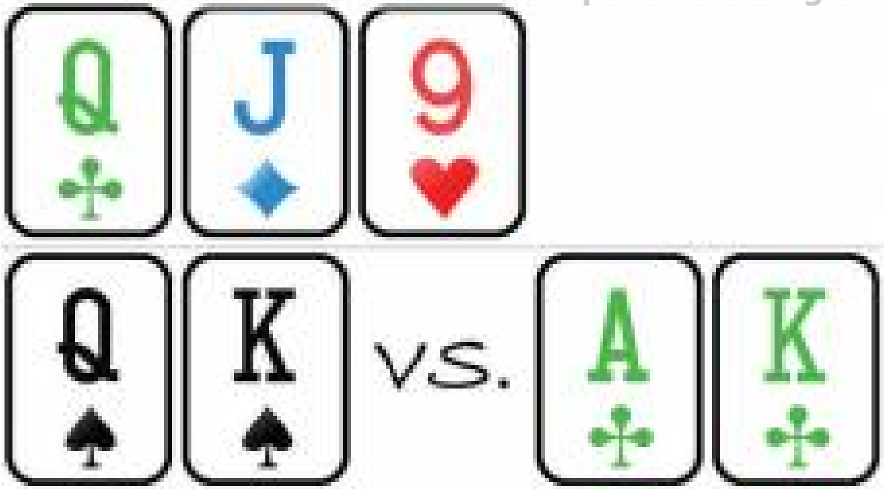
Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 80

Villain bets $ 60

Amount behind $ 130

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

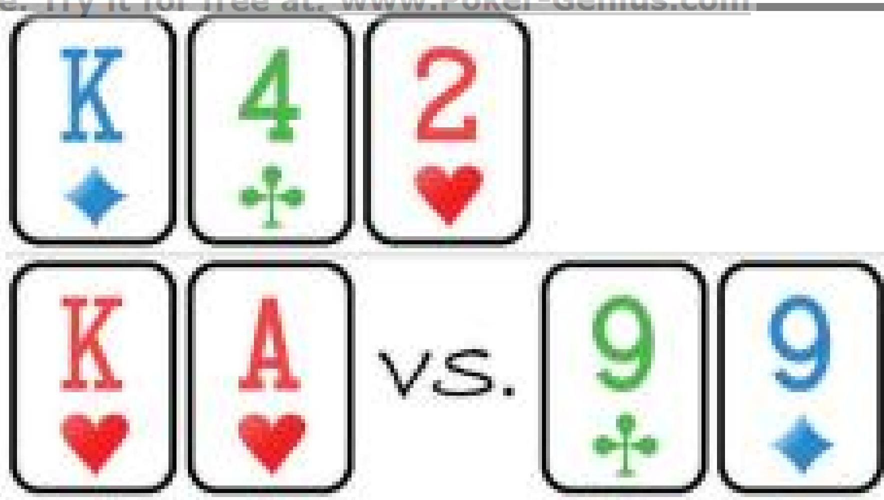
Higher equity? Call.
Odds against lower? Call.

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 35

Villain bets $ 20

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call.
Odds against lower? Call.

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 25

Villain bets $ 20

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 30

Villain bets $ 20

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

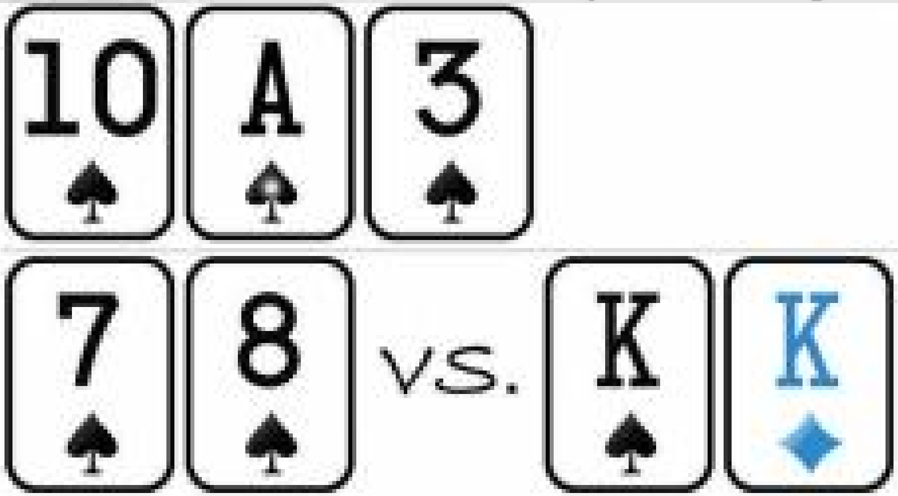
Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 40

Villain bets $ 35

Amount behind $ 150

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call

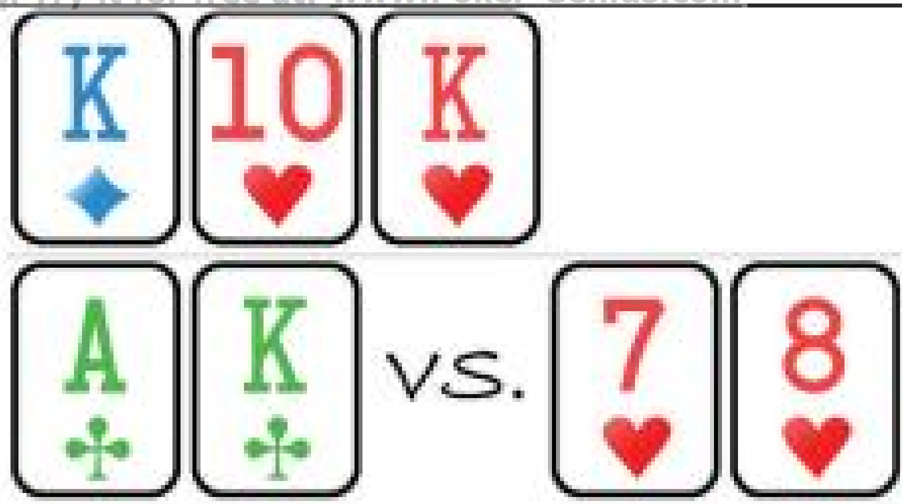
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 35

Villain bets $ 25

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call

Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

K♥ 8♠ 5♠

A♣ K♣ vs. 6♥ 7♥

Pot: $ 55

Villain bets $ 40

Amount behind $ 120

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %______ of the final pot.

Outs: ______

Equity %______

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

3♦ 5♣ A♥

A♦ K♦ vs. A♣ 2♣

Pot: $ 30

Villain bets $ 20

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %______ of the final pot.

Outs: ______

Equity %______

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

8♦ 3♥ 6♠

8♠ 7♠ vs. 9♦ 10♦

Pot: $ 10

Villain bets $ 10

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

4♥ Q♣ 3♣

Q♦ Q♠ vs. A♣ 2♣

Pot: $ 40

Villain bets $ 20

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

8♣ 2♥ 8♦

A♠ 8♠ vs. 9♦ 9♣

Pot: $ 25

Villain bets $ 20

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

A♥ A♣ 8♣

K♦ K♣ vs. 7♣ 6♣

Pot: $ 60

Villain bets $ 35

Amount behind $ 85

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

4♠ 5♣ 6♥

J♥ J♠ vs. 6♦ 8♦

Pot: $ 25

Villain bets $ 15

Amount behind $ 100

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

2♥ 4♦ 9♠

9♦ J♥ vs. 8♣ 8♠

Pot: $ 35

Villain bets $ 25

Amount behind $ 150

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

K♣ Q♦ 4♠

K♦ Q♣ vs. J♦ 10♦

Pot: $ 90

Villain bets $ 80

Amount behind $ 250

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

A♦ 8♦ 6♥

A♣ K♣ vs. 6♦ 7♦

Pot: $ 55

Villain bets $ 45

Amount behind $ 300

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

J♦ A♠ Q♣

A♣ 10♣ vs. 9♦ 10♦

Pot: $ 70

Villain bets $ 55

Amount behind $ 110

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %______ of the final pot.

Outs: ______

Higher equity? call
Odds against lower call

Equity %______

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

10♣ 8♦ 2♠

A♠ 10♠ vs. 9♥ 10♥

Pot: $ 85

Villain bets $ 60

Amount behind $ 90

Pot Odds: ____ : 1

Final pot would be: ______

Your call would be %______ of the final pot.

Outs: ______

Higher equity? call
Odds against lower call

Equity %______

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

Hand Versus Range on Flop with Implied Odds

This section is very similar in format to the turn math with implied odds. We are estimating the value of each match-up and counting the combos to find out how likely that match-up is. At the tables we would almost never do this math out entirely. We do the math now so that our intuition is trained when we get to the tables.

When we are estimating the value of a match-up, like AJ vs 78, we guess at the profitability of that match-up. This will be very rough. With deep stacks, we will need to make another decision on the turn. For this flop call, we are just deciding, "Will this put us in a profitable spot on the turn?"

Let's go through a problem.

How much is this match-up going to be worth to us? The turn pot will be $200 and 20% of the time it will be ours on the turn. We are paying $65 to lock up $40, so we lose $25 every time we call. Were we to do this five times, we lose $125. However, one of those five times we have a shot at getting the rest of his stack. If we get the entire stack of $200, then that one time pays for the losses and makes us $75. If we always get the entire stack, over the course of five trials we will make $15 on average. If we figure sometimes the Villain properly folds when we hit, it will be a bit less than that.

An alternate way to do the math here is to look for money to make up for the times we call and lose. We need to call $65 and pay for four losses waiting for our win. That is $260 to pay for. Villain's bet plus the rest of his stack pays for that. The one time we hit, there is $80 in the pot and we will get that 20% of the time, so we can make $16 on average if we always get his stack. It is a different way of doing the math but same essential result.

The rest of the worksheet is done as before. It has been started here.

9♠ J♥ 6♥

? ? vs. 7♠ 8♠

Top pair	21 combos	x	15	Estimated Return	=	315
Open ender	____ combos	x	____	Estimated Return	=	____
Nut FD	____ combos	x	____	Estimated Return	=	____
Set	____ combos	x	____	Estimated Return	=	____

☐ Call ☐ =EV ☐ Fold Total: ____

A♥ J♦ 7♠

A♣ 3♣ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

Equity %____

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

A♥ J♦ 7♠

A♣ J♣ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be %____ of the final pot.

Outs: ____

Equity %____

Odds: ____ : 1

Profit : $____ Makeup: $____

☐ Call ☐ =EV ☐ Fold

A♥ J♦ 7♠

7♥ 7♣ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

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A♥ J♦ 7♠

K♦ Q♦ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

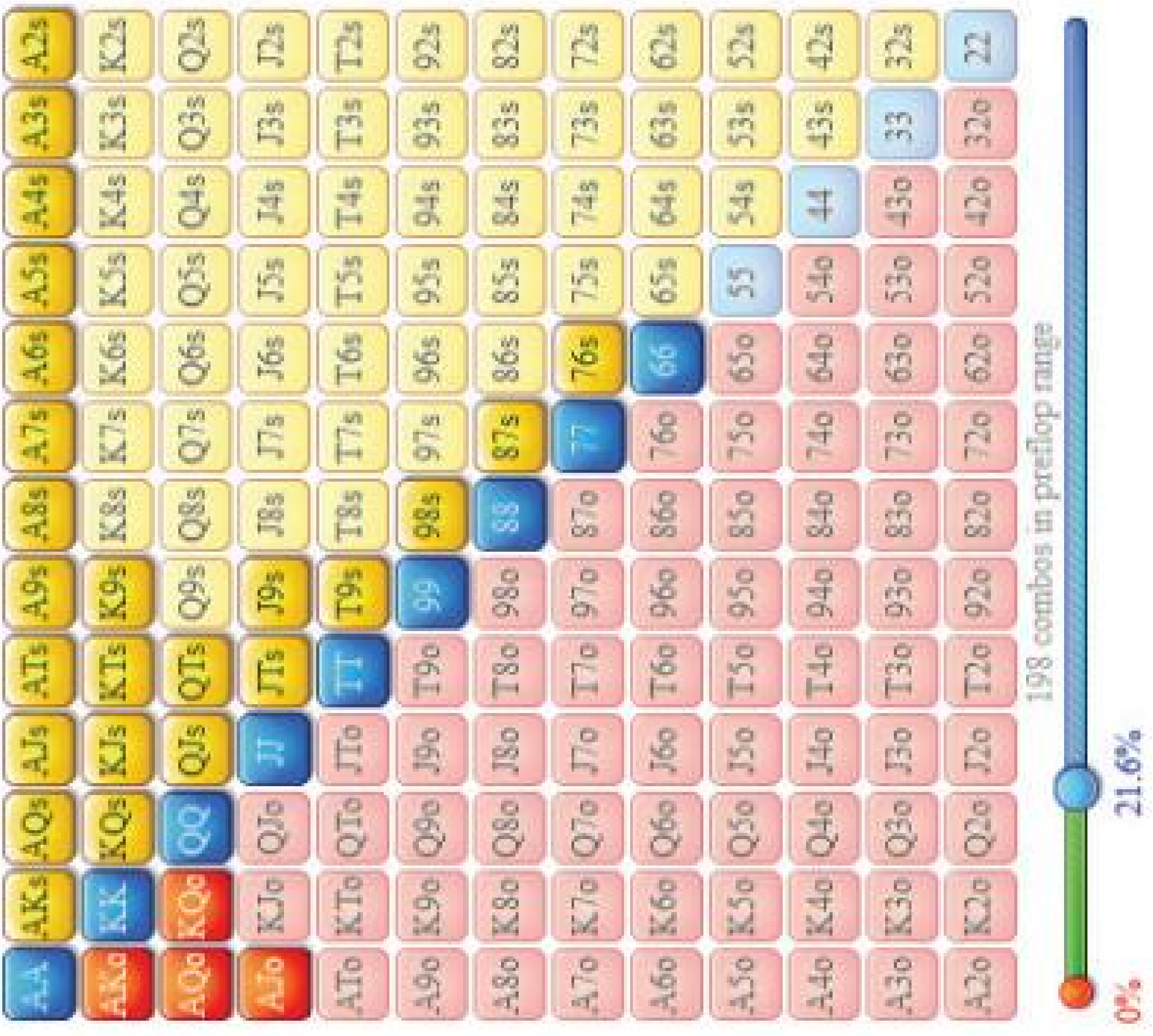
Higher equity? Call
Odds against lower? Call

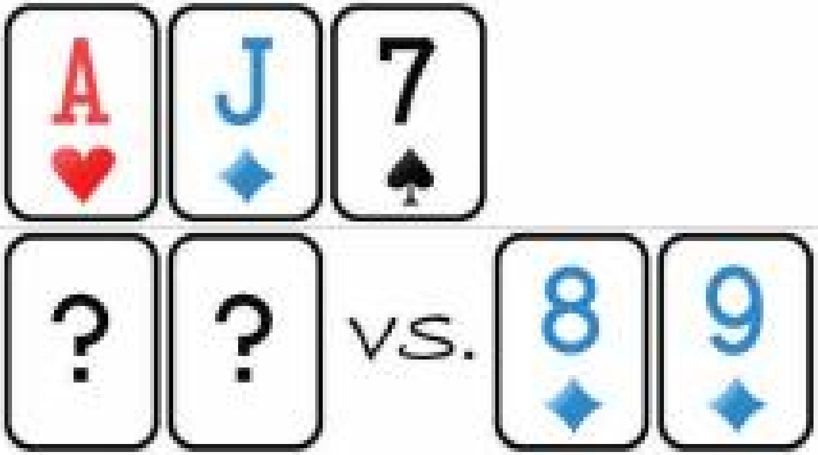
Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%



Top pair ______ Combos × ______ Estimated Return = __________

Two Pair ______ Combos × ______ Estimated Return = __________

Set ______ Combos × ______ Estimated Return = __________

Gut shot ______ Combos × ______ Estimated Return = __________

☐ Call ☐ =EV ☐ Fold Total: __________

9♠ J♥ 6♥

J♣ A♣ vs. 7♠ 8♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

9♠ J♥ 6♥

10♠ Q♠ vs. 7♠ 8♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? Call
Odds against lower? Call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

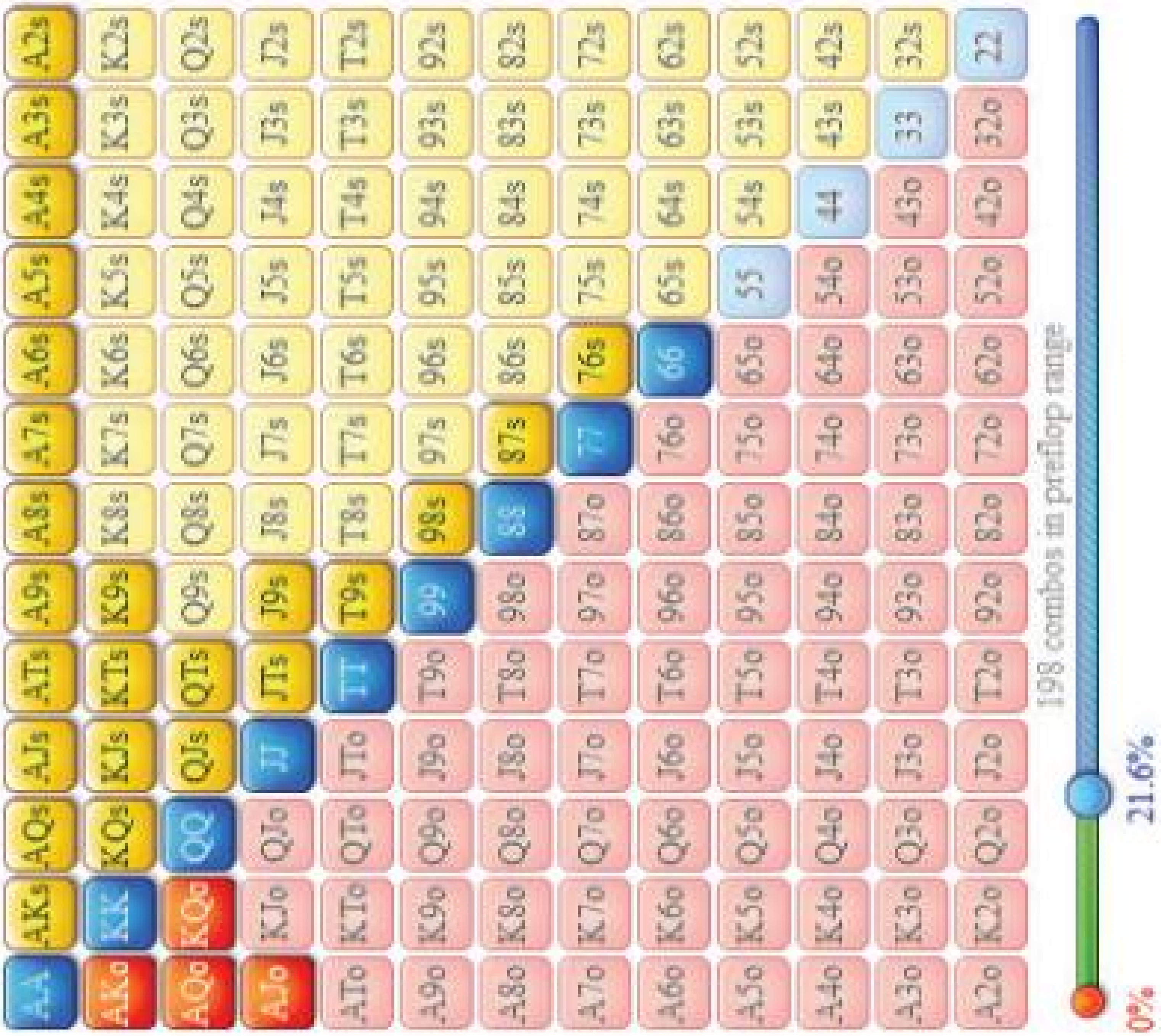
Higher equity? Call
Odds against lower? Call

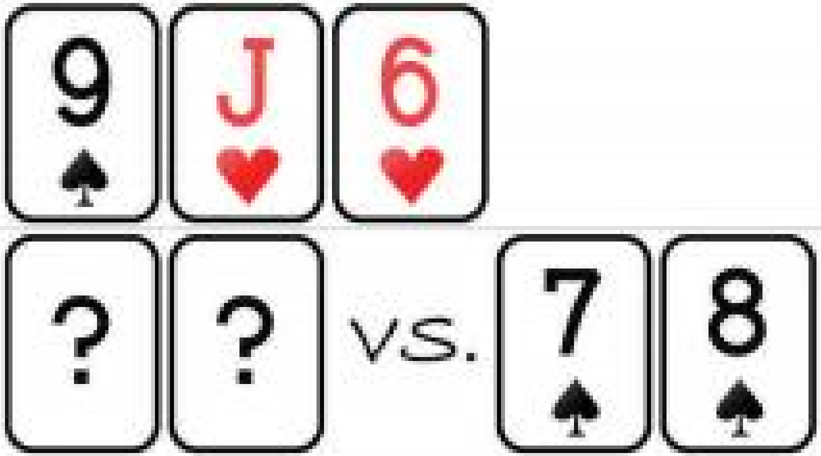
Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold


198 combos in preflop range
0%
21.6%



Top pair	______ Combos	x	______ Estimated Return	= ______
Open ender	______ Combos	x	______ Estimated Return	= ______
Nut FD	______ Combos	x	______ Estimated Return	= ______
Set	______ Combos	x	______ Estimated Return	= ______

☐ Call ☐ =EV ☐ Fold Total: ______

5♥ Q♣ 2♣

A♠ Q♠ vs. A♣ K♣

Pot: $ 90

Villain bets $ 80

Amount behind $ 155

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? call

Odds against lower? call

Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold

5♥ Q♣ 2♣

K♠ K♦ vs. A♣ K♣

Pot: $ 90

Villain bets $ 80

Amount behind $ 155

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Higher equity? call

Odds against lower? call

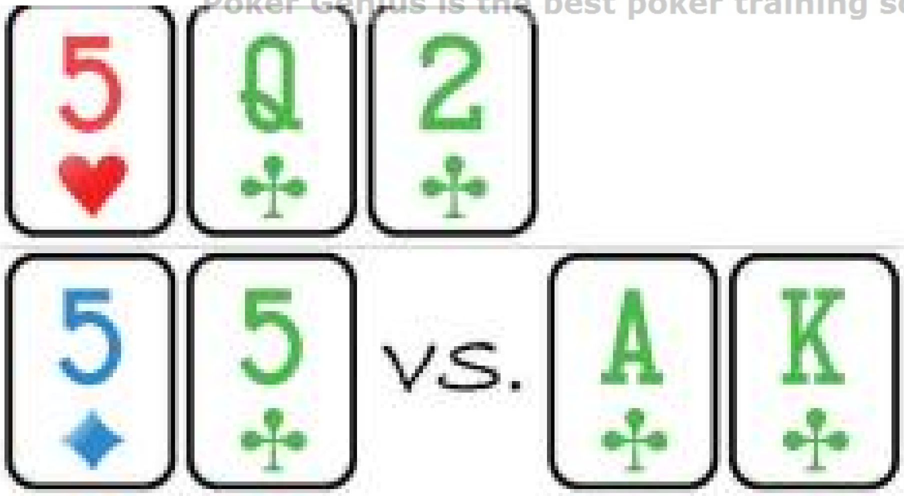
Outs: ____

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 90

Villain bets $ 80

Amount behind $ 155

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? call

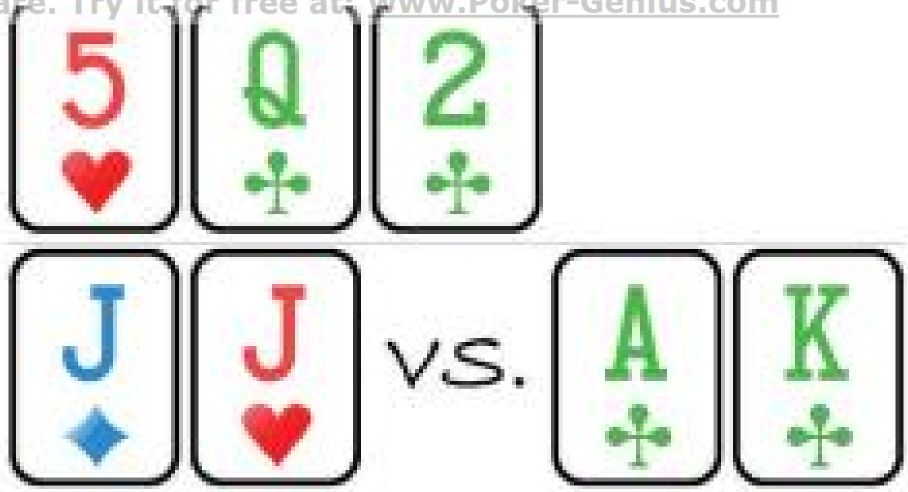
Odds against lower? call

Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold



Pot: $ 90

Villain bets $ 80

Amount behind $ 155

Pot Odds: ____ : 1

Final pot would be: ____

Your call would be % ____ of the final pot.

Outs: ____

Higher equity? call

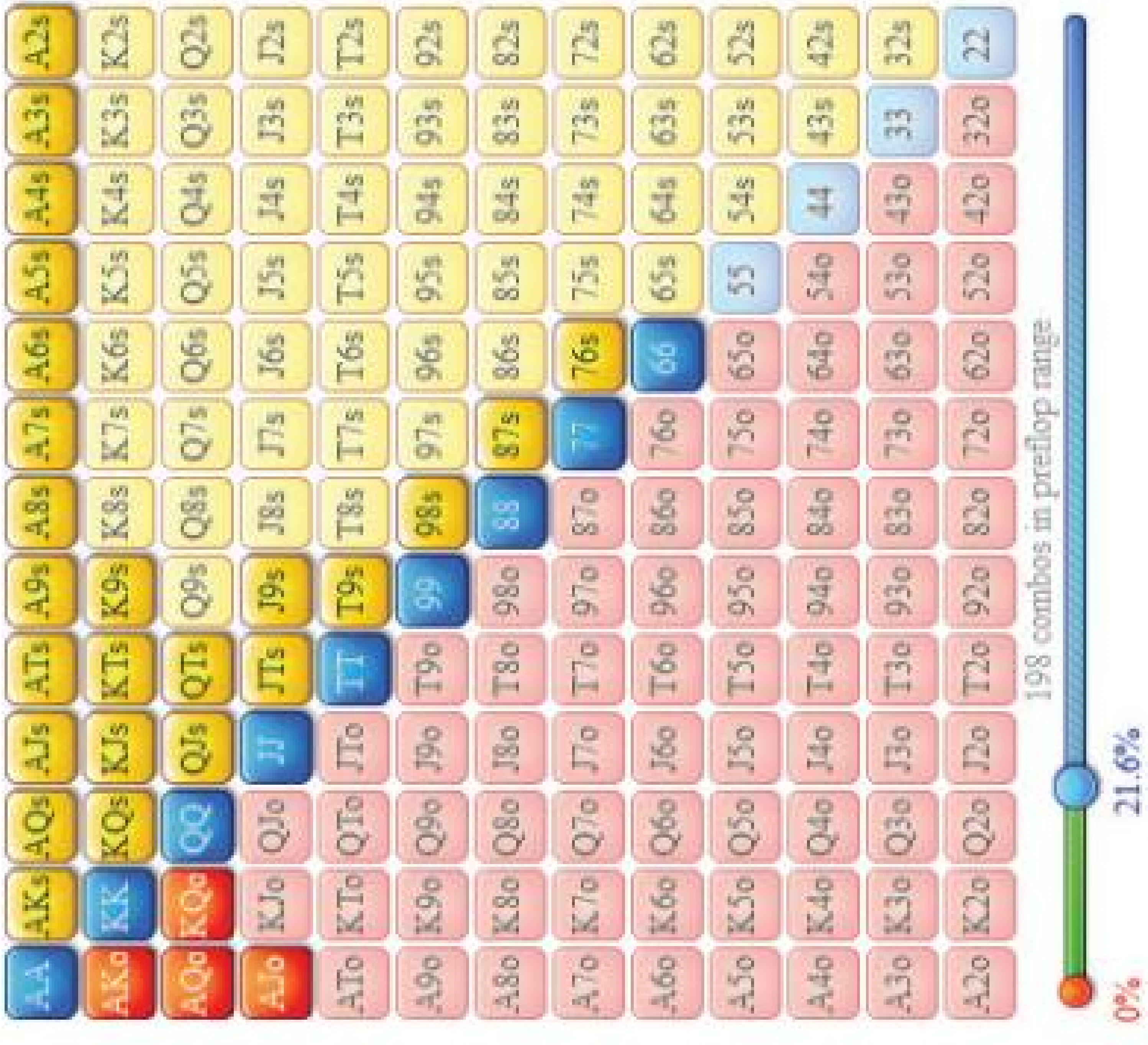
Odds against lower? call

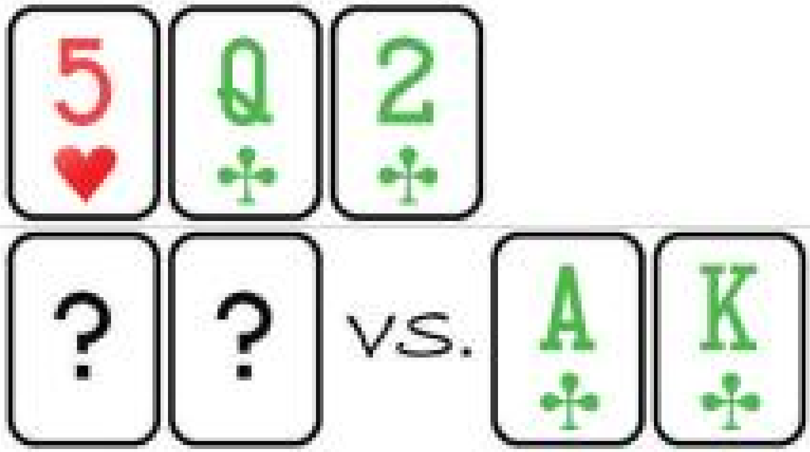
Equity % ____

Odds: ____ : 1

Profit : $ ____ Makeup: $ ____

☐ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%



Top pair	______ Combos	x	______	Estimated Return	= ________
Overpair	______ Combos	x	______	Estimated Return	= ________
Set	______ Combos	x	______	Estimated Return	= ________
Pocket pair below TP	______ Combos	x	______	Estimated Return	= ________

☐ Call ☐ =EV ☐ Fold Total: ________

FOLD EQUITY

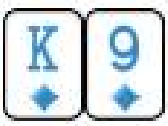
Fold Equity

Our cards have both showdown equity and fold equity. Showdown equity is the value we get when you go to showdown and have a superior five card hand. Fold equity is what makes bluffing and semi-bluffing work because sometimes we will bet and everyone folds. In semi-bluffing, when called we still have appreciable equity.

As we have seen through this book, it is often difficult to make money by calling with draws. Playing more aggressively with draws is one way to make up for this and is the hallmark of great players. There are many strategic places where betting with a draw makes sense. Here we will see the math behind that.

In a pure bluff, we expect that we will always lose when called. If we have a chance to win when called because our draw might come in, then this is more of a semi-bluff. The showdown value of our hand is our second chance in a semi-bluff; the more equity you have when called the better.

As an example:



Pot: $120

Two players, we are in position, $90 stacks

We put our Villain firmly on an Ace but not two pair. This means we have nine flush outs, two Nines, and three Kings unless Villain has Ace King. We will discount the King out by one. This gives us thirteen discounted outs. Rule of Two says we have 26% + 3% bonus for 29% equity against a variety of Aces.

This means that if we were to shove and get called, the pot would be $300. We are entitled to 30% of that pot or $90. Since we are shoving $90 and we expect to get back $90 *when called*, shoving costs us nothing. It is like a coin flip except we win less frequently and triple up when we do win.

The key part of the above statement is *when called*. It is reasonable to believe that sometimes when we shove the Villain will fold. Every time Villain folds, we win the current pot. Every time he calls, we break even. This is a bet we can never lose, on average. This is a great bet and we should fire in here if we truly believe Villain has a single pair of Aces and sometimes will fold.

They are not always such perfect situations. Let's change this board a little bit.

Pot: $120

Two players, we are in position, $90 stacks

We put Villain on the same exact hand range, except in this scenario we only have flush outs without the trips and two pair outs. Nine outs is 18% plus 2% bonus is 20% against a reasonable range of Aces. Now we are entitled to only 20% of the $300 final pot or $60. This means we are putting in $90 and collecting only $60 back when called.

We need to know how often the bluff needs to work. The bluff needs to make up our $30 loss when called. There is $120 in the pot. If he always folds, we make $120.

Let's estimate some different fold percentages:

1.) If he folds 50% of the time, then there are two things that can happen. Half of the time we make $120 on the bluff. The other half of the time we lose $30. This is a great situation for us since that nets $90 profit. The average profit is $45 per time we run out this hand.

Since we know we are taking the worst of it when called, we want to bracket the required folding percent by Villain. We just saw that 50% folds is really good for us. Let's try another easy to calculate number.

2.) If Villain folds 33% of the time, we make $120. The 66% of the time that he calls, we lose $30. Since losing $30 is twice as common as winning $120, we will double it to find the average. This means we lose $60 for every time we win $120. That is still $60 won over three trials. That means $20 average profit. We like this, but not as much as when he folds 100% or 50% of the time.

3.) The next easiest number is 25% folds. Again we make $120 on that try, but the other 75% of the time we lose $30. Three losses of $30 is $90, so 25% folds is still good for us, but now we are only making $30 over four tries. Less than $7.50 profit per time we run it out.

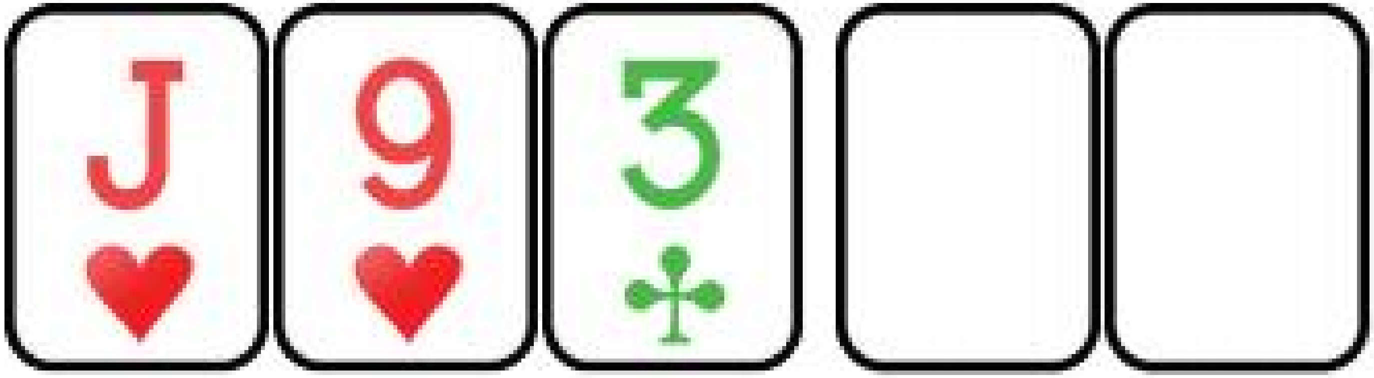
At the tables, we could stop here. $7.50 profit on a $90 bet hoping for 25% folds is probably about the limits of math and estimation. The art of poker is being right about the Villain's holding an Ace and estimating the chance he will fold. This is simply the math to help with those reads.

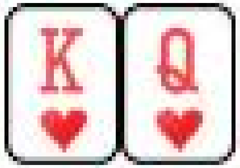
4.) The final estimate is 20% folds. Again, we make $120 when Villain folds. Four times that often, we lose $30. Multiply that out and we see that we break even.

Knowing where the break even point is allows us to decide if it is a good shove. We could have just said our win when he folds is $120, and our average bluffing loss is $30. We see that one win pays for four losses, a ratio of 4:1. This equates to 80%:20% meaning we only need 20% folds to break even.

Realistically at the tables, the Villain might hold lots of hands weaker than top pair that he would fold to this bet. The more of these weak holdings, the better this will work.

Let's do another one of these. We already know how to estimate our equity when called. Lets look at a situation where a Hero flops the World's Fair of draws: two overs, gut shot straight draw with a flush draw.





Pot: $80

Two players, we are in position, $260 stacks

On the flop, the Villain bets $60 into the $80. Hero considers shipping it in for $180 on top. Based on the history with the player, we think Villain will call with top pair or better. We think he could show up with J9+, all the overpairs, and set Nines or better. There is a good amount of junk that he will fold, like AK.

The first calculation should be equity against the nuts, pocket Jacks. We have nine flush outs, plus three other straight outs. We believe they are essentially always good. This gives us a minimum of 12 outs for 48% equity. The set has redraws to a boat, so we need to drop back 30% of our total equity. We need to know 30% of 50%. It is 15%. That means we have 35% equity against the nuts.

Against top pair type hands, we have the full 50% equity from our straight and flush draws and then about 10% equity from our over cards. Flopzilla puts us at 58% equity. We would have estimated it to about 60% (Against overpairs, we are more like 50% equity.)

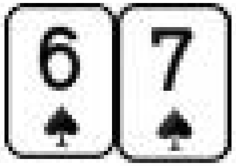
We could try and count the combos and take a weighted average, but we have bracketed our equity when called to somewhere between 35% and 60%. There are a lot more top pair and overpairs than sets and two pair. We could just call this about 50% equity as a SWAG (Scientific Wild Ass Guess). Flopzilla puts us at 50% equity. Bracketing and SWAG works pretty well.

Let's rough out the math here so we feel more confident at the tables. Our final pot if called will be $260 + $260 + $80 or $600. When called, we will take half the pot back. That is $300, and we are putting in $260. It is already profitable even if Villain never folds.

Villain will fold sometimes, so this is an instant ship, unless we think there is an even better move we can make.

The general procedure for these calculations is:

- Figure the final pot when called.
- Calculate your percent return when called.
- If the return is more than your stack, consider shipping, it is profitable.
- If your equity when called is better than 50%, shipping is always profitable.
- If the return is less than your stack, find the average loss.
- Figure out how many times you can ship and lose compared to the profit when Villain folds. This ratio gives the amount Villain must fold for the move to be profitable.
- Use your poker sense to decide if you will get the required folds. Count combos if you can.



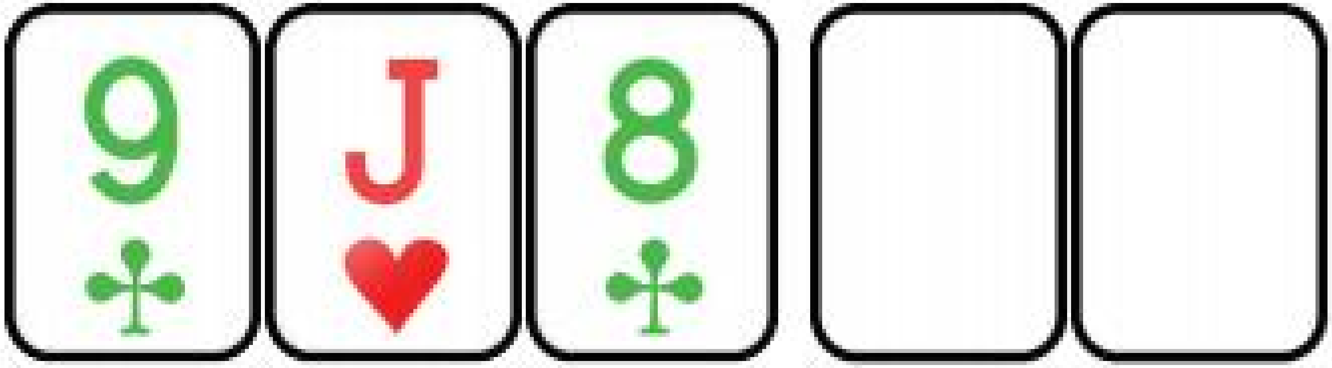
Pot: Villain bets $30 into $50
$150 stacks before you call
Villain will call with JJ or better

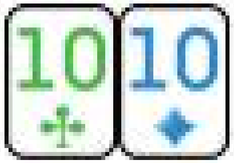
Equity when called: % ______

Loss when called: ______

Win when folded to: ______

Required folding % to break even: ______





Pot: Villain bets $25 into $30

$150 stacks

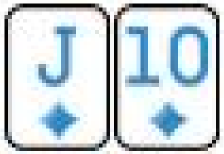
Villain will call with top pair or better, two overs and a flush draw or better

Equity when called: %______

Loss when called: ______

Win when folded to: ______

Required folding % to break even: ______



Pot: $110

$50 stacks

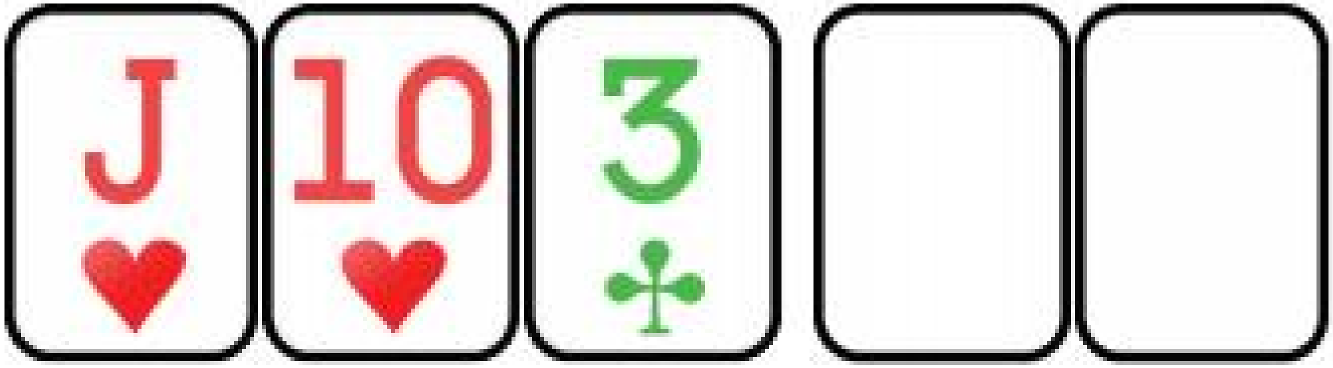
Villain will call with top pair or better

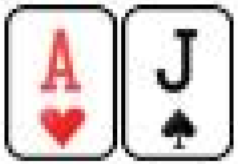
Equity when called: %_______

Loss when called: _______

Win when folded to: _______

Required folding % to break even: _______





Pot: $50

$35 stacks

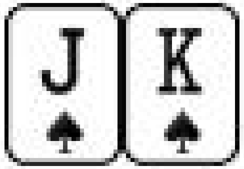
Villain will call with any pair any draw

Equity when called: %________

Loss when called: ________

Win when folded to: ________

Required folding % to break even: ________



Pot: $100

$90 stacks

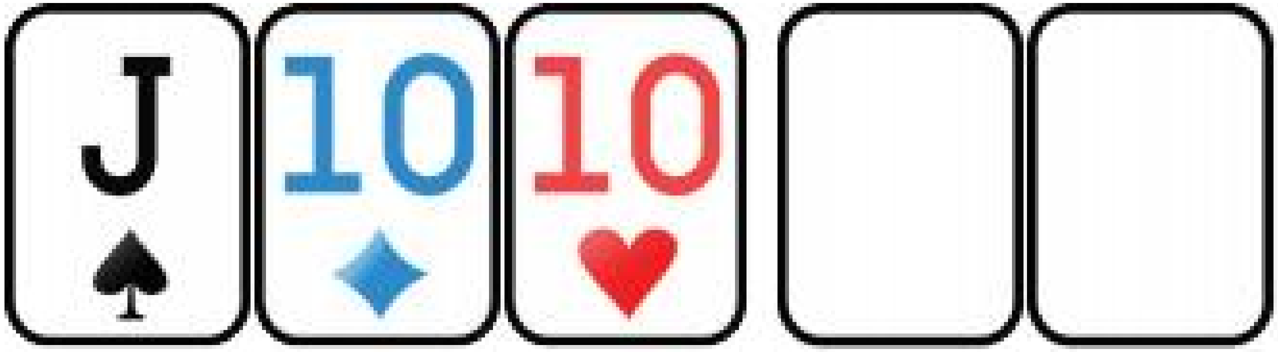
Villain will call with any boat or better

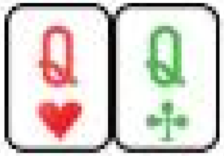
Equity when called: %_______

Loss when called: _______

Win when folded to: _______

Required folding % to break even: _______





Pot: $75

$150 stacks

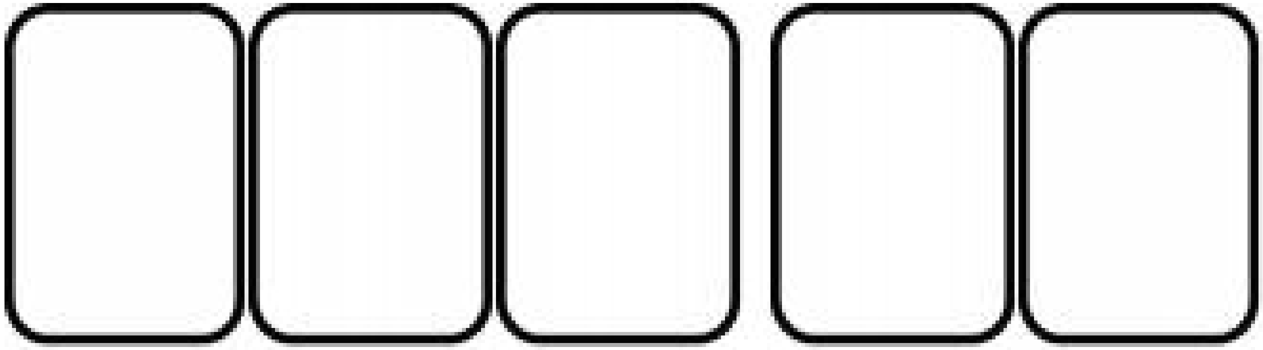
Villain will call with top pair or better or with an open ended straight draw or AK with back door flush

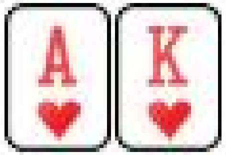
Equity when called: %______

Loss when called: ______

Win when folded to: ______

Required folding % to break even: ______





Pot: Villain bets $30 into $50

$120 stacks before you call

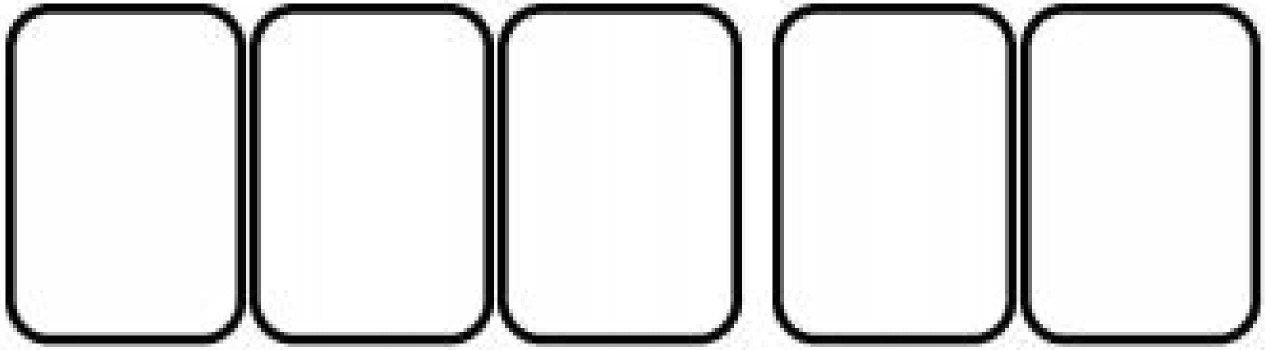
Villain will call with AQ+ or 99+

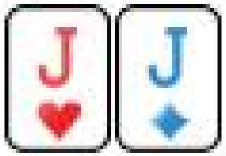
Equity when called: %_______

Loss when called: _______

Win when folded to: _______

Required folding % to break even: _______





Pot: $30 into $50

$200 stacks

Villain will call with QQ+ and AKs

Equity when called: %_______

Loss when called: _______

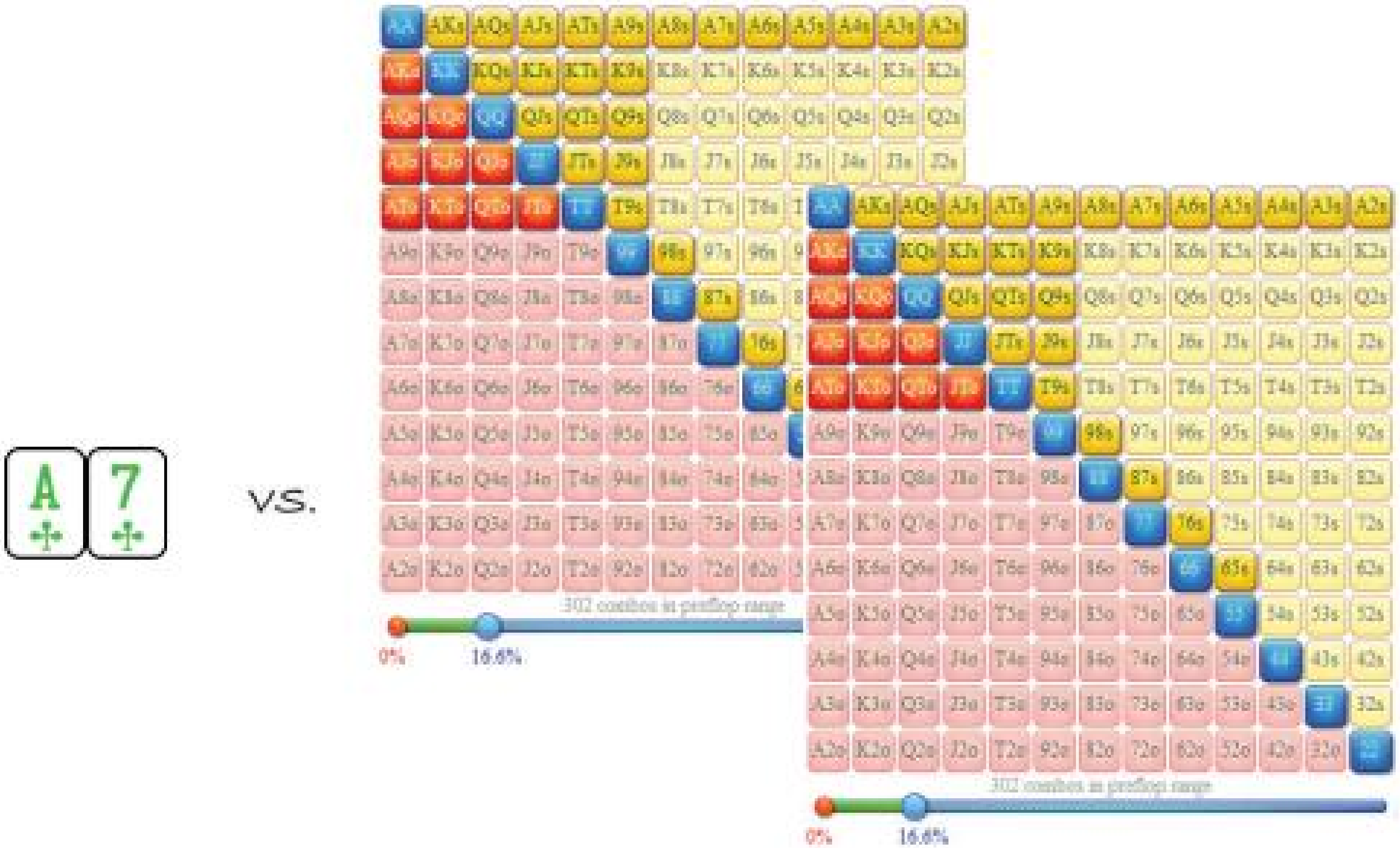
Win when folded to: _______

Required folding % to break even: _______

REAL HANDS

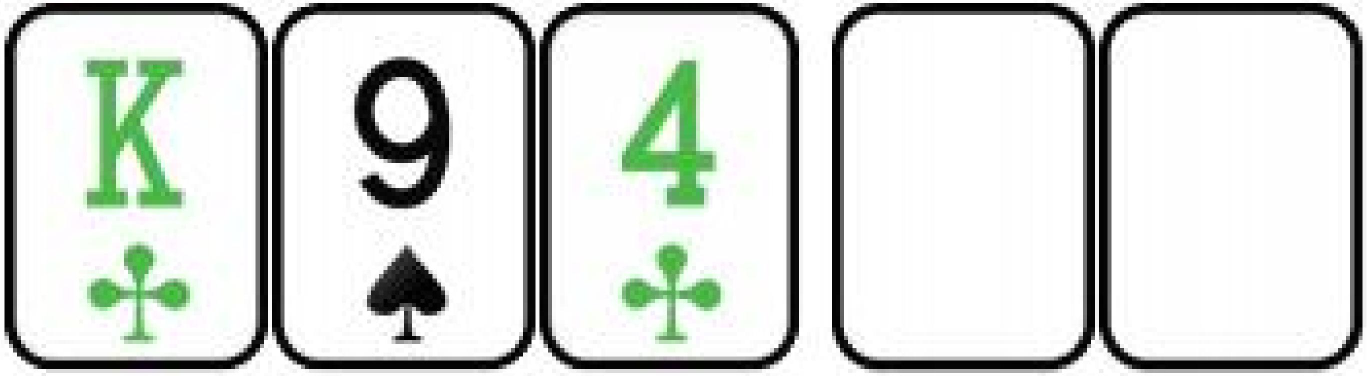
Folding Nut Flush Draw on the Flop

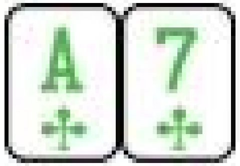
Effective stacks: $200.



Villain raises to $12 in MP1. A player calls and we call on the button with a weak suited Ace.

We know very little about these ranges at this point, so lets go to the flop.





Pot: $39

Three players, we are in position, $190 stacks

The original raiser bets $40 into the pot and the middle player raises it up to $120. The flop raiser is not the type that would raise on a draw in this spot, so we put them solidly on two pair or better. Most likely we are against a set of

Nines or Fours with the occasional King Nine suited. Further, we believe that the flop raiser is never folding. If the flop bettor does not re-open the action, the remaining $70 will be bet on the turn.

It is unclear to us what the pre-flop raiser has or if he will come along to the turn, but we think he certainly has a weaker range than the flop raiser.

Let's start with pure aggression. Do we have the odds to just ship it right now? We might remember that a flush draw is 25% to win by the river versus a flopped set. If we assume pre-flop raiser has very little equity and is willing to call, then he will contribute a lot of dead money to the pot. In this rosy situation, we will put essentially 33% of the money in and only collect 25%. The $40 in pre-flop dead money is not enough to justify getting $190 more in right now since our 25% equity in the dead money is only $10. Clearly if all the money goes in now against a set, we are losing lots of money. It gets even worse if the pre-flop raiser does not come along.

Can we call the raise? In the best case scenario the flop bettor will call but not raise us. That makes the pot $120 x 3 for $360 and the original $40 for $400 total with $70 back.

We make the nuts on the turn with only eight cards since the Nine of Clubs brings a boat or more to a flopped set. We will make this draw about 18% of the time. Let's call it 20%. This means we are entitled to $80 of the pot, and we are putting $120 in. This is not good for us either. However, we have $70 in reserve. Let's take the best case scenario where we hit our flush and get called by both Villains. The set still has ten clean outs to a boat or better, that is about 20% equity to our 80%. The final pot would be $600 again and we get $480 on average **when we hit on the turn**. That means we only get that $480 20% of the time. That is $96 (think 10% of $480 and then double it) in the absolutely best case scenario. And our best case scenario has us losing money on average.

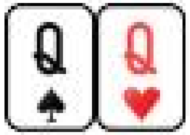
If making our draw on the turn does not make us money, then calling the inevitable turn shove is going to be ugly for us also. There are seven board pairing turns where we are drawing stone dead. Imagine we get to the turn three ways for $120. The pot will be $360 + $40 for $400. If we catch a brick that does not pair the board and both players go all in before us, then giving us the best possible odds on our draw there would be $70 + $70 + $400. We would be forced to call getting such a good value on our 20% draw. The final pot would be $600 again so we would be entitled to $120 for our $70.

Essentially, by calling the flop we are setting ourselves up to be pot stuck on the turn. The turn call on a non-pairing brick would be +EV, but the whole line would be bad for us since we are losing money even those times when we do hit as we saw in the analysis where we hit on the turn.

All of these analysis were with the very generous assumption that the third player is shoving money in stone dead. In more realistic scenarios we are doing much worse. Just fold the flop, even with this monster draw if you truly believe the Villain has two pair or better.

Folding Middle Set on the Flop

Effective stacks: $1600 at $2-5.



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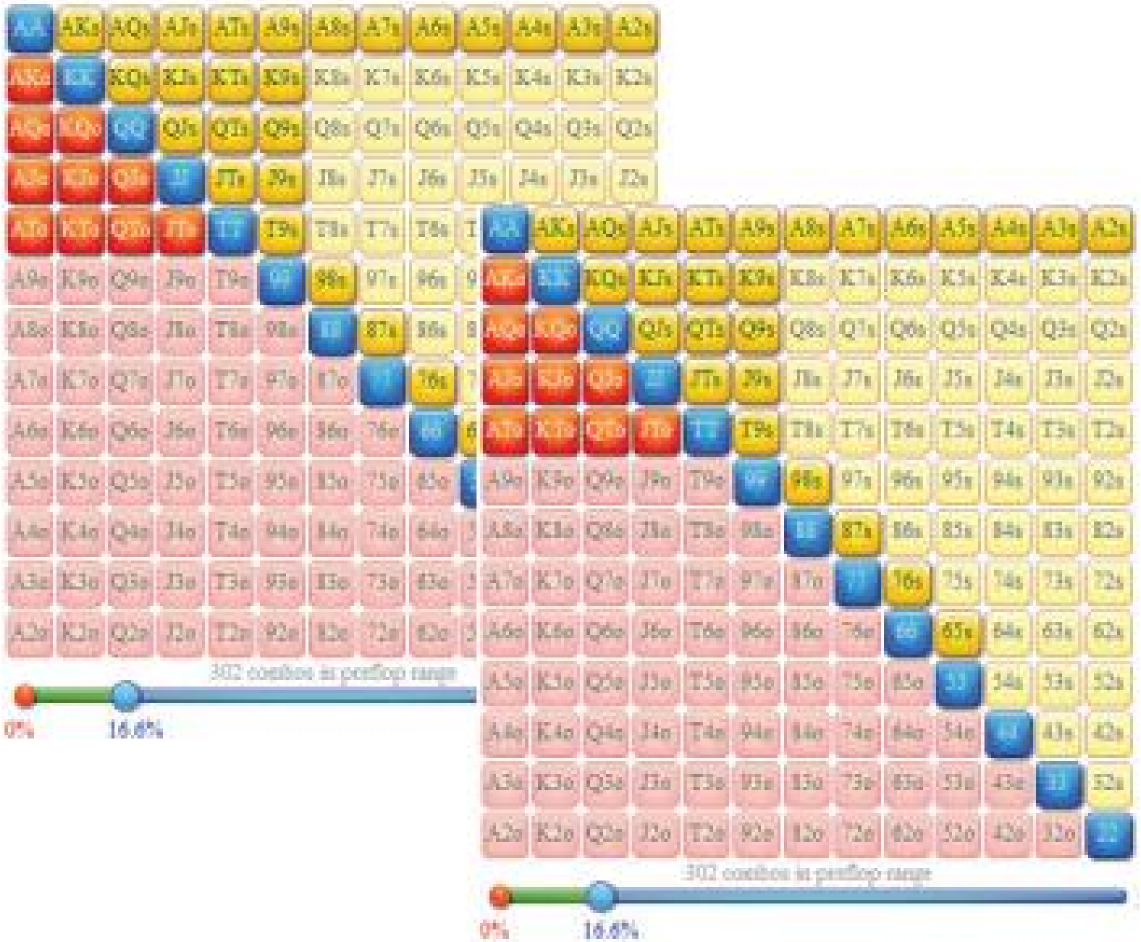
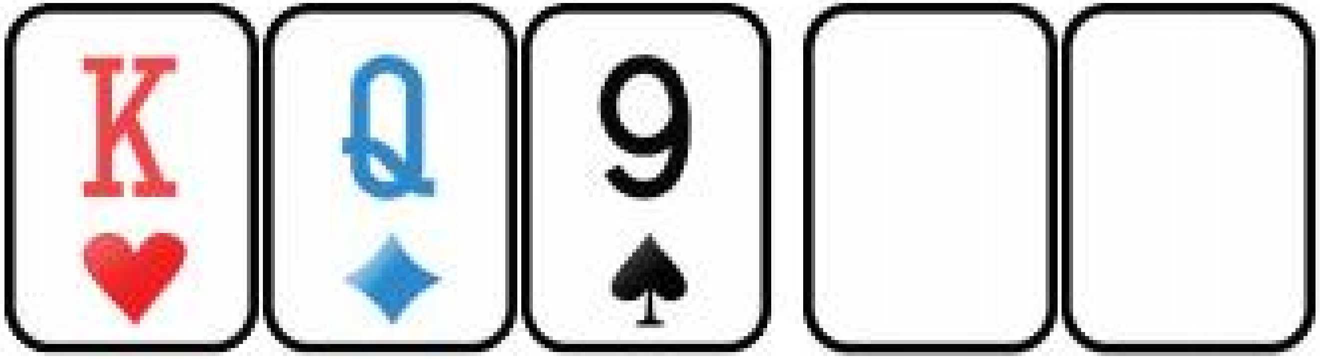
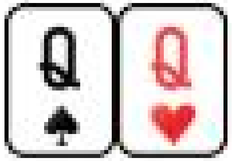


Nitty Villain limps in UTG, we raise with pocket Queens to $30 and are called by the Button and the Nit.

We know very little about these ranges at this point, so lets go to the flop.





Pot: $97

Three players, we are in middle position, $1580 stacks

The Nit checks to us. We have the third nuts. We are only behind top set and a flopped straight. We bet $80 into the roughly $100 pot. The Button makes it $160. He makes a minimum raise on this dangerous board. We feel he wants action. They jokingly say that if Jack Ten is the nuts on a board, it is out there. We must strongly consider the idea that we are behind right now.

A set of Kings does not make sense with the pre-flop action, but it is possible. In Vegas lots of people play trappy with big pocket pairs like this. Jack Ten seems very reasonable given the play. When this hand actually was played out at the Venetian, I instantly started doing the math assuming I was on the draw with the third nuts.

Let's do that math here. Assuming we are against the straight, we have seven outs on the turn. So we win 14% percent plus a bonus 2% or 16%. We will lose 85% of the turn cards and surely face a bet. We will miss 85% to 15% or a ratio of 5.66 losses for every win on the turn. If the Nit folds, we will be asked to put in $80 to win our original flop bet of $80, his call of $80, his raise of $80, and the $80 that was in pre-flop, plus $20 more that was in pre-flop. We can count 4.25 times our call even if the Nit folds.

Even though we are not getting the direct odds that we need to make this call immediately, there is enough in the stacks such that taking a slight loss for the opportunity at winning his stack is worth taking. If we happen to be against a set of Kings, we are dead to a single out, but a set of Nines has the same problem against us and of the two sets, the Nines seem more likely considering the lack of pre-flop aggression.

None of this math we did really mattered because with the pot now holding $340, and effective stacks at $1420, the Nit ships it in. So to recount the flop action: the Nit checks, we bet, Button min-raises and the Nit check-raises all-in for a 4x pot sized bet.

We are clearly behind one of these two players, if not both. At this point we are easily drawing nearly dead to a set of Kings and a flopped straight. We only have only one out to the set of Kings. If by some miracle we are against two flopped straights, we have seven outs on the turn and additional three again on the river. Roughly speaking we can apply the 2% rule to make 17 outs 34% plus 4% bonus for 38%. (The actual number is 36%, but this is a great estimation that can be done at the table.) In this most optimistic scenario we are essentially breaking even and sometimes we are drawing near dead. This is an easy fold.

At the actual table, the min-raiser on the button called with the expected JT. The nit tabled *bottom* set. This is actually a worse scenario for us had we called because the lower set is acting as a blocker to us getting a boat, taking away three outs. Our equity would have dropped to 24% from 36%.

I was very happy with my easy fold, but then the turn was a King giving the Nit a boat. Sometimes I wish I played worse — that would have been a $4800 pot if I called and caught lucky.

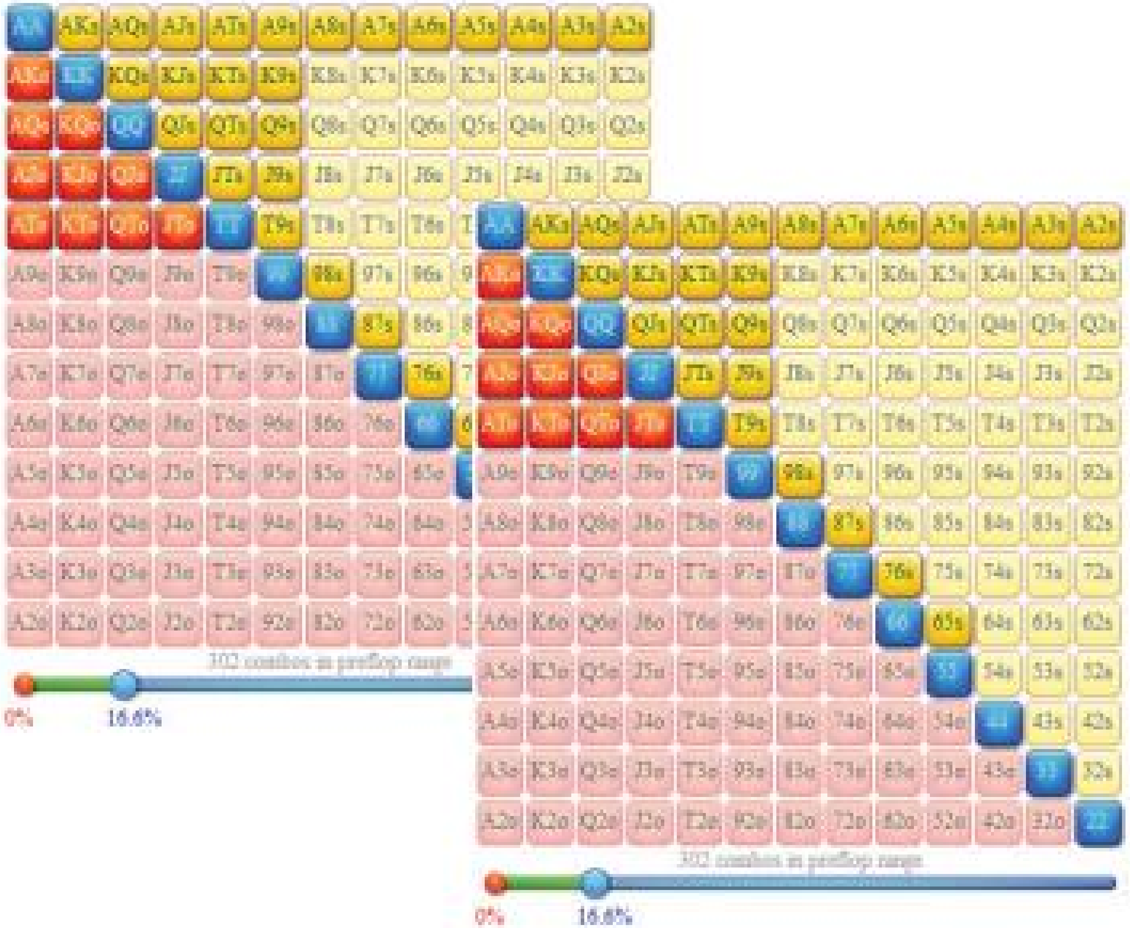
It is a great exercise to run analysis like this about your equities in different scenarios, it helps to build up your intuition. Looking at enough different scenarios will make it easier to remember or calculate the equities you need at the table.

Flop Call on Paired Board

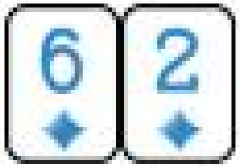
Effective stacks: $300 at $1-2 with a UTG straddle to $4.

Three limpers and the Button gets frisky with 62s makes it $20. Solid TAG calls from the Big Blind as does the UTG straddle and a limper.

vs.



We know very little about these ranges at this point, so lets go to the flop.



Pot: $80

Four players, Hero is on Button $280 effective.

The TAG donks out on this flop for $60 from the Big Blind. From playing with this player all evening this bet represents trip Queens, usually KQs+, AQo+, 77 or the rare AdXd. This is overwhelmingly going to be trip Queens or better.

The next two players fold. The Hero thinks that the TAG will bet again on the turn unless a Diamond comes. The bet on the Turn will be too large to call.

Is the Hero right to call for his flush draw here?

If Hero is not already drawing dead against the TAG's full house, he has 8 outs. The ninth Diamond will boat up the TAG and Hero will lose the rest of his stack. Take Hero's eight outs and double it to 16% while adding 2% bonus and we have 18%. Call it 20% for simplicity.

Hero will suffer this $60 loss four times for a total loss of $240 for every win. If Hero gets paid in full every time he binks his flush, there is $220 in reserve and the current pot of $80+$60 for $360. He will make $120 over five trials for an average win of $24, *under the rosiest conditions.*

The above though does not account for TAG's redraws on the river. Instead of getting paid off in full for a profit of $360, we have to account for the fact that TAG will still occasionally beat a flush on the river. The TAG still has 10 outs to a boat or quads.

We do the math again saying that on the turn the clean Diamond out was hit and both players are all in for $280 for $560 plus the original $80 making a $640 pot. When the Hero hits good on the turn and gets paid off, because of redraws Hero still only wins 77% of the pot on average (Not 100% as we assumed above) or $490, call it $500.

This means that Hero will call the flop and 20% of the time he will walk away with $500. This is a profit of $220 from his current stack of $280. The other 80% of the time he will fold for a loss of $60. Four loses of $60 is a total loss of $240 and this is offset by a single win of $280. Over these five trials Hero is up $40 for an average win of $8, *under the rosiest conditions.*

What does that mean over all? Look at our assumptions:

- Hero is against trip Queens, not the boat.
- Turn hits the clean outs or a brick, not the poisoned flush out.
- Hero gets paid in full when he hits on the turn, but 25% of the time he still loses to redraw.
- Hero folds on the turn when he misses.

After all of this, Hero finds an $8 profit on average through this line under ideal conditions.

What about more realistic situations?

Sometimes Hero is against a boat already and is drawing stone dead. Worse, he will stack off when a flush comes on the turn. When against a full house, the TAG might bet small enough to induce another call on the turn. One card in the deck will quietly make the TAG a boat and Hero will stack off dead to it also.

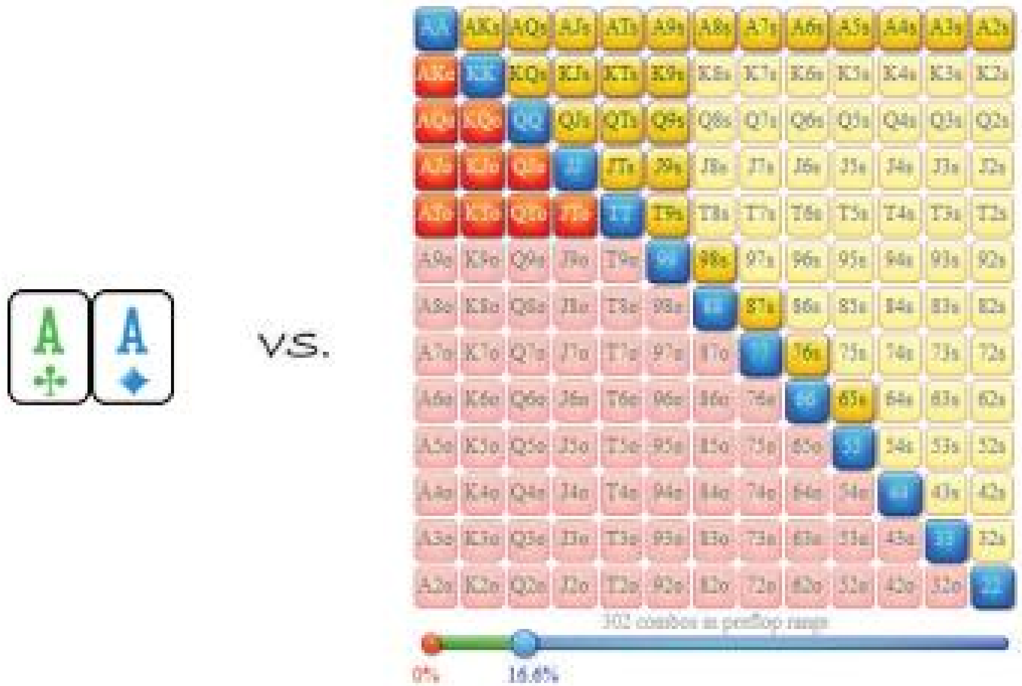
On the rare occasion that TAG has a nut flush draw the TAG will stack Hero when the flush comes in. In this flush draw over flush draw situation, Hero's pair outs will be very hard to capitalize on since he will not know he is good when he does hit.

If the Hero really believes that the TAG has KQs+, AQo+, 77 or the occasional AdXd then this call is at the rosiest a break even call when against a single Queen. Sometimes this hand has massive negative implied odds. The TAG also might not pay off the flush, making the play even more dubious. This is a high variance, losing play for the Hero under the gentlest of assumptions.

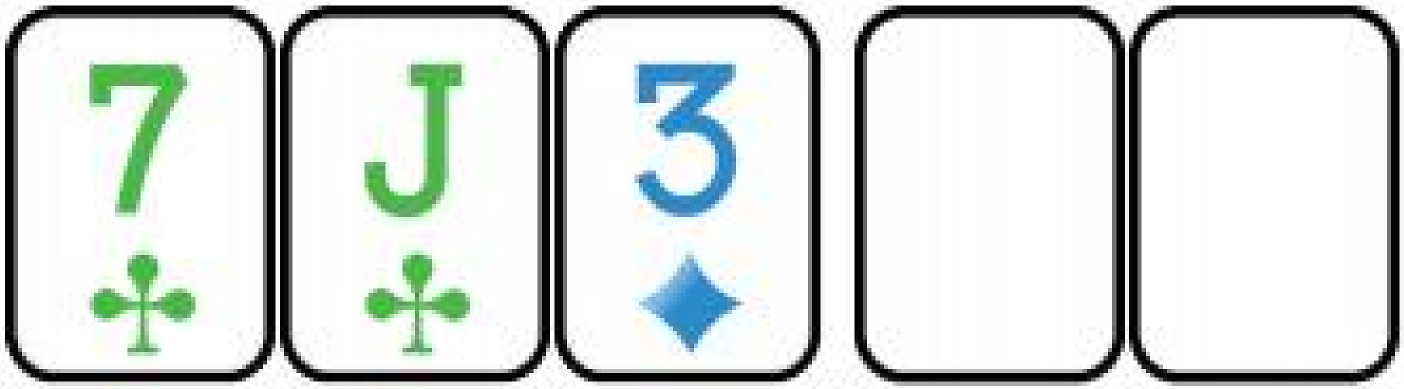
Facing a Massive Donk Ship on the Flop

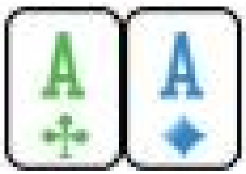
Effective stacks: $500 at $2-5.

Naive player who I just stacked one hand earlier. He limps in pre-flop and then calls our $35 raise. He could have just about anything here. The player was terrible and could have anything from the other two Aces to low suited connectors to suited garbage hands.



We jump right to the flop.





Pot: $77

Two players, we are in position, $465 stacks

The Villain donks bets all-in for $465. What do we do here? A terrible player might do this for a variety of reasons. He was tilty from the prior hand, he does not know how to play a flush draw, or he is afraid of the flush draw. The kinds of hands we expect to see here are:

- Flush draws
- Overpairs
- Sets

How are we doing against each of these?

Flush draws: These draws only have eight outs because we have a blocker, there is also a negligible effect where we can over flush if he does turn his flush. Eight outs, twice is the Rule of Four for 32% with two bonus percent for 34% equity. (The actual number is 33% so that is a fine estimation.) If we call, there is a $1000 pot and we are entitled to $666 of it. We make $200 on average when we make this call versus flush draws.

Overpairs: This Villain clearly plays erratically and he might have been playing pocket Kings waiting for a safe flop. With the flush draw out there, he might ship it in with Kings or Queens here. If he holds these hands, he has two outs twice and so that is about 8%. That means we are entitled to $920 of the final pot. We make about $460 on average when we make this call versus overpairs.

Sets: Sets are the big fear here. If we think he would play an overpair like this, then for the same reasons he would play a set like this also. We are the ones drawing thin. Our backdoor flush draw adds another 4% to our 8% for about 12%. We are entitled to $120 of this pot, so we lose about $340 on average when we call against a set.

Time to count the combos.

Overpairs: Four Kings times three Kings is twelve pairs, but order does not matter, so it is six possible pairs of Kings. This makes twelve overpairs of Kings or Queens.

Sets: There are always nine sets possible on unpaired boards where we don't hold blockers.

We can actually stop counting right now.

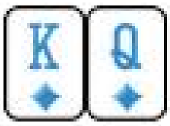
The overpairs are more numerous than sets. Overpairs win more than the sets lose. This means the overpairs alone more than pay for the sets. The flush draws are all massively profitable so this becomes a fist-pump call.

Villain showed two Clubs, missed and left the table down $1000 in back to back hands against me.

Folding Top Pair + Open Ender

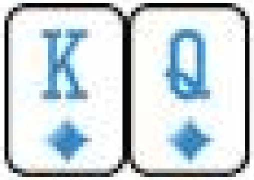
Effective stacks: 70 big blinds in a tourney, far from the money.

We open for three big blinds in late position and are called on the button by a solid player.



vs.

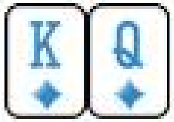
We get to the flop:



Pot: 7 BB

Two players, we are out of position, 67BB stacks

We fire 4BB in and are called. Off to the turn:



Pot: 15 BB

Two players, we are out of position, 63BB stacks

We have the new top pair and an open-ender. We fire 12 BB in and the Villain ships in his remaining 51 BB. Regardless of the strategy of the line up until now, what is the best move on the turn when we get shipped on?

First question is what do we put him on? This is a solid, conservative player. We do not think he does this as a bluff. There are no combination draws available, and we have the best pair plus draw. What makes sense?

- Straights, flopped or double gutter on flop
- Turned two pair

We are drawing reasonably well versus the two prime candidates. Let's figure out our target equity. The pot was 15 BB on the turn, we bet 12 BB and the call of 12 BB makes the pot before the raise 39 BB. Let's round it to 40BB. We have to call 51BB so lets round it to 50 BB.

The final pot would be 140 BB and we would be putting in 50 BB. 150BB final pot would mean we were putting in 33%. The pot is a little smaller than that, so our call is a little bit bigger percent of the smaller pot. Lets say 33% since it is easy to remember.

Straight: We expect Villain would have 89s for a flopped straight, though King Nine would have made a sneaky double gutter. Either way, the Villain always has one of our Nines so we only have seven outs and we are drawing to a chop against the double gutter. Seven outs is only 16% equity, and sometimes we are chopping, so it is even worse.

Two pair: This is very consistent with the play of the hand if the Villain holds top two pair. Flopped two pair or Sets would have likely made their move on the flop. Let's just take the top two for our math here. We have eleven outs for 22% plus about 3% bonus equity for 25%.

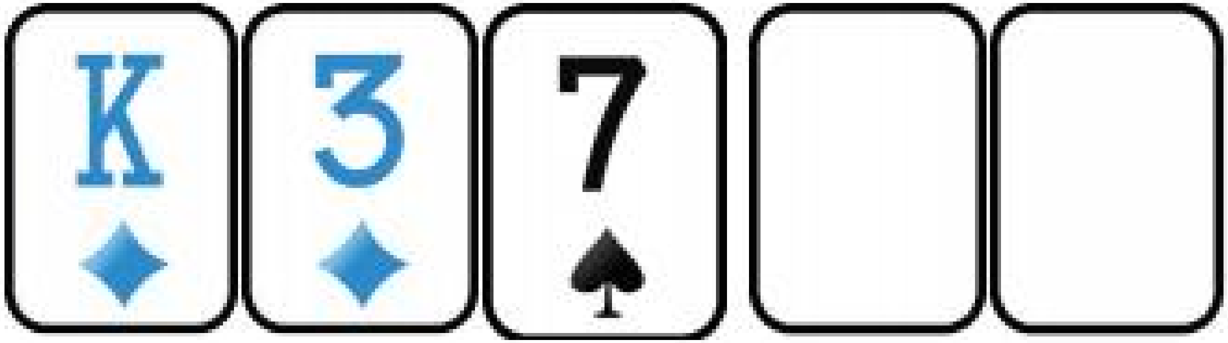
We can stop the math immediately. The two most likely hands are nowhere near target 33% equity we are looking for. 51BB is a good fighting stack, so we fold and go on to the next hand.

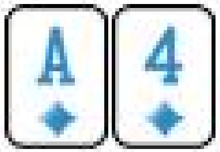
Nut Flush Draw Against "Same Bet"

Effective stacks: $300 in a $1-$2. The Villain limps and then calls our $12 raise.

vs.

The flop comes:





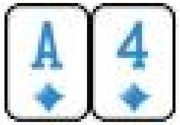
Pot: $27

Two players, we are in position, $290 stacks

The Villain checks, we bet $15, and the Villain check raises to $30.

The mental dialog here is, "Our opponent is an idiot. This bet serves no purpose." We might consider a re-raise, but it is unclear we have any fold equity. Let's just follow the calling line.

We are almost certain to face a bet on the turn. We already know there is plenty back to chase a flush draw for one card, but let's do the mental math anyway. We are hunting for "$15's" since we have to call that amount. We see the Villain's current raise for one, his call for two, and our original bet for three. There were two more in the original pot of $27 for a total of five. Flush draws come in about 20% on the next card, so we are getting direct odds to call for the flush without implied odds. The implied odds only make it clearer. Additionally, our Aces might be outs and some beautiful days the Villain has a worse flush draw. All these add value to the call.



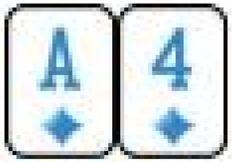
Pot: $87

Two players, we are in position, $260 stacks

The Villain announces same bet and throws in $15. Ignoring the more aggressive raising line, this is a trivial call. His range has not strengthened, in fact it has actually weakened with this silly bet that gives us 7:1 on our call.

Since we made the flop call assuming we would have to call a turn bet and the pot got bigger while the bet stayed the same, we are getting better odds. We know for certain the calling line is profitable.

Rounding off the numbers and going to the River:



Pot: $120

Two players, we are in position, $250 stacks

Our Villain checks. For him to have us beat, he would have needed to min raise the flop, min bet his flopped set on a flush draw board, and then check the river with a full house. Players would almost never play a flopped set like this and Quads are just not likely either.

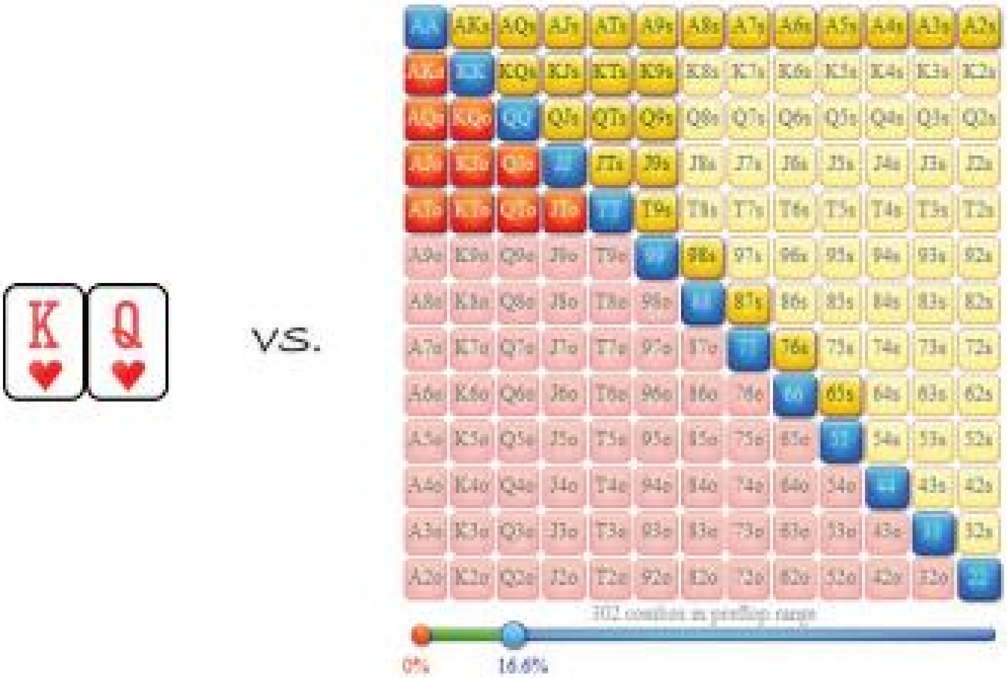
We overwhelmingly have the best hand, and the Villain likely has a very dubious King. We bet whatever we think he would be willing to call. Even though the pot has ballooned to $120, the Villain has essentially put in his half $15 at a time. Know your player, and bet what you can. I bet $45, and he folded.

These ridiculous min-raise and barrel "same bet" are common and price you in with your draws. The Villain feels like they milk us for the maximum because usually we miss. As we saw, we had the correct direct odds to call, so Villain's tiny bets are a mistake that we are happy to benefit from.

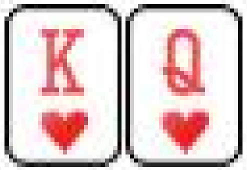
Big Draw Versus Turn Check Raise.

Effective stacks: $200.

Villain limps in MP1. We raise to $12 with KQs and get called by the limper. This Villain's range is not particularly well defined by limping and calling. We can put him on a range like this:



It will be very Villain dependent. Most Villains would have raised with Aces,so they can no longer have them now. Some Villains would limp-reraise if they had Aces or Kings. Some Villains don't like to raise until they see a favorable flop. This range is just an example to work with and nothing more.



Pot: $27

Two players, we are in position, $190 stacks

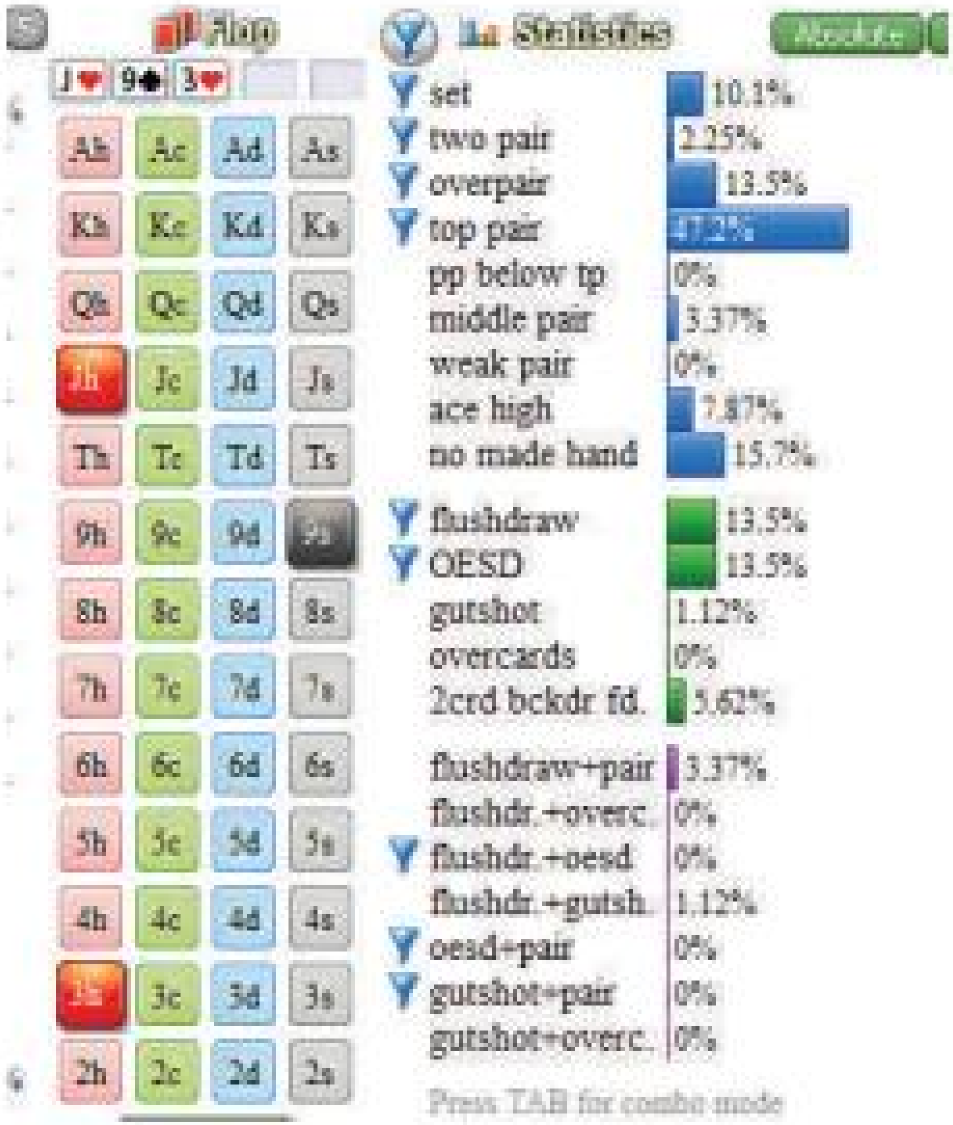
The Villain checks. We expect that to happen most of the time, so we can not make much of a read here. While we only have King high, we have a gutter ball straight draw and a second nut flush draw. two overcards can be worth something also. We bet $20 into a $27 pot leaving $170 behind.

Thinking of made hands, overwhelmingly Villain has top pair when he check-calls the flop. There are lots of slow played overpairs and some sets possible also. Even against top set we are drawing very well with 33% equity.

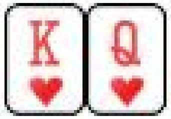
The call instead of a check-raise is also telling. Imagine that you hold a set of Nines on this board. Every Heart possibly brings in a flush. Seven, Eight, Ten, Queen, King can all complete a straight. This check-call indicate that there is an upper limit on the strength of Villain's hand. When the time comes, we might discount the sets, flopped two pair, and overpairs from his range.

There are a handful of flush draws and straight draws possible on this board, a few with a pair to go with them. Considering that we have huge equity against even top set and the fact that Villain will fold often on this flop, we are happy with the bet and not upset that we got called.

The Villain's range looks like this:



We are not terribly concerned about reading the hand too much yet, though it is safe to assume we are behind at this point.



Pot: $67

Two players, we are in position, $170 stacks

This is a great card for us. The top pair changed and the Villain mostly had top pair. Unfortunately, a straight came in for King Ten and for Eight Ten. We improved our hand against the most expected holding of a Jack. All of this encourages us to bet for value.

We bet $50 into the pot and the Villain check-raise ships in the rest of his stack for $120 on top.

We now have a math problem. First, the calling odds.

Using nice round numbers to keep things simple the analysis looks like this: Our $50 and his call are $100. There was about $70 in the pot on the Turn. He shipped $120 in, so we are looking for how many "$120" we can find. His bet is one, the pot holds $170 before the ship, so that is two more. There is a remaining $50 which is just under half.

We have found just under 2.5 times our call amount in the pot if we call.

Next we want to calculate our needed equity from the calling odds. If we can not convert 2.5:1 into a percentage from memory we can estimate it from easier to calculate ratios. We will bracket the 2.5 in between 2 and 3. 3:1 on our call would be 75%-25% to break even as the lower estimate. Similarly, we figure 2:1 on our call would be 66%-33% to break even. We need somewhere between 25%-33% to break even on this call. A mathematician would correctly say we can not simple average 25% and 33% to get the actual percentage since the math does not work that way. This averaged estimate would put us at about 29% if we call it 30% that is close enough for what we are doing here.

By chance, the actual number is that we need 30% equity to break even because we are calling $120 and the final pot will be $410. This means we are putting $120/$410 or 30% of the money in the pot and we need to collect at least that percentage back.

If I were using this percentage method, I would estimate the percentage of my call this way in my head: $410 is close enough to $400. If we halve $120 and $400 we get $60 and $200. Halve it again and we have $30 and $100. This is 30%. (The more of these shortcuts you know, the faster you can estimate.)

Whatever method you use to arrive at "about 30%" equity being needed is fine. Next we estimate our needed outs. Thirteen outs times two is 26%, then we get a bonus percent for every four outs. That bumps us up three more percent to 29%. Again, this is close enough. If we have thirteen outs, we are break even to call.

Next, we need to know what Villain has here so we can count the outs. Will the Villain ever do this with a draw? At most low stakes games, the answer is no. This Villain has a hand, and it is better than ours. Is it possible that he picked up a pair with his flush draw? AhQh would be a great combo draw, but he can not hold that hand since the red lady is with us. Ace and Ten of Hearts is the biggest draw possible here. There is only one combination of this hand, and we are ahead of it. We can mostly ignore this hand, and it just builds a safety margin in for us since we beat it anyways.

What about big hands that would check-raise shove the turn? The most obvious are the straights, sets, two pair and the occasional overpair that was played strangely. The good news is that our best draw, the flush, beats all of these hands. Our second draw to a King high straight is usually good or at least chops against the straight. We assume our flush or straight is always good when we make it without pairing the board. This gives us eight flush outs and three straight outs. These are eleven absolutely clean outs. We are targeting thirteen to just break even. Our quick estimate using only our flush and straight equity says this is a fold. We might find a call with further analysis though.

Remember, thirteen outs is our break even point. We don't actually make any money at thirteen, we just have a wild ride where we break even over the long term.

Since the short-cut did not give us a clear call, we can go to the individual hands.

The straights. We have nine clean flush outs for about 20% equity.

Every now and then we are against Eight Ten (without the Ten of Hearts) and have two bonus out to a higher straight. This is just a little bonus equity that will not change our calculation. Sometimes we catch our straight for a chop. We have 20% and need 30% so we are losing about 10% of $400 final pot in this spot or $40.

The sets. Pairing the board with the Nine of Hearts is a poison out. Since we are calling all-in there are no reverse implied odds where we lose more money when we hit our hand on this out. This gives us our normal nine flush outs minus one, for eight flush outs. We can add our three straight outs for eleven outs total. Double the eleven to get 22% plus 1% bonus for every four outs is more like 25%. We are 5% down or $20 for the sets.

Overpairs. Pocket Kings or Aces may have gotten here for some Villains. With these we have nine flush outs, and we also get the two Queens for eleven solid outs.

There are six conditional outs: three Kings and three Tens against Aces. The three Tens are chop outs against Kings. Of these six conditional outs, let's discount it to three. Eleven plus three is fourteen outs, so that is 28% + 4% bonus or about 32%. Some of this is chopping a straight with pocket Kings. We can call that break even against the overpairs since we need about 30%.

Two pair. Two pair is either Jack Nine, Queen Jack, or Queen Nine. The worst case scenario is two pair with a Queen, and it is also the most consistent with the play of the hand. We will assume the worst case, meaning our Queen outs are no good, but our King outs are good. This gives us nine flush, three straight, and three King outs for fifteen outs 30% + 4% bonus for 34%. That is 15% over what we need or $60 profit.

Now we know the outcomes of each likely holding, and we must figure out how likely each is.

Straights: There are 12 combos of KT and 16 of T8. This is 28 combos.

Sets: Three of each for 12 total combos.

Two pair: Nine for J9, six for Q9 and six for QJ. This is 21 combos.

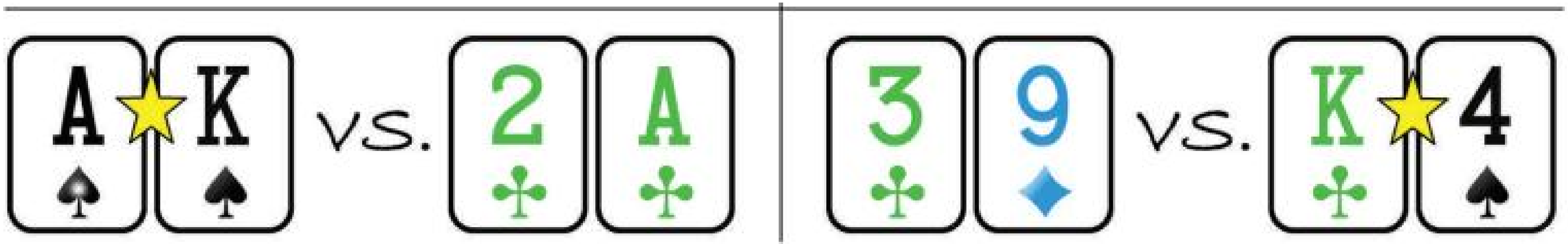
So now if we play against every possible combination, with the more nuanced analysis, here is how we are doing:

- 30 Straights losing $40 each for -$1200
- 12 Sets losing $20 for -$240
- Overpairs break even, no need to think about them.
- 20 two pair winning $60 for $1200

This call looks more and more dubious. To make this a call, we need to discount the straights and sets from Villain's range. Put this into Flopzilla and try different ranges, it is very difficult to justify calling here.

ANSWER KEY

7♦ 2♣	vs.	A♠ A♥	3♣ 3♠	vs.	A♣ K♠
8♣ 8♦	vs.	7♣ 7♠	A♥ 3♥	vs.	K♣ K♠
2♦ 2♠	vs.	3♠ 4♠	K♣ J♣	vs.	A♥ Q♠
A♠ 3♠	vs.	A♥ 2♥	7♦ 7♣	vs.	8♥ 9♥


A K vs. 2 A
3 9 vs. K 4

K♣ K♠ vs. 7♦ 7♥ % 80 vs. % 20	K♣ K♠ vs. A♥ 4♥ % 67 vs. % 33	A♠ A♣ vs. K♠ Q♠ % 84 vs. % 16
J♦ 10♣ vs. 8♠ 3♦ % 70 vs. % 30	J♦ J♣ vs. A♠ 7♥ % 71 vs. % 29	A♥ 9♠ vs. K♣ 3♥ % 64 vs. % 36
3♣ 3♠ vs. K♣ Q♣ % 50 vs. % 50	A♠ K♣ vs. 9♠ 8♦ % 64 vs. % 36	2♦ 2♥ vs. A♣ K♠ % 53 vs. % 47
K♣ 3♣ vs. K♠ 2♠ % 53 vs. % 47	10♠ 10♣ vs. J♦ J♣ % 18 vs. % 82	A♣ 2♣ vs. J♦ 10♦ % 54 vs. % 46

10♣ 9♠ vs. 10♠ 2♥	10♣ 10♠ vs. 2♦ 7♥	6♠ 6♣ vs. 2♣ 2♦
% 70 vs. % 30	% 88 vs. % 12	% 81 vs. % 19
Q♦ Q♠ vs. A♣ 10♣	K♣ 2♣ vs. J♦ 10♦	J♠ J♣ vs. 8♠ 2♣
% 68 vs. % 32	% 53 vs. % 47	% 89 vs. % 11
J♠ 3♠ vs. 9♣ 2♠	3♣ 3♠ vs. K♣ Q♠	J♠ 9♣ vs. 2♦ 8♥
% 65 vs. % 35	% 51 vs. % 49	% 69 vs. % 31
3♠ 3♣ vs. 2♣ 10♦	K♣ J♠ vs. Q♦ 10♥	10♣ 10♠ vs. 3♠ 3♣
% 69 vs. % 31	% 62 vs. % 38	% 82 vs. % 18

3♣ 3♠ vs. K♦ Q♦	10♠ 10♣ vs. 3♠ 9♣	10♠ 6♣ vs. 10♦ 2♥
% 49 vs. % 51	% 89 vs. % 11	% 60 vs. % 40
7♠ 5♠ vs. 6♣ 2♣	9♣ 9♠ vs. 3♥ 4♥	K♥ 10♥ vs. J♥ 7♥
% 62 vs. % 38	% 79 vs. % 21	% 66 vs. % 34
K♣ Q♣ vs. 7♠ 2♠	K♠ 2♣ vs. J♦ 10♦	K♣ Q♣ vs. 7♠ 6♠
% 66 vs. % 34	% 51 vs. % 49	% 61 vs. % 39
A♠ 2♣ vs. J♦ 10♦	A♥ 9♥ vs. A♦ 2♦	9♣ 9♥ vs. J♠ 2♠
% 51 vs. % 49	% 66 vs. % 34	% 69 vs. % 31

J♣ 8♣ vs. 10♠ 9♣	10♠ J♠ vs. 10♥ 3♣	A♣ A♠ vs. 9♣ 9♠
%60 vs. %40	%77 vs. %23	%82 vs. %18
	7♦ 7♠ vs. A♦ 9♣	
	%56 vs. %44	

K♣ 3♣ 2♠ 10♥

K♥ A♦ vs. 9♣ 8♣

outs 9

% 20 vs. % 80

K♠ 3♣ 2♣ 2♠

K♥ A♦ vs. 9♣ 8♣

outs 8

% 18 vs. % 82

K♣ 3♣ 2♠ 10♥

K♥ A♣ vs. 9♣ 8♣

outs 8

% 82 vs. % 18

K♠ 3♣ 2♣ 2♠

K♣ A♣ vs. 9♣ 8♣

outs 0

% 100 vs. % 0

7♥ J♣ 2♥ Q♣

Q♠ J♠ vs. A♥ 3♥

outs 7

% 84 vs. % 16

7♣ J♥ 2♥ Q♣

Q♠ J♠ vs. A♥ 3♥

outs 8

% 82 vs. % 18

7♠ J♥ 2♣ Q♥

Q♠ J♠ vs. A♥ 3♥

outs 9

% 80 vs. % 20

7♥ J♥ 2♥ Q♣

Q♠ J♠ vs. A♥ 8♠

outs 8

% 82 vs. % 18

7♥ J♥ 2♣ Q♥

Q♠ J♠ vs. A♥ 8♠

outs 9

% 80 vs. % 20

K♦ K♣ 3♣ 9♠

3♦ 2♦ vs. A♣ 7♣

outs 17

% 39 vs. % 61

K♦ K♠ 3♣ 9♣

3♦ 2♦ vs. A♣ 7♣

outs 27

% 61 vs. % 39

7♦ 2♠ 3♦ Q♥

7♥ 7♣ vs. A♦ K♦

outs 7

% 84 vs. % 16

7♠ 2♦ 3♦ Q♥

7♥ 7♣ vs. A♦ K♦

outs 7

% 84 vs. % 16

7♦ 2♦ 3♦ Q♣

7♥ 7♣ vs. A♦ K♠

outs 8

% 82 vs. % 18

9♣ 9♥ 4♥ 3♦

9♦ 8♦ vs. Q♥ J♥

outs 7

% 84 vs. % 16

9♣ 9♠ 4♥ 3♥

9♦ 8♦ vs. Q♥ J♥

outs 7

% 16 vs. % 84

K♠ 7♦ 6♥ 3♦

K♥ A♦ vs. 9♣ 8♣

outs 8

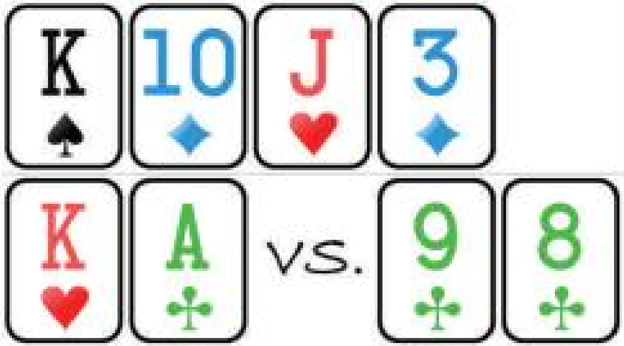
% 82 vs. % 18

K♠ 10♦ 7♥ 3♦

K♥ A♦ vs. 9♣ 8♣

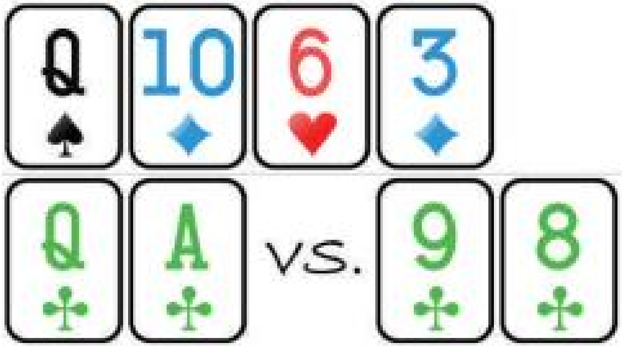
outs 8

% 82 vs. % 18



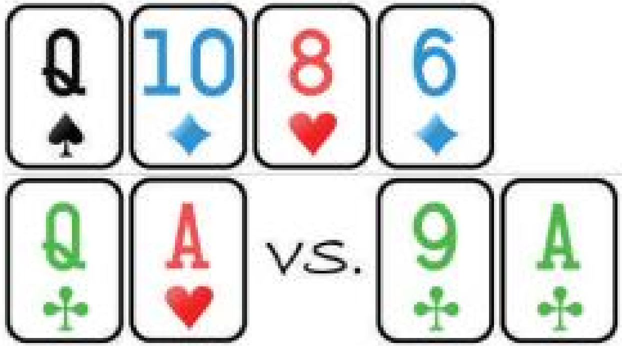
outs 4

% 91 vs. % 9



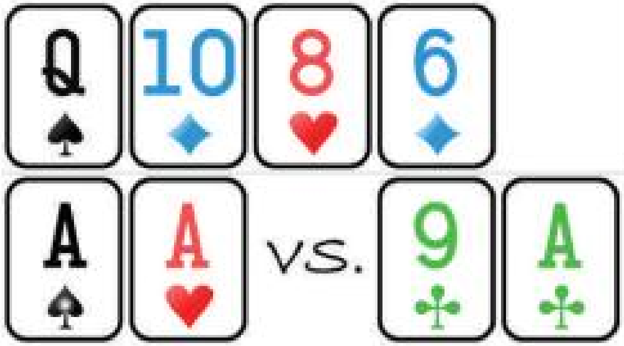
outs 8

% 82 vs. % 18



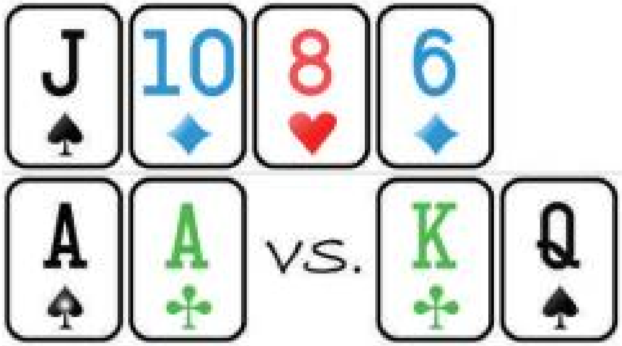
outs 4

% 91 vs. % 9



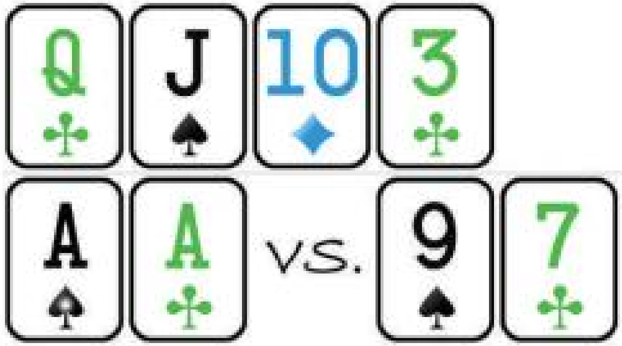
outs 8

% 82 vs. % 18



outs 6

% 86 vs. % 14



outs 4

% 91 vs. % 9

9♦ 8♦ 3♠ 4♠

9♠ 8♠ vs. J♣ 10♥

\# outs 6

% 14 vs. % 86

9♦ 8♦ 3♠ 3♣

9♠ 8♠ vs. J♣ 10♥

\# outs 14

% 68 vs. % 32

9♦ 8♦ 3♠ 3♣

Q♠ Q♣ vs. 7♣ 6♥

\# outs 8

% 82 vs. % 18

9♦ 8♦ 8♣ 3♣

Q♠ Q♣ vs. J♣ 10♥

\# outs 4

% 91 vs. % 4

9♦ 8♦ 8♣ 3♣

A♠ A♣ vs. J♣ 10♥

\# outs 8

% 82 vs. % 18

9♦ 7♥ 5♦ 3♣

9♣ 7♣ vs. 8♠ J♠

\# outs 8

% 82 vs. % 18

6♠ 6♣ 5♣ K♣

A♥ 6♥ vs. 7♦ 8♦

outs 8

% 82 vs. % 18

6♠ 6♣ 5♣ K♣

9♥ 6♥ vs. 7♦ 8♦

outs 4

% 91 vs. % 9

6♠ 6♣ 5♣ K♣

7♥ 6♥ vs. 4♦ 3♦

outs 4

% 91 vs. % 9

10♦ K♠ 4♥ 5♥

10♠ 10♣ vs. J♣ Q♣

outs 8

% 82 vs. % 18

9♣ 8♣ 3♠ 2♠

K♥ K♣ vs. Q♠ J♠

outs 12

% 73 vs. % 27

9♣ 8♣ 3♠ 3♣

K♥ K♣ vs. Q♠ J♠

outs 3

% 93 vs. % 7

9♣ 8♣ 3♠ 3♣

A♥ 9♥ vs. Q♠ J♠

outs 10

% 77 vs. % 23

9♣ 8♣ 5♠ 3♣

A♥ 9♥ vs. A♠ 7♠

outs 4

% 91 vs. % 9

A♦ 10♦ 3♠ 2♠

A♥ A♠ vs. K♣ Q♣

outs 4

% 91 vs. % 9

A♦ 10♦ A♠ 2♠

A♥ J♥ vs. K♣ Q♣

outs 0

% 100 vs. % 0

A♦ 10♦ A♠ 2♠

A♥ 3♥ vs. K♣ Q♣

outs 4

% 91 vs. % 9

2♣ 3♠ K♦ 7♦

3♣ 3♥ vs. 4♣ A♣

outs 4

% 91 vs. % 9

5♦ 4♥ K♦ J♠

A♣ K♠ vs. 7♦ 6♦

\# outs 15

% 66 vs. % 34

9♦ 8♣ 3♦ 2♠

A♠ 9♠ vs. 10♦ J♦

\# outs 21

% 52 vs. % 48

9♦ 8♣ 3♦ 2♠

Q♠ Q♣ vs. 10♦ J♦

\# outs 13

% 70 vs. % 30

9♦ 8♣ 3♦ 2♠

A♠ A♣ vs. 10♦ J♦

\# outs 15

% 66 vs. % 34

9♦ 8♣ 3♦ 2♠

9♠ 8♠ vs. 10♦ J♦

\# outs 14

% 68 vs. % 32

9♥ 8♣ 3♦ 2♦

9♦ 8♦ vs. 10♦ J♦

\# outs 13

% 70 vs. % 30

9♦ 8♣ 3♦ 3♠

A♦ A♣ vs. 10♦ J♦

outs 14

% 68 vs. % 32

9♦ 8♦ 3♣ 3♠

A♦ A♣ vs. 10♦ J♦

outs 13

% 70 vs. % 30

9♦ 8♦ 6♠ 6♦

A♦ A♣ vs. K♣ 7♦

outs 6

% 86 vs. % 14

9♦ 8♦ 6♦ 6♠

A♥ A♣ vs. K♣ 7♦

outs 14

% 68 vs. % 32

9♠ 6♣ A♠ 3♦

9♣ 9♦ vs. 7♠ 8♠

outs 13

% 70 vs. % 30

9♠ 6♣ K♠ 9♥

A♣ 9♣ vs. 7♠ 8♠

outs 13

% 70 vs. % 30

K♦ 10♦ 3♠ 2♣

K♣ K♠ vs. Q♦ J♦

outs 13

% 70 vs. % 30

7♦ 9♠ 2♠ 6♣

7♠ 7♣ vs. 8♠ J♠

outs 13

% 70 vs. % 30

3♥ 6♠ 6♣ K♥

3♣ 3♠ vs. 5♥ 4♥

outs 0

% 100 vs. % 0

3♥ 6♠ 6♥ K♦

3♣ 3♠ vs. 5♥ 4♥

outs 2

% 95 vs. % 5

9♦ 6♣ 7♦ 2♥

A♥ K♠ vs. Q♠ J♠

outs 6

% 86 vs. % 14

9♦ 6♣ 7♦ 2♥

A♥ 3♠ vs. Q♠ J♠

outs 6

% 86 vs. % 14

A♠ 3♦ 6♣ 7♠

A♥ K♥ vs. 10♣ 10♠

outs 2

% 95 vs. % 5

Q♠ 7♠ 8♦ A♣

Q♦ J♠ vs. 2♣ 2♠

outs 2

% 95 vs. % 5

Q♠ 7♠ 8♦ 2♣

Q♦ J♠ vs. 2♣ K♠

outs 5

% 89 vs. % 11

Q♠ 7♠ 8♦ 2♣

Q♦ J♠ vs. 2♣ 3♠

outs 5

% 89 vs. % 11

6♠ 6♣ 2♦ A♥

K♠ K♣ vs. 7♦ 8♦

outs 0

% 100 vs. % 0

6♠ 6♣ 2♦ A♥

Q♠ Q♣ vs. 9♦ K♦

outs 3

% 93 vs. % 7

9♠ 9♦ 8♠ 8♦

A♠ 2♠ vs. 7♣ 7♠

outs 2

% 95 vs. % 5

9♦ 8♦ 7♠ 6♠

9♠ 8♠ vs. 7♣ 6♣

outs 7

% 84 vs. % 16

9♦ 8♦ 7♦ 6♦

9♠ 8♠ vs. 7♣ 6♣

outs 11.5

% 74 vs. % 26

J♦ J♠ 2♦ 4♥

A♠ A♣ vs. K♠ K♣

outs 2

% 95 vs. % 5

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. A♣ A♦

outs 2

% 95 vs. % 5

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. 6♣ 6♦

outs 0

% 100 vs. % 0

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. K♣ 7♣

outs 2

% 95 vs. % 5

3♦ 7♠ 8♦ K♥

8♣ 8♠ vs. 3♣ 7♣

outs 0

% 100 vs. % 0

3♦ 7♠ 8♣ 3♠

3♥ A♥ vs. K♣ K♦

outs 2

% 95 vs. % 5

A♦ 7♠ 8♣ A♠

3♥ A♥ vs. K♣ K♦

outs 2

% 95 vs. % 5

A♠ 7♦ 3♥ 2♣

7♣ 7♠ vs. A♦ 2♦

outs 2

% 95 vs. % 5

A♠ A♦ 2♣ 5♣

A♣ K♣ vs. A♥ Q♥

outs 3

% 93 vs. % 7

A♠ A♦ J♦ 5♣

A♣ 7♣ vs. A♥ 2♥

outs 3

% 93 vs. % 7

3♣ 7♣ 5♦ 3♠

A♣ 2♣ vs. K♣ Q♣

outs 6

% 86 vs. % 14

Q♠ 7♣ 3♣ 5♠

A♣ 9♣ vs. K♣ Q♣

outs 10

% 23 vs. % 77

8♠ 6♠ 5♦ 3♥

A♠ 7♠ vs. K♣ 7♣

outs 5

% 89 vs. % 11

8♠ 6♠ 5♦ 3♥

A♣ 7♣ vs. 3♣ 3♦

outs 8

% 18 vs. % 82

8♠ 6♠ 5♦ 3♥

A♣ K♠ vs. Q♠ J♠

outs 14

% 68 vs. % 32

Q♣ 3♣ 2♠ 10♥

Q♥ A♦ vs. Set

outs TT - 0

% 0 vs. % 100

K♠ J♠ vs. Set

outs TT - 8

% 18 vs. % 82

3♠ 3♦ vs. Set

outs TT - 2

% 5 vs. % 95

K♣ J♣ vs. Set

outs TT - 15

% 34 vs. % 66

9♠ 9♦ vs. Set

outs TT - 0

% 0 vs. % 100

A♥ K♠ vs. Set

outs TT - 4

% 9 vs. % 91

Q♣ 3♣ 2♠ 10♥

Q♥ A♦ vs. Nut FD

outs A7 - 9

% 80 vs. % 20

K♠ J♠ vs. Nut FD

outs A7 - 10

% 23 vs. % 77

3♠ 3♦ vs. Nut FD

outs A7 - 7

% 84 vs. % 16

K♣ J♣ vs. Nut FD

outs A7 - 6

% 14 vs. % 86

9♠ 9♦ vs. Nut FD

outs A7 - 12

% 73 vs. % 27

A♥ K♠ vs. Nut FD

outs A7 - 12

% 73 vs. % 27

Q♣ 3♣ 2♠ 10♥

Hand	vs.	# outs	%	vs. %
Q♥ A♦	vs. Overpair	AA-2	5	95
K♠ J♠	vs. Overpair	AA-6	14	86
3♠ 3♦	vs. Overpair	AA-2	95	5
K♣ J♣	vs. Overpair	AA-13	30	70
9♠ 9♦	vs. Overpair	AA-2	5	95
A♥ K♠	vs. Overpair	AA-4	9	91

Q♣ 3♣ 2♠ 10♥

Q♥ A♦ vs. Two Pair

outs QT - 8

% 18 vs. % 82

K♠ J♠ vs. Two Pair

outs QT - 8

% 18 vs. % 82

3♠ 3♦ vs. Two Pair

outs QT - 4

% 91 vs. % 9

K♣ J♣ vs. Two Pair

outs QT - 13

% 30 vs. % 70

9♠ 9♦ vs. Two Pair

outs QT - 2

% 5 vs. % 95

A♥ K♠ vs. Two Pair

outs QT - 4

% 9 vs. % 91

A♣ 6♣ vs. Straight

\# outs QT - 4

% 9 vs. % 91

A♣ 6♣ vs. Set

\# outs 77 - 2

% 5 vs. % 95

A♣ 6♣ vs. Two Pair

\# outs A7 - 2

% 5 vs. % 95

A♣ 6♣ vs. Top pair

\# outs AK - 3

% 93 vs. % 7

A♣ 6♣ vs. Pair + Open ender

\# outs 89 - 10

% 77 vs. % 23

A♣ 6♣ vs. Open ender + Flush draw

\# outs K9 - 15

% 66 vs. % 34

A♥ 6♦ 7♠ 8♠

4♠ 5♠ vs. Straight

\# outs 9T - 9

% 80 vs. % 20

4♠ 5♠ vs. Set

\# outs 77 - 10

% 77 vs. % 23

4♠ 5♠ vs. Two Pair

\# outs AK - 0

% 100 vs. % 0

4♠ 5♠ vs. Top pair

\# outs AK - 0

% 100 vs. % 0

4♠ 5♠ vs. Pair + Open ender

\# outs 89 - 7

% 84 vs. % 16

4♠ 5♠ vs. Open ender + Flush draw

\# outs K9 - 15

% 66 vs. % 34

A♥ 6♦ 7♠ 8♠

A♣ A♦ vs. Straight	A♣ A♦ vs. Set	A♣ A♦ vs. Two Pair
# outs 45 - 10	# outs 77 - 1	# outs 67 - 0
% 23 vs. % 77	% 98 vs. % 2	% 100 vs. % 0
A♣ A♦ vs. Top pair	A♣ A♦ vs. Pair + Open ender	A♣ A♦ vs. Open ender + Flush draw
# outs AK - 0	# outs 89 - 8	# outs K9 - 14
% 100 vs. % 0	% 82 vs. % 18	% 68 vs. % 32

A♠ 5♠ vs. Straight

outs 9T - 9

% 20 vs. % 80

A♠ 5♠ vs. Set

outs 77 - 14

% 68 vs. % 32

A♠ 5♠ vs. Two Pair

outs 76 - 22

% 50 vs. % 50

A♠ 5♠ vs. Top pair

outs AK - 17

% 39 vs. % 61

A♠ 5♠ vs. Pair + Open ender

outs 89 - 8

% 82 vs. % 18

A♠ 5♠ vs. Open ender + Flush draw

outs K9 - 6

% 86 vs. % 14

J♦ A♠ J♣ 4♦

K♣ K♦ vs. Three of a kind

outs JT - 2

% 5 vs. % 95

A♦ K♦ vs. Three of a kind

outs JT - 9

% 20 vs. % 80

A♥ A♣ vs. Three of a kind

outs JT - 1

% 98 vs. % 2

K♠ Q♠ vs. Three of a kind

outs JT - 3

% 7 vs. % 93

K♦ Q♦ vs. Three of a kind

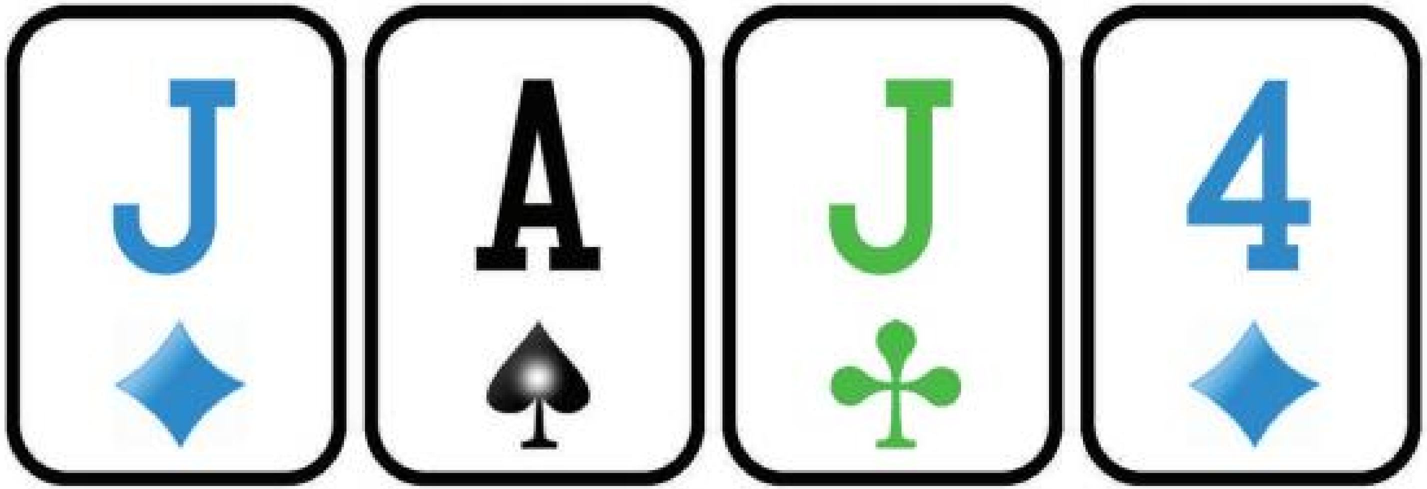
outs JT - 7

% 16 vs. % 84

J♠ 10♠ vs. Three of a kind

outs JT - 22

% 50 vs. % 50



K♣ K♦ vs. Pocket pair below TP

\# outs QQ - 2

% 95 vs. % 5

A♦ K♦ vs. Pocket pair below TP

\# outs QQ - 2

% 95 vs. % 5

A♥ A♣ vs. Pocket pair below TP

\# outs QQ - 0

% 100 vs. % 0

K♠ Q♠ vs. Pocket pair below TP

\# outs QQ - 7

% 16 vs. % 84

K♦ Q♦ vs. Pocket pair below TP

\# outs QQ - 15

% 34 vs. % 66

J♠ 10♠ vs. Pocket pair below TP

\# outs QQ - 2

% 95 vs. % 5

J♦ A♠ J♣ 4♦

K♣ K♦ vs. Top pair

\# outs AQ - 2

% 5 vs. % 95

A♦ K♦ vs. Top pair

\# outs AQ - 5

% 89 vs. % 11

A♥ A♣ vs. Top pair

\# outs AQ - 0

% 100 vs. % 0

K♠ Q♠ vs. Top pair

\# outs AQ - 4

% 9 vs. % 91

K♦ Q♦ vs. Top pair

\# outs AQ - 11

% 25 vs. % 75

J♠ 10♠ vs. Top pair

\# outs AQ - 2

% 95 vs. % 5

J♦ A♠ J♣ 4♦

K♣ K♦ vs. Gut shot

outs QT - 0

% 100 vs. % 0

A♦ K♦ vs. Gut shot

outs QT - 3

% 93 vs. % 7

A♥ A♣ vs. Gut shot

outs QT - 0

% 100 vs. % 0

K♠ Q♠ vs. Gut shot

outs QT 5.5

% 88 vs. % 12

K♦ Q♦ vs. Gut shot

outs QT 5.5

% 88 vs. % 12

J♠ 10♠ vs. Gut shot

outs QT - 4

% 9 vs. % 91

K♠ K♣ vs. Full House

\# outs 79 - 2

% 5 vs. % 95

K♠ K♣ vs. Three of a kind

\# outs A9 - 2

% 5 vs. % 95

K♠ K♣ vs. Overpair

\# outs TT - 2

% 95 vs. % 5

K♠ K♣ vs. Flush draw

\# outs KQ - 9

% 80 vs. % 20

K♠ K♣ vs. Open ender

\# outs 8T - 8

% 82 vs. % 18

K♠ K♣ vs. Overcards

\# outs AT - 3

% 93 vs. % 7

9♠ 10♠ vs. Full House

outs 77 - 7

% 16 vs. % 84

9♠ 10♠ vs. Three of a kind

outs A9 - 6

% 14 vs. % 86

9♠ 10♠ vs. Overpair

outs TT - 1

% 98 vs. % 2

9♠ 10♠ vs. Flush draw

outs TT - 7

% 84 vs. % 16

9♠ 10♠ vs. Open ender

outs 8T - 8

% 82 vs. % 18

9♠ 10♠ vs. Overcards

outs AT - 0

% 100 vs. % 0

7♥ 9♦ 9♥ 5♣

A♥ 10♥ vs. Full House

outs 77 - 0

% 0 vs. % 100

A♥ 10♥ vs. Overpair

outs TT - 12

% 73 vs. % 27

A♥ 10♥ vs. Three of a kind

outs A9 - 8

% 18 vs. % 82

A♥ 10♥ vs. Flush draw

outs KQ - 6

% 86 vs. % 14

A♥ 10♥ vs. Open ender

outs 8T - 8

% 82 vs. % 18

A♥ 10♥ vs. Overcards

outs AT26.5

% 40 vs. % 60

7♥ 9♦ 9♥ 5♣

8♣ 8♠ vs. Full House # outs 77 - 4 % 9 vs. % 91	8♣ 8♠ vs. Three of a kind # outs A9 - 6 % 14 vs. % 86	8♣ 8♠ vs. Overpair # outs TT - 6 % 14 vs. % 86
8♣ 8♠ vs. Flush draw # outs KQ - 14 % 68 vs. % 32	8♣ 8♠ vs. Open ender # outs 8T - 11 % 75 vs. % 25	8♣ 8♠ vs. Overcards # outs AT - 6 % 86 vs. % 14

K♣ 10♥ 4♦ 8♠

A♣ A♥ vs. Set # outs 44 - 2 % 5 vs. % 95	A♣ A♥ vs. Two Pair # outs KT - 8 % 18 vs. % 82	A♣ A♥ vs. Top pair # outs KQ - 5 % 89 vs. % 11
A♣ A♥ vs. Overpair # outs AA - 22 % 50 vs. % 50	A♣ A♥ vs. Open ender # outs QJ - 6 % 86 vs. % 14	A♣ A♥ vs. Gut shot + Overcard # outs AQ - 4 % 91 vs. % 9

10♦ 10♣ vs. Set # outs 44 - 1 % 98 vs. % 2	10♦ 10♣ vs. Two Pair # outs KQ - 0 % 100 vs. % 0	10♦ 10♣ vs. Top pair # outs AA - 2 % 95 vs. % 5
10♦ 10♣ vs. Overpair # outs QJ - 8 % 82 vs. % 18	10♦ 10♣ vs. Open ender # outs QJ - 8 % 82 vs. % 18	10♦ 10♣ vs. Gut shot + Overcard # outs AQ - 4 % 91 vs. % 9

K♣ 10♥ 4♦ 8♠

Q♣ J♣ vs. Set

\# outs 44 - 8

% 82 vs. % 18

Q♣ J♣ vs. Two Pair

\# outs KT - 8

% 82 vs. % 18

Q♣ J♣ vs. Top pair

\# outs KQ - 8

% 82 vs. % 18

Q♣ J♣ vs. Overpair

\# outs AA - 6

% 86 vs. % 14

Q♣ J♣ vs. Open ender

\# outs QJ - 22

% 50 vs. % 50

Q♣ J♣ vs. Gut shot + Overcard

\# outs AQ - 10

% 77 vs. % 23

K♣ 10♠ 4♦ 8♠

K♦ 10♥ vs. Set

outs 44 - 4

% 9 vs. % 91

K♦ 10♥ vs. Two Pair

outs KT - 22

% 50 vs. % 50

K♦ 10♥ vs. Top pair

outs KQ - 3

% 93 vs. % 7

K♦ 10♥ vs. Overpair

outs AA - 2

% 95 vs. % 5

K♦ 10♥ vs. Open ender

outs QJ - 8

% 82 vs. % 18

K♦ 10♥ vs. Gut shot + Overcard

outs AQ - 4

% 91 vs. % 9

4♣ 4♠ 2♠ 6♣

K♠ Q♠ vs. overpair

\# outs 99-8

% 18 vs. % 82

8♦ 8♠ vs. overpair

\# outs 99-2

% 5 vs. % 95

K♣ K♦ vs. overpair

\# outs 99-2

% 95 vs. % 5

8♣ 7♣ vs. overpair

\# outs 99-11

% 25 vs. % 75

5♥ 5♦ vs. overpair

\# outs 99-6

% 14 vs. % 86

A♠ 5♠ vs. overpair

\# outs 99-14

% 68 vs. % 32

4♣ 4♠ 2♠ 6♣

K♠ Q♠ vs. Nut FD

\# outs AT - 6

% 14 vs. % 86

8♦ 8♠ vs. Nut FD

\# outs AT - 14

% 68 vs. % 32

K♣ K♦ vs. Nut FD

\# outs AT - 11

% 75 vs. % 25

8♣ 7♣ vs. Nut FD

\# outs AT - 15

% 66 vs. % 34

5♥ 5♦ vs. Nut FD

\# outs AT - 14

% 68 vs. % 32

K♣ 10♠ 5♠ 6♦

K♥ K♦ vs. Set # outs TT - 1 % 98 vs. % 2	K♥ K♦ vs. Two Pair # outs KT - 0 % 100 vs. % 0	K♥ K♦ vs. Overpair # outs AA - 2 % 95 vs. % 5
K♥ K♦ vs. T.P.T.K. # outs AK - 0 % 100 vs. % 0	K♥ K♦ vs. Open ender + Flush draw # outs 78 - 13 % 70 vs. % 30	K♥ K♦ vs. Open ender # outs QJ - 8 % 82 vs. % 18

K♣ 10♠ 5♠ 6♦

8♠ 7♠ vs. Set

outs TT - 13

% 30 vs. % 70

8♠ 7♠ vs. Two Pair

outs KT - 14

% 32 vs. % 68

8♠ 7♠ vs. Overpair

outs AA - 15

% 34 vs. % 66

8♠ 7♠ vs. T.P.T.K.

outs AK - 15

% 34 vs. % 66

8♠ 7♠ vs. Open ender

outs QJ - 18

% 41 vs. % 59

Pot is: 100 Villain bets: 50 3 : 1 on the call	Pot is: 100 Villain bets: 75 2.33 : 1 on the call
Pot is: 100 Villain bets: 20 6 : 1 on the call	Pot is: 100 Villain bets: 100 2 : 1 on the call
Pot is: 40 Villain bets: 30 2.33 : 1 on the call	Pot is: 55 Villain bets: 35 2.57 : 1 on the call

Pot is: 70

Villain bets: 20

4.5 : 1 on the call

Pot is: 66

Villain bets: 41

2.61 : 1 on the call

Pot is: 90

Villain bets: 65

2.38 : 1 on the call

Pot is: 12

Villain bets: 12

2 : 1 on the call

Pot is: 5

Villain bets: 10

1.5 : 1 on the call

Pot is: 300

Villain bets: 125

3.4 : 1 on the call

Pot is: 100 Villain bets: 50 Call is %_25_ of total	Pot is: 100 Villain bets: 75 Call is %_30_ of total
Pot is: 100 Villain bets: 20 Call is %_14_ of total	Pot is: 100 Villain bets: 100 Call is %_33_ of total
Pot is: 40 Villain bets: 30 Call is %_30_ of total	Pot is: 55 Villain bets: 35 Call is %_28_ of total

Pot is: 70

Villain bets: 20

Call is % 18 of total

Pot is: 66

Villain bets: 41

Call is % 28 of total

Pot is: 90

Villain bets: 65

Call is % 30 of total

Pot is: 12

Villain bets: 12

Call is % 33 of total

Pot is: 5

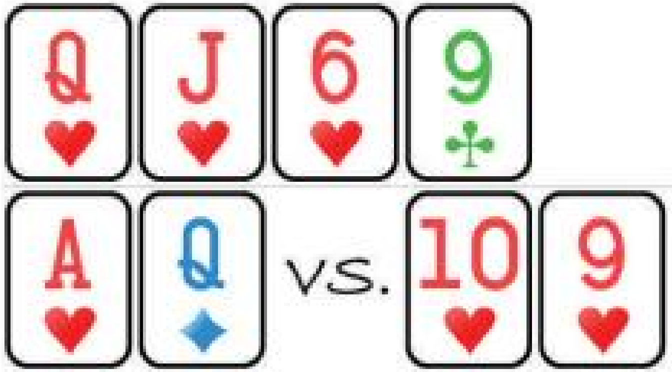
Villain bets: 10

Call is % 40 of total

Pot is: 300

Villain bets: 125

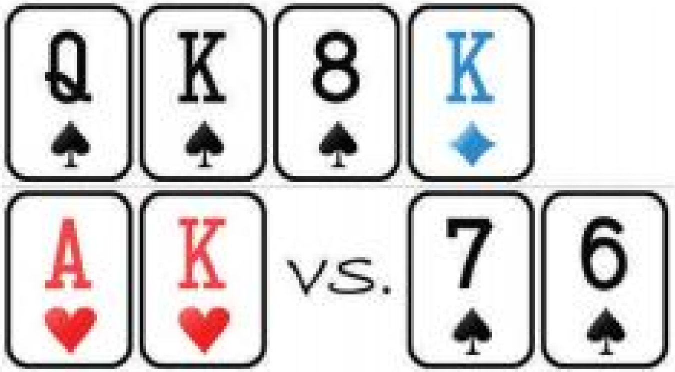
Call is % 23 of total



outs 5

% 11 vs. % 89

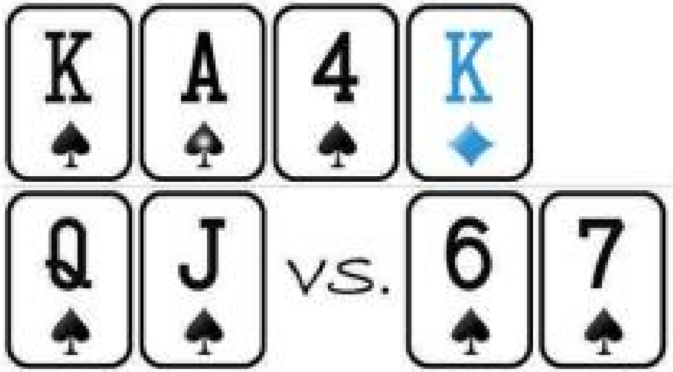
1 : 8.09



outs 10

% 23 vs. % 77

1 : 3.35



outs 0

% 0 vs. % 100

1 : ∞

J♠ 9♠ Q♦ K♣

9♥ 10♥ vs. A♣ Q♣

outs 3

% 93 vs. % 7

13.29 : 1

3♠ 8♦ 10♠ 10♣

J♦ J♣ vs. A♠ K♠

outs 14

% 68 vs. % 32

2.13 : 1

4♦ J♦ K♣ 2♠

K♥ Q♥ vs. 4♠ 5♠

outs 5

% 89 vs. % 11

8.09 : 1

7♣ J♦ 4♣ A♣

J♦ J♣ vs. 6♣ 9♣

\# outs 10

% 23 vs. % 77

1 : 3.35

6♥ 6♦ 7♦ 5♣

8♦ 9♦ vs. J♠ J♥

\# outs 4

% 91 vs. % 9

10.11 : 1

6♣ 10♥ 4♣ 2♠

10♦ J♦ vs. 4♥ 4♠

\# outs 0

% 0 vs. % 100

1 : ∞

5♥ 10♦ Q♥ 5♠

K♥ A♥ vs. Q♣ J♣

outs 15

% 34 vs. % 66

1 : 1.94

10♠ 8♣ 6♦ Q♥

Q♠ J♠ vs. A♦ Q♦

outs 7

% 16 vs. % 84

1 : 5.25

8♦ 7♦ 6♣ 5♣

K♦ J♦ vs. 9♣ 9♠

outs 9

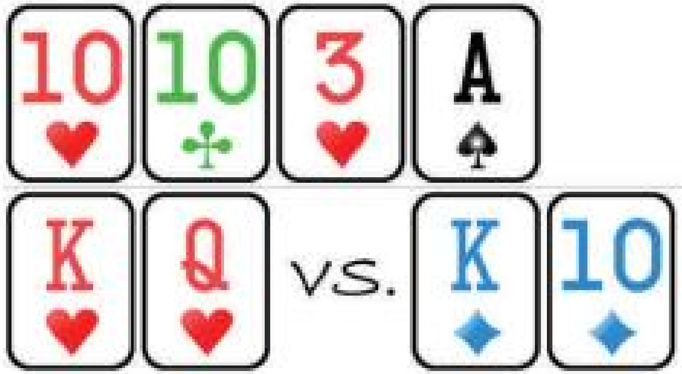
% 20 vs. % 80

1 : 4

outs 12

% 27 vs. % 73

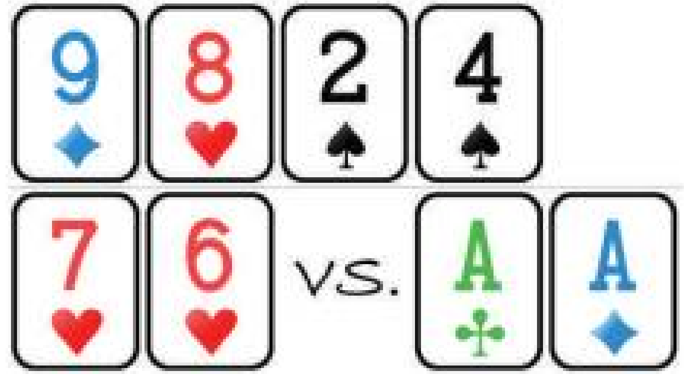
1 : 2.7



outs 11

% 25 vs. % 75

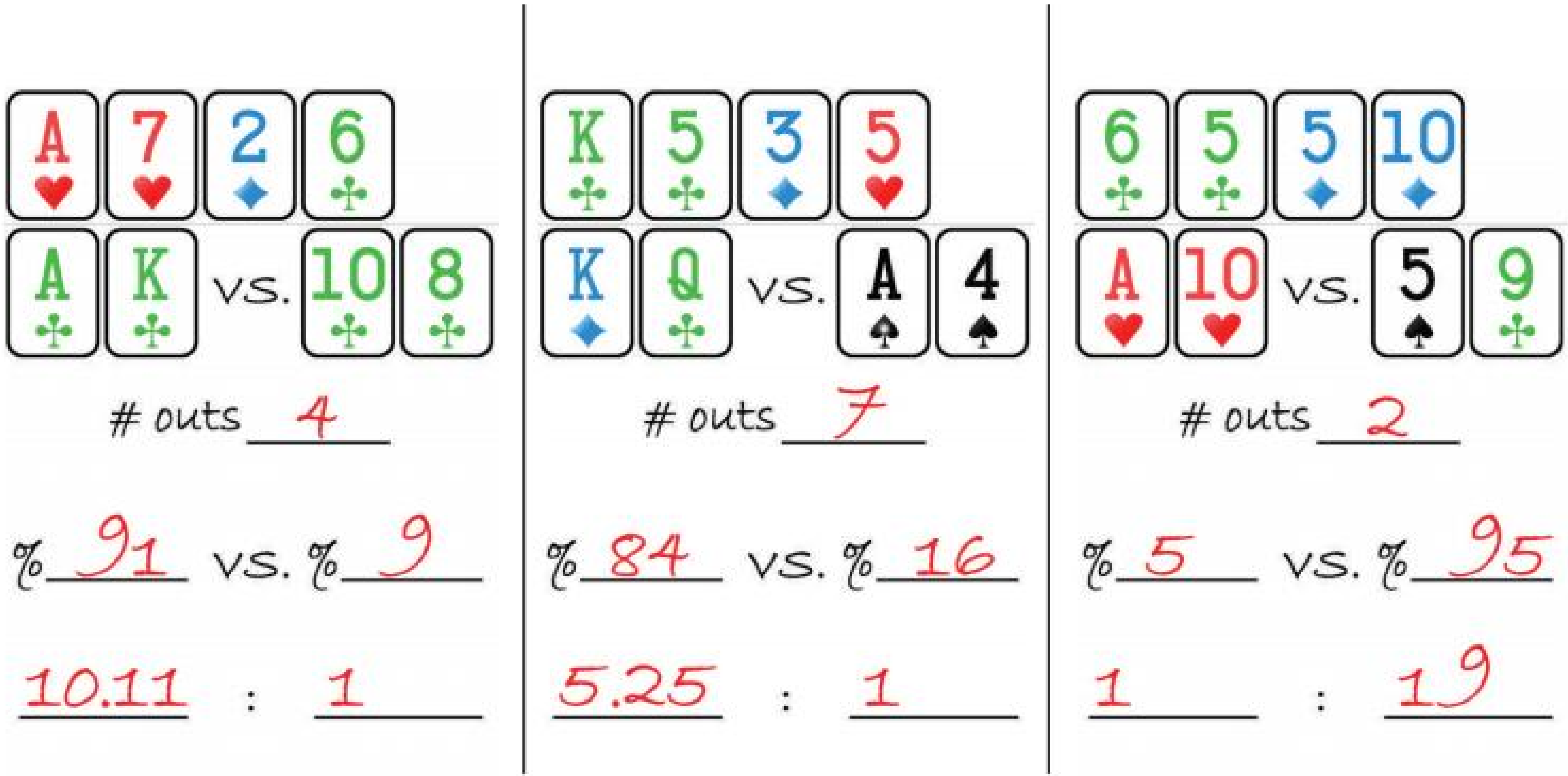
1 : 3



outs 8

% 18 vs. % 82

1 : 4.56


A 7 2 6
A K vs. 10 8
outs 4
% 91 vs. % 9
10.11 : 1
K 5 3 5
K Q vs. A 4
outs 7
% 84 vs. % 16
5.25 : 1
6 5 5 10
A 10 vs. 5 9
outs 2
% 5 vs. % 95
1 : 19

4♠ 8♠ 9♦ A♠

K♠ K♣ vs. A♦ Q♥

outs 11

% 25 vs. % 75

1 : 3

2♠ 2♣ 9♠ A♦

Q♣ Q♦ vs. A♠ 4♠

outs 2

% 5 vs. % 95

1 : 19

A♥ 8♣ 4♠ 4♦

A♦ J♣ vs. 8♥ 10♦

outs 2

% 95 vs. % 5

19 : 1

8♥ 3♥ Q♠ 3♠

K♥ Q♥ vs. J♠ 10♠

outs 9

% 80 vs. % 20

4 : 1

10♠ 8♣ 3♦ 10♥

J♠ 8♠ vs. 10♣ K♣

outs 0

% 0 vs. % 100

∞ : 1

7♦ 6♣ 3♦ 2♣

7♠ 7♥ vs. 5♠ 4♠

outs 10

% 23 vs. % 77

1 : 3.35

K♦ J♥ 7♥ 4♠

K♠ J♠ vs. A♥ 2♥

outs 8

% 82 vs. % 18

4.56 : 1

9♠ 4♠ 6♣ 3♠

6♠ 6♦ vs. A♠ K♠

outs 10

% 23 vs. % 77

1 : 3.35

6♠ 5♦ 6♣ 5♣

A♣ 10♣ vs. 6♥ 9♥

outs 0

% 0 vs. % 100

1 : ∞

J♣ K♠ 5♦ 2♣

Q♦ A♦ vs. K♥ 9♥

\# outs 7

% 16 vs. % 84

1 : 5.25

9♦ 5♠ Q♦ 9♥

10♦ J♦ vs. A♠ 9♠

\# outs 13

% 30 vs. % 70

1 : 2.33

5♠ J♥ 6♣ K♦

Q♦ 10♦ vs. K♠ A♠

\# outs 7

% 16 vs. % 84

1 : 5.25

2♦ 7♣ 5♦ 8♥

6♦ 8♦ vs. A♣ A♥

outs 20

% 45 vs. % 55

1 : 1.22

3♠ 7♣ K♦ 4♦

7♥ 7♠ vs. A♦ Q♦

outs 8

% 82 vs. % 18

4.56 : 1

4♣ 2♦ Q♦ 6♦

A♦ A♠ vs. 7♦ 8♦

outs 7

% 16 vs. % 84

1 : 5.25

outs 13

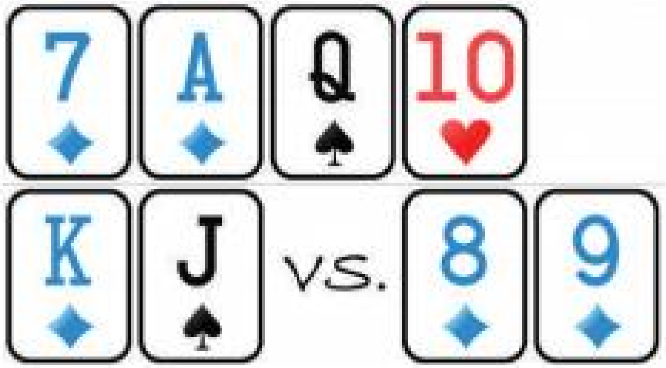
% 30 vs. % 70

1 : 2.33

outs 8

% 82 vs. % 18

4.56 : 1



outs 8

% 82 vs. % 18

4.56 : 1

Open ender + Flush draw

- [x] Call
- [ ] Fold

Pot: 275

Villain shoves: $ 100

Pot Odds: 3.75 : 1

Final pot would be: 475

Your call would be % 21 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 33

Return from pot: ____ Odds: 2.03 : 1

Gut shot

- [ ] Call
- [x] Fold

Pot: $120

Villain shoves: $ 80

Pot Odds: 2.5 : 1

Final pot would be: 280

Your call would be % 29 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 9

Return from pot: ____ Odds: 10.11 : 1

Pocket pair below TP

- [ ] Call
- [x] Fold

Pot: $100

Villain shoves: $ 30

Pot Odds: 4.33 : 1

Final pot would be: 160

Your call would be % 19 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 4

Return from pot: ____ Odds: 24 : 1

Flush draw

- [x] Call
- [ ] Fold

Pot: $120

Villain shoves: $ 30

Pot Odds: 5 : 1

Final pot would be: 180

Your call would be % 17 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 20

Return from pot: ____ Odds: 4 : 1

Flush draw

- [x] Call
- [ ] Fold

Pot: $200

Villain Shoves: $ 60

Pot Odds: 4.33 : 1

Final pot would be: 320

Your call would be % 19 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 20

Return from pot: ____

Odds: 4 : 1

Pocket pair below TP

- [ ] Call
- [x] Fold

Pot: $ 55

Villain Shoves: $ 35

Pot Odds: 2.57 : 1

Final pot would be: 125

Your call would be % 28 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 4

Return from pot: ____

Odds: 24 : 1

Open ender + Flush draw

- [x] Call
- [ ] Fold

Pot: $125

Villain Shoves: $ 90

Pot Odds: 2.39 : 1

Final pot would be: 305

Your call would be % 30 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 33

Return from pot: ____

Odds: 2.03 : 1

Flush draw

- [ ] Call
- [x] Fold

Pot: $ 98

Villain Shoves: $ 60

Pot Odds: 2.63 : 1

Final pot would be: 218

Your call would be % 28 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 20

Return from pot: ____

Odds: 4 : 1

Flush draw

- [x] Call
- [ ] Fold

Pot: $200

Villain Shoves: $ 50

Pot Odds: 5 : 1

Final pot would be: 300

Your call would be % 17 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 20

Return from pot: ____ Odds: 4 : 1

Pair + Flush draw

- [ ] Call
- [x] Fold

Pot: $ 50

Villain Shoves: $ 40

Pot Odds: 2.25 : 1

Final pot would be: 130

Your call would be % 31 of the final pot.

Outs: 14

Higher equity? Call
Odds against lower? Call

Equity % 30

Return from pot: ____ Odds: 2.33 : 1

Gut shot

- [ ] Call
- [x] Fold

Pot: $180

Villain Shoves: $ 40

Pot Odds: 5.5 : 1

Final pot would be: 260

Your call would be % 15 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 9

Return from pot: ____ Odds: 10.11 : 1

Open ender

- [ ] Call
- [x] Fold

Pot: $300

Villain Shoves: $125

Pot Odds: 3.4 : 1

Final pot would be: 550

Your call would be % 23 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 17

Return from pot: ____ Odds: 4.88 : 1

Open ender + Flush draw

- [x] Call
- [ ] Fold

Pot: $400

Villain Shoves: $250

Pot Odds: 2.6 : 1

Final pot would be: 900

Your call would be % 28 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 33

Return from pot: ____ Odds: 2.03 : 1

Pocket pair below TP

- [ ] Call
- [x] Fold

Pot: $400

Villain Shoves: $ 100

Pot Odds: 5 : 1

Final pot would be: 600

Your call would be % 17 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 4

Return from pot: ____ Odds: 24 : 1

Open ender

- [ ] Call
- [x] Fold

Pot: $320

Villain Shoves: $200

Pot Odds: 2.28 : 1

Final pot would be: 820

Your call would be % 30 of the final pot.

Outs: 8

Higher equity? call
Odds against lower? call

Equity % 17

Return from pot: ____ Odds: 4.88 : 1

Gut shot + Flush draw

- [x] Call
- [x] Fold

Pot: $320

Villain Shoves: $200

Pot Odds: 2.6 : 1

Final pot would be: 720

Your call would be % 28 of the final pot.

Outs: 13

Higher equity? call
Odds against lower? call

Equity % 28

Return from pot: ____ Odds: 2.57 : 1

Flush draw

- [ ] Call
- [x] Fold

Pot: $ 70

Villain Shoves: $ 40

Pot Odds: 2.75 : 1

Final pot would be: 150

Your call would be % 27 of the final pot.

Outs: 9

Higher equity? call
Odds against lower? call

Equity % 20

Return from pot: ____ Odds: 4 : 1

Overcards

- [ ] Call
- [x] Fold

Pot: $ 90

Villain Shoves: $ 40

Pot Odds: 3.25 : 1

Final pot would be: 170

Your call would be % 24 of the final pot.

Outs: 6

Higher equity? call
Odds against lower? call

Equity % 13

Return from pot: ____ Odds: 6.69 : 1

Nut FD

- [x] Call
- [ ] Fold

Pot: $100

Villain Shoves: $ 50

Pot Odds: 3 : 1

Final pot would be: 200

Your call would be % 25 of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 26

Return from pot: ____ Odds: 2.85 : 1

Gut shot

- [ ] Call
- [x] Fold

Pot: $ 45

Villain Shoves: $ 20

Pot Odds: 3.25 : 1

Final pot would be: 85

Your call would be % 24 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 9

Return from pot: ____ Odds: 10.11 : 1

A♣ 2♥ J♦ K♦

A♠ Q♠ vs. A♦ 3♦

Pot: $ 100

Villain bets $ 80

Amount behind $ 200

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 27

Odds: 2.7 : 1

Profit : $-10 Makeup: $37

☒ Call ☐ =EV ☐ Fold

9♣ 10♥ 4♥ 6♠

K♠ 10♠ vs. J♣ Q♣

Pot: $ 75

Villain bets $ 75

Amount behind $ 150

Pot Odds: 2 : 1

Final pot would be: 225

Your call would be % 33 of the final pot.

Outs: 13

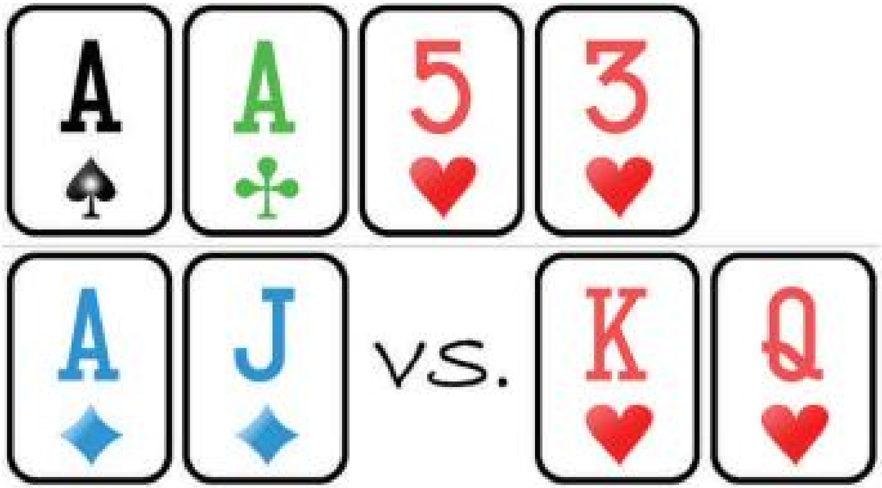
Higher equity? Call
Odds against lower? Call

Equity % 30

Odds: 2.33 : 1

Profit : $-7 Makeup: $23

☒ Call ☐ =EV ☐ Fold



Pot: $ 35

Villain bets $ 20

Amount behind $ 150

Pot Odds: 2.75 : 1

Final pot would be: 75

Your call would be % 27 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -7 Makeup: $ 39

☒ Call ☐ =EV ☐ Fold

Pot: $ 75

Villain bets $ 45

Amount behind $ 120

Pot Odds: 2.67 : 1

Final pot would be: 165

Your call would be % 27 of the final pot.

Outs: 11

Higher equity? Call
Odds against lower? Call

Equity % 25

Odds: 3 : 1

Profit : $ -3 Makeup: $ 9

☒ Call ☐ =EV ☐ Fold

9♦ 7♦ 5♥ 6♦

8♣ 8♠ vs. 10♦ 10♥

Pot: $ 60

Villain bets $ 60

Amount behind $ 300

Pot Odds: 2 : 1

Final pot would be: 180

Your call would be % 33 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 11

Equity % 25

Odds: 3 : 1

Profit : $-14 Makeup: $42

☒ Call ☐ =EV ☐ Fold

K♦ 10♠ 4♥ K♣

K♥ Q♥ vs. A♦ A♥

Pot: $ 110

Villain bets $ 70

Amount behind $ 300

Pot Odds: 2.57 : 1

Final pot would be: 250

Your call would be % 28 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 2

Equity % 5

Odds: 19 : 1

Profit : $-58 Makeup: 1102

☐ Call ☐ =EV ☒ Fold

7♦ 2♠ J♠ 3♥

7♣ 7♥ vs. A♠ K♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 120

Pot Odds: 2.23 : 1

Final pot would be: 210

Your call would be % 31 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $-27 Makeup: $123

☒ Call ☐ =EV ☐ Fold

9♥ 7♥ 7♣ 3♠

7♠ 8♠ vs. 8♥ 10♥

Pot: $ 70

Villain bets $ 45

Amount behind $ 100

Pot Odds: 2.56 : 1

Final pot would be: 160

Your call would be % 28 of the final pot.

Outs: 15

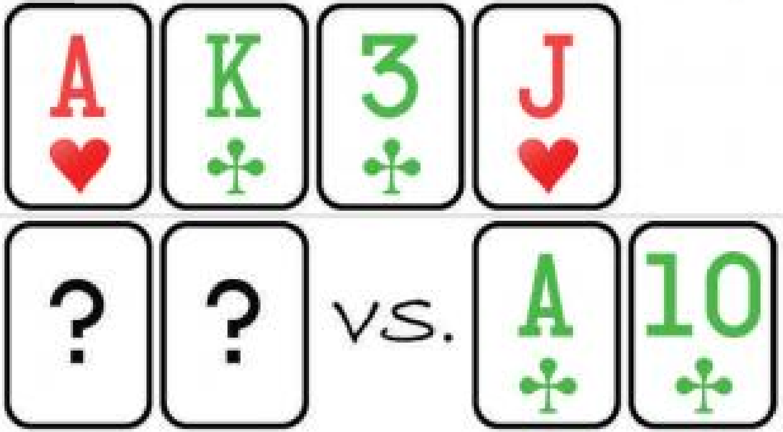
Higher equity? Call
Odds against lower? Call

Equity % 34

Odds: 1.94 : 1

Profit : $10 Makeup: $-19

☒ Call ☐ =EV ☐ Fold

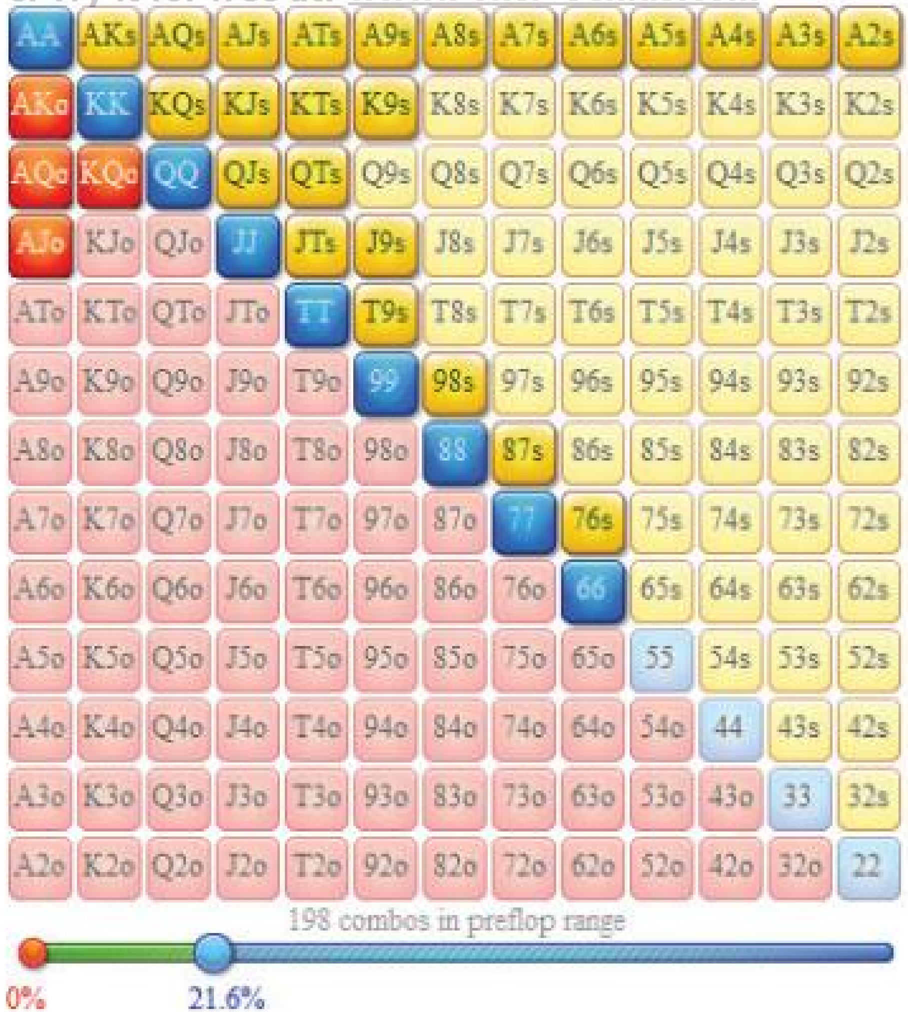


Flush draw 13 combos

Straight 3 combos

Pair + Gut shot 39 combos

Set 7 combos



A♣ 6♠ 10♦ 2♠

? ? vs. A♦ K♦

Flush draw	21 combos
Three of a kind	7 combos
Open ender	0 combos
Two Pair	4 combos

6♠ 5♦ 6♣ J♥

? ? vs. K♣ K♠

Full House	3 combos
Three of a kind	4 combos
Two Pair	22 combos
Pocket pair below TP	24 combos

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

198 combos in preflop range

0% 21.6%

9♣ K♦ 5♠ 5♣

? ? vs. A♥ K♥

Full House 4 combos

Overpair 3 combos

Two Pair 48 combos

Top pair 18 combos

4♠ 4♣ 10♥ 5♣

? ? vs. J♦ J♣

Full House	3 combos
Overpair	19 combos
Top pair	13 combos
Three of a kind	2 combos

J♥ 8♥ J♣ 4♠

? ? vs. A♠ J♠

Full House	3 combos
Overpair	15 combos
Full House	3 combos
Three of a kind	7 combos

3♥ K♦ A♥ 9♠

A♠ J♣ vs. K♥ Q♥

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 14

Higher equity? Call
Odds against lower? Call

Equity % 32

Odds: 2.13 : 1

Profit : $ 3

☒ Call ☐ =EV ☐ Fold

3♥ K♦ A♥ 9♠

3♣ 3♦ vs. K♥ Q♥

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 8

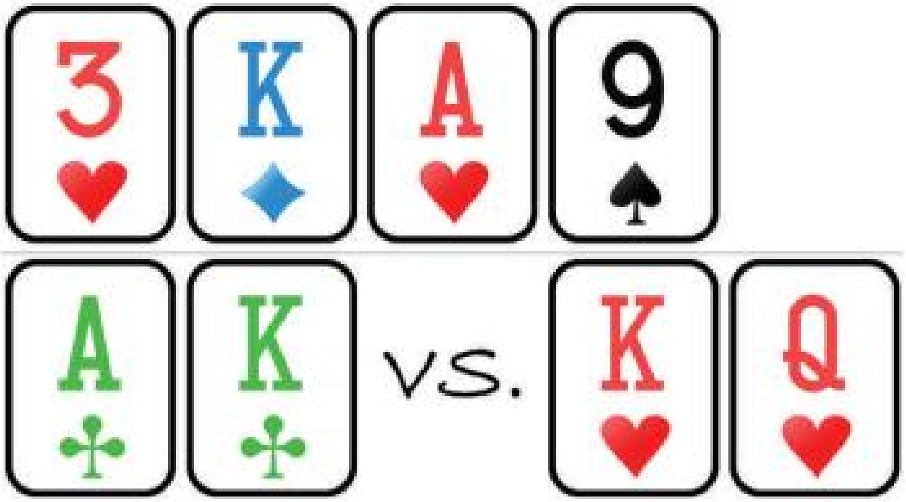
Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -34

☐ Call ☐ =EV ☒ Fold



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 9

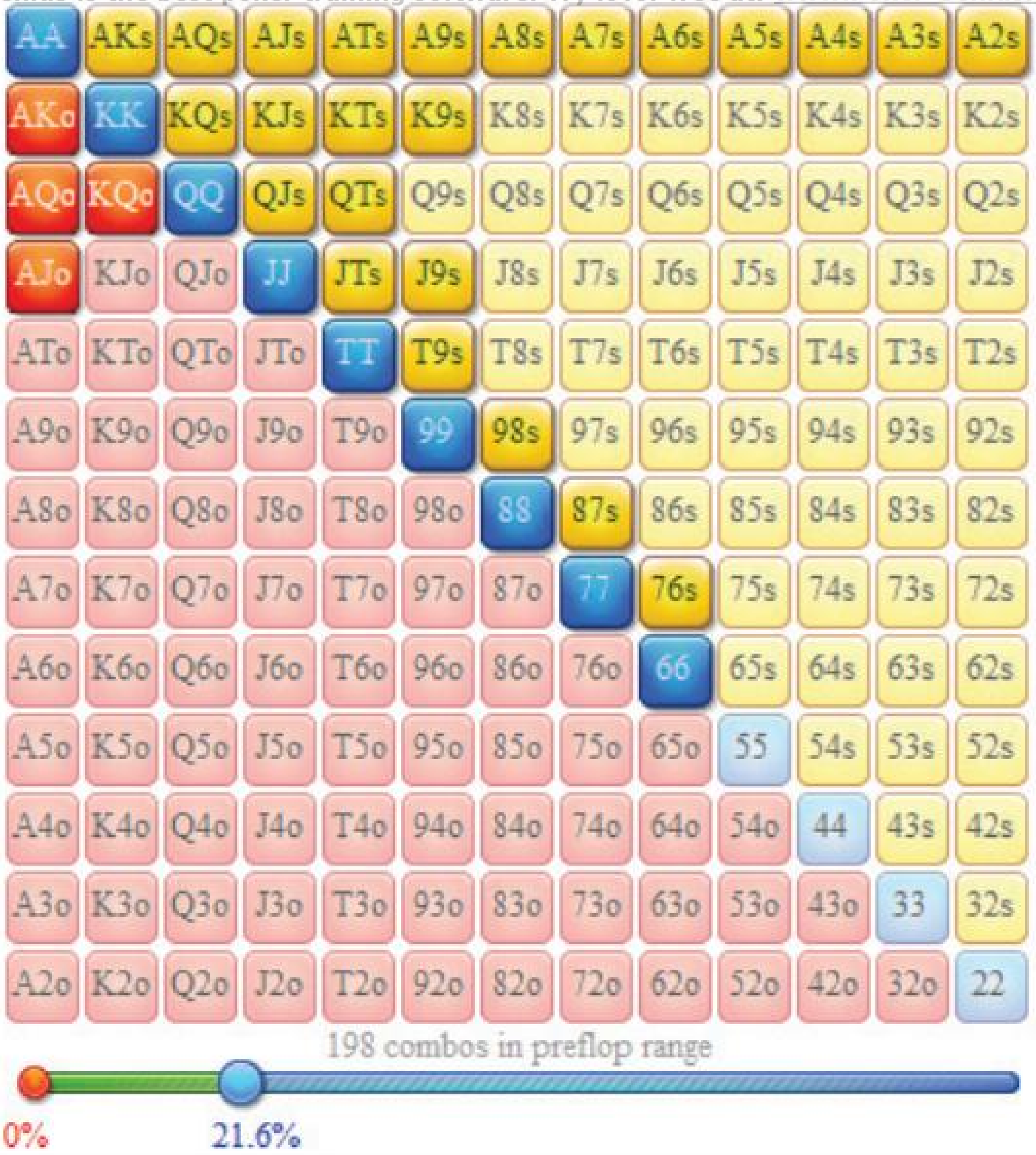
Higher equity? Call
Odds against lower? Call

Equity % 20

Odds: 4 : 1

Profit : $ -29

☐ Call ☐ =EV ☒ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

Top pair	45 combos	x	3 Profit	=	135
Set	4 combos	x	-34 Profit	=	-136
Two Pair	9 combos	x	-29 Profit	=	-261

☐ Call ☐ =EV ☒ Fold Total: -262

4♦ 3♣ 9♣ 3♥

A♣ J♣ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: 2.88 : 1

Final pot would be: 310

Your call would be % 26 of the final pot.

Outs: 32

Higher equity? Call
Odds against lower? Call

Equity % 73

Odds: 0.37 : 1

Profit : $ 146

☒ Call ☐ =EV ☐ Fold

4♦ 3♣ 9♣ 3♥

K♦ K♣ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: 2.88 : 1

Final pot would be: 310

Your call would be % 26 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 5

Odds: 19 : 1

Profit : $ -65

☐ Call ☐ =EV ☒ Fold

4♦ 3♣ 9♣ 3♥

10♠ 10♥ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: 2.88 : 1

Final pot would be: 310

Your call would be % 26 of the final pot.

Outs: 42

Higher equity? Call
Odds against lower? Call

Equity % 95

Odds: 0.05 : 1

Profit : $ 214

[x] Call [ ] =EV [ ] Fold

4♦ 3♣ 9♣ 3♥

K♠ 9♠ vs. Q♠ Q♥

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: 2.88 : 1

Final pot would be: 310

Your call would be % 26 of the final pot.

Outs: 39

Higher equity? Call
Odds against lower? Call

Equity % 89

Odds: 0.12 : 1

Profit : $ 195

[x] Call [ ] =EV [ ] Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

Flush draw	18 combos	x 146 Profit	= 2628
Overpair	12 combos	x -65 Profit	= -780
Weaker Overpair	12 combos	x 95 Profit	= 1140
Top pair	15 combos	x 195 Profit	= 2925

☒ Call ☐ =EV ☐ Fold Total: 5913

Pot: $ 150

Villain Shoves: $ 80

Pot Odds: 2.88 : 1

Final pot would be: 310

Your call would be % 26 of the final pot.

Higher equity? Call
Odds against lower? Call

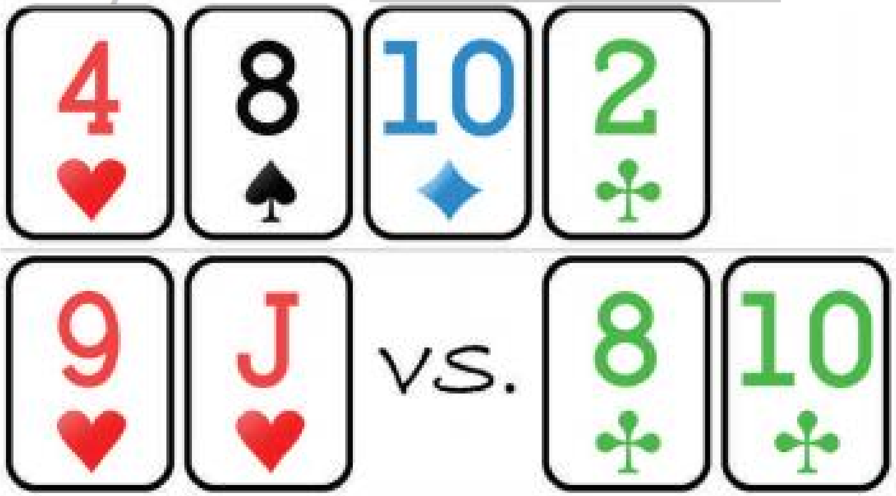
Outs: 39

Equity % 89

Odds: 0.12 : 1

Profit : $ 195

☒ Call ☐ =EV ☐ Fold



Pot: $ 170

Villain Shoves: $ 120

Pot Odds: 2.42 : 1

Final pot would be: 410

Your call would be % 29 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 36

Equity % 82

Odds: 0.22 : 1

Profit : $ 217

☒ Call ☐ =EV ☐ Fold

4♥ 8♠ 10♦ 2♣

10♥ J♥ vs. 8♣ 10♣

Pot: $ 170

Villain Shoves: $ 120

Pot Odds: 2.42 : 1

Final pot would be: 410

Your call would be % 29 of the final pot.

Outs: 41

Higher equity? Call
Odds against lower? Call

Equity % 93

Odds: 0.08 : 1

Profit : $ 262

☒ Call ☐ =EV ☐ Fold

4♥ 8♠ 10♦ 2♣

Q♥ Q♠ vs. 8♣ 10♣

Pot: $ 170

Villain Shoves: $ 120

Pot Odds: 2.42 : 1

Final pot would be: 410

Your call would be % 29 of the final pot.

Outs: 2

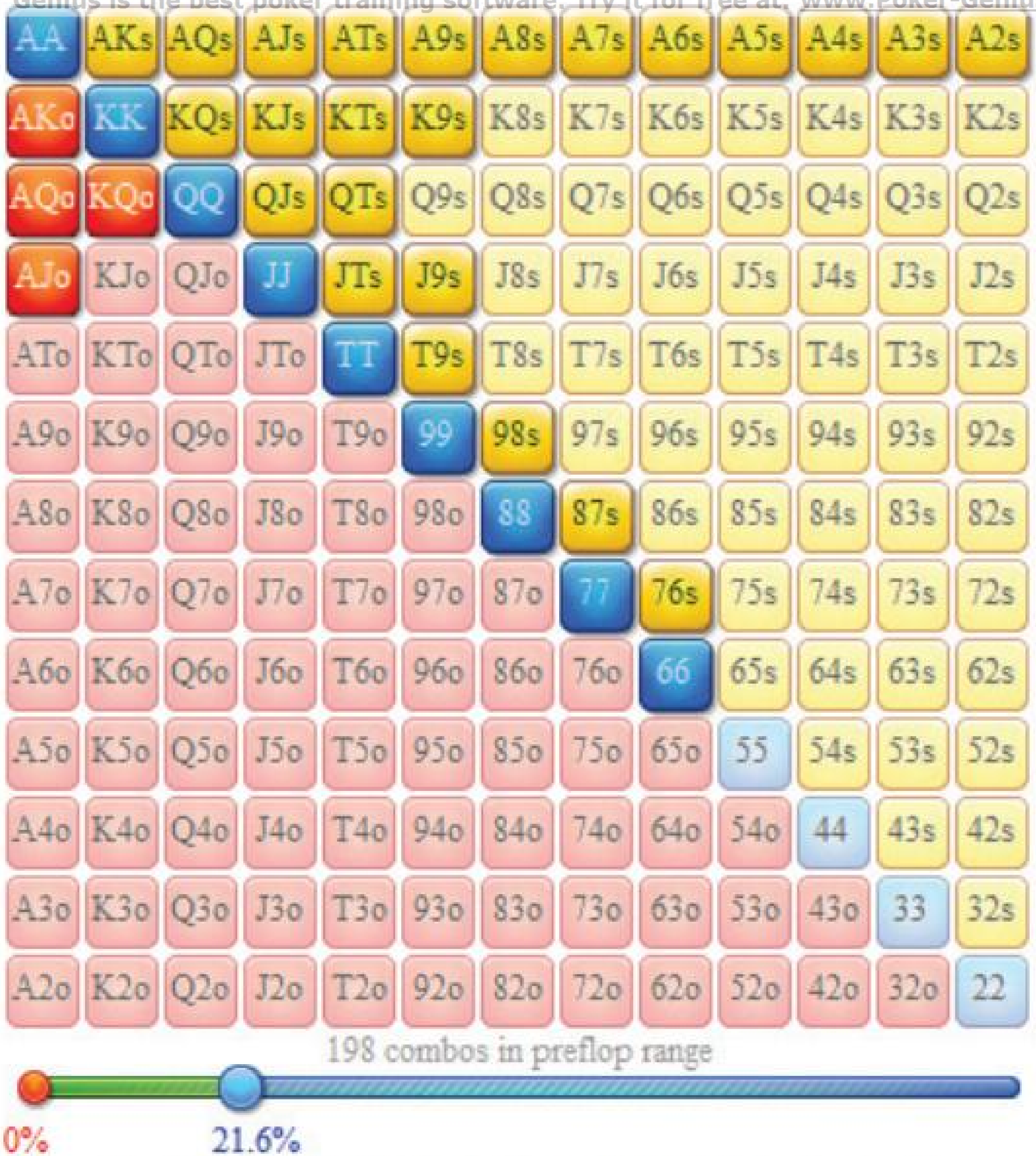
Higher equity? Call
Odds against lower? Call

Equity % 5

Odds: 19 : 1

Profit : $ -98

☐ Call ☐ =EV ☒ Fold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AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
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A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

4♥ 8♠ 10♦ 2♣

? ? vs. 8♣ 10♣

Open ender	8	combos	x	195	Profit	= 1560
Top pair	10	combos	x	217	Profit	= 2170
Overpair	24	combos	x	262	Profit	= 6288
Set	2	combos	x	-98	Profit	= -196

☒ Call ☐ =EV ☐ Fold Total: 9822

2♣ 6♥ 6♦ 6♠

6♣ A♣ vs. Q♣ Q♠

Pot: $ 140

Villain Shoves: $ 100

Pot Odds: 2.4 : 1

Final pot would be: 340

Your call would be % 29 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 0

Equity % 0

Odds: ∞ : 1

Profit : $ -100

☐ Call ☐ =EV ☒ Fold

2♣ 6♥ 6♦ 6♠

7♣ 7♦ vs. Q♣ Q♠

Pot: $ 140

Villain Shoves: $ 100

Pot Odds: 2.4 : 1

Final pot would be: 340

Your call would be % 29 of the final pot.

Higher equity? Call
Odds against lower? Call

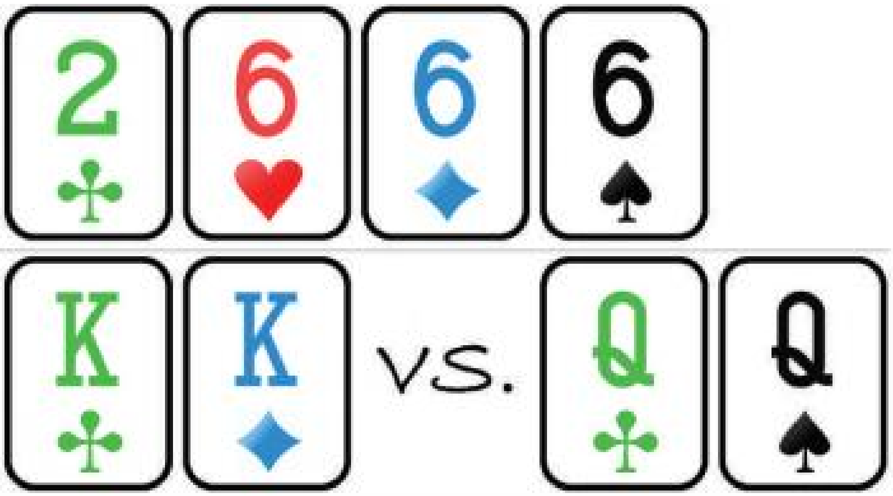
Outs: 42

Equity % 95

Odds: 0.05 : 1

Profit : $ 224

☒ Call ☐ =EV ☐ Fold



Pot: $ 140

Villain Shoves: $ 100

Pot Odds: 2.4 : 1

Final pot would be: 340

Your call would be % 29 of the final pot.

Outs: 2

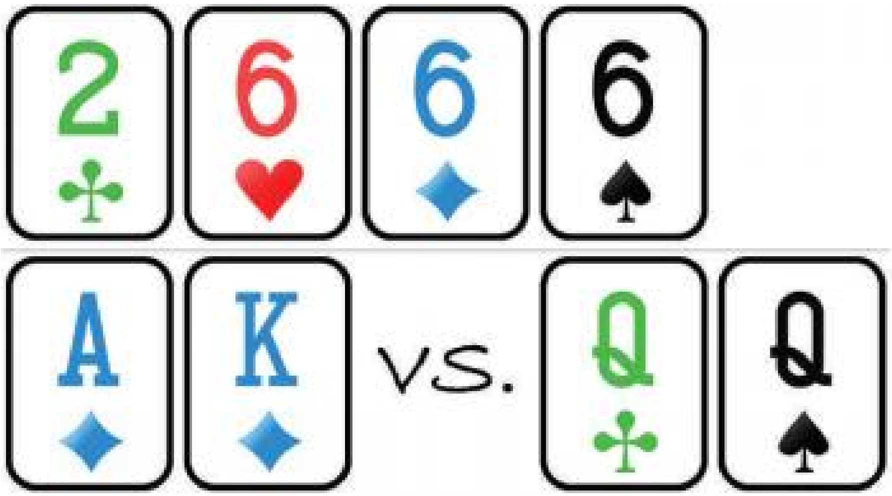
Higher equity? Call
Odds against lower? Call

Equity % 5

Odds: 19 : 1

Profit : $ -82

☐ Call ☐ =EV ☒ Fold



Pot: $ 140

Villain Shoves: $ 100

Pot Odds: 2.4 : 1

Final pot would be: 340

Your call would be % 29 of the final pot.

Outs: 38

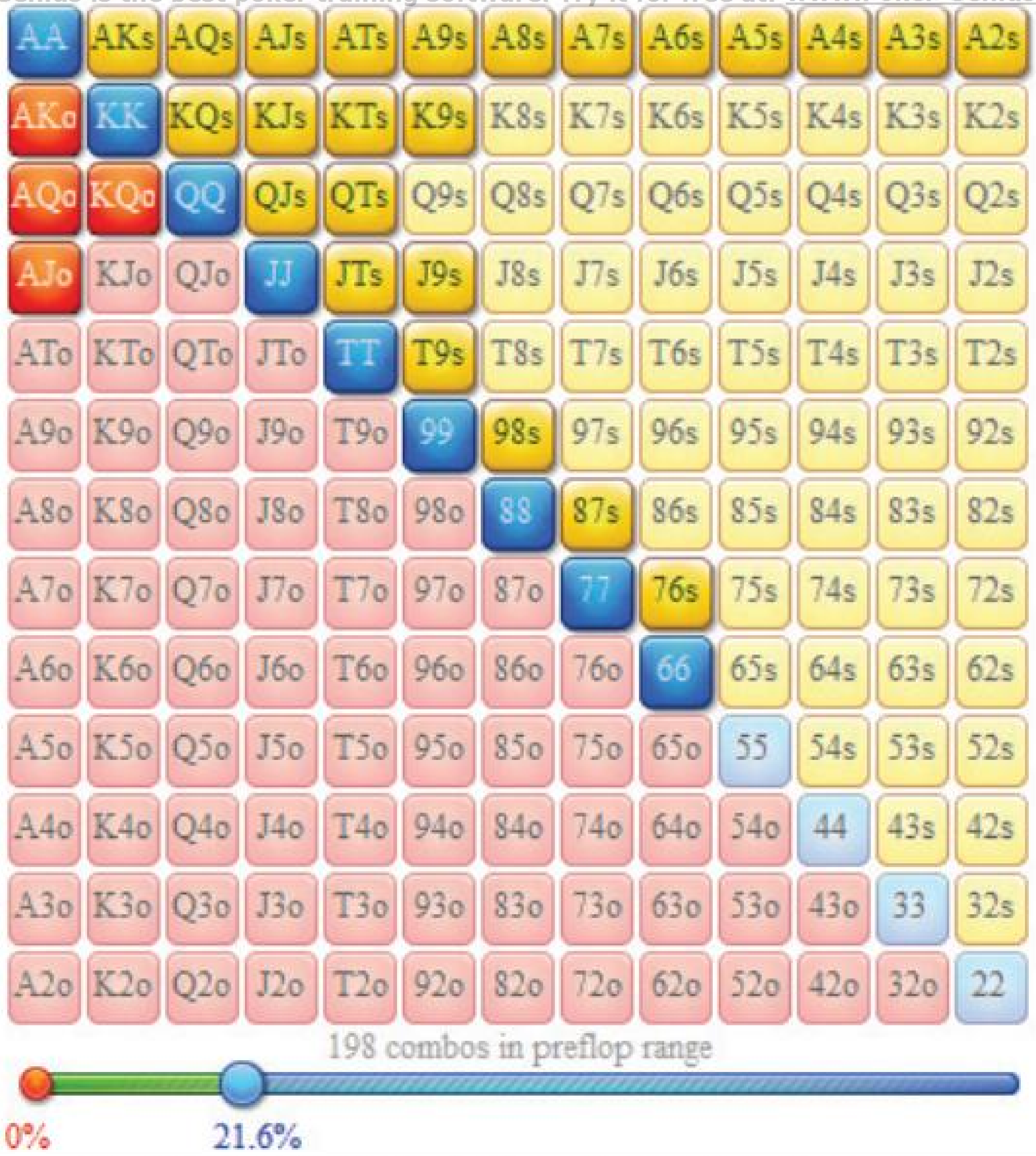
Higher equity? Call
Odds against lower? Call

Equity % 86

Odds: 0.16 : 1

Profit : $ 194

☒ Call ☐ =EV ☐ Fold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AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

2♣ 6♥ 6♦ 6♠

? ? vs. Q♣ Q♠

Monster	2	combos	x	-100	Profit	= -200
Weaker Overpair	30	combos	x	224	Profit	= 6720
Overpair	12	combos	x	-82	Profit	= -984
Nut No Pair	16	combos	x	194	Profit	= 3104

☒ Call ☐ =EV ☐ Fold Total: 8640

8♦ 2♠ 3♦ 7♠

J♣ J♦ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: 3.2 : 1

Final pot would be: 105

Your call would be % 24 of the final pot.

Outs: 14

Higher equity? Call
Odds against lower? Call

Equity % 32

Odds: 2.13 : 1

Profit : $8 Makeup: $-17

☒ Call ☐ =EV ☐ Fold

8♦ 2♠ 3♦ 7♠

9♣ 8♣ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: 3.2 : 1

Final pot would be: 105

Your call would be % 24 of the final pot.

Outs: 14

Higher equity? Call
Odds against lower? Call

Equity % 32

Odds: 2.13 : 1

Profit : $8 Makeup: $-17

☒ Call ☐ =EV ☐ Fold

8♦ 2♠ 3♦ 7♠

3♥ 3♣ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: 3.2 : 1

Final pot would be: 105

Your call would be % 24 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -6 Makeup: $27

☒ Call ☐ =EV ☐ Fold

8♦ 2♠ 3♦ 7♠

7♣ 7♥ vs. A♦ 7♦

Pot: $ 55

Villain bets $ 25

Amount behind $ 120

Pot Odds: 3.2 : 1

Final pot would be: 105

Your call would be % 24 of the final pot.

Outs: 8

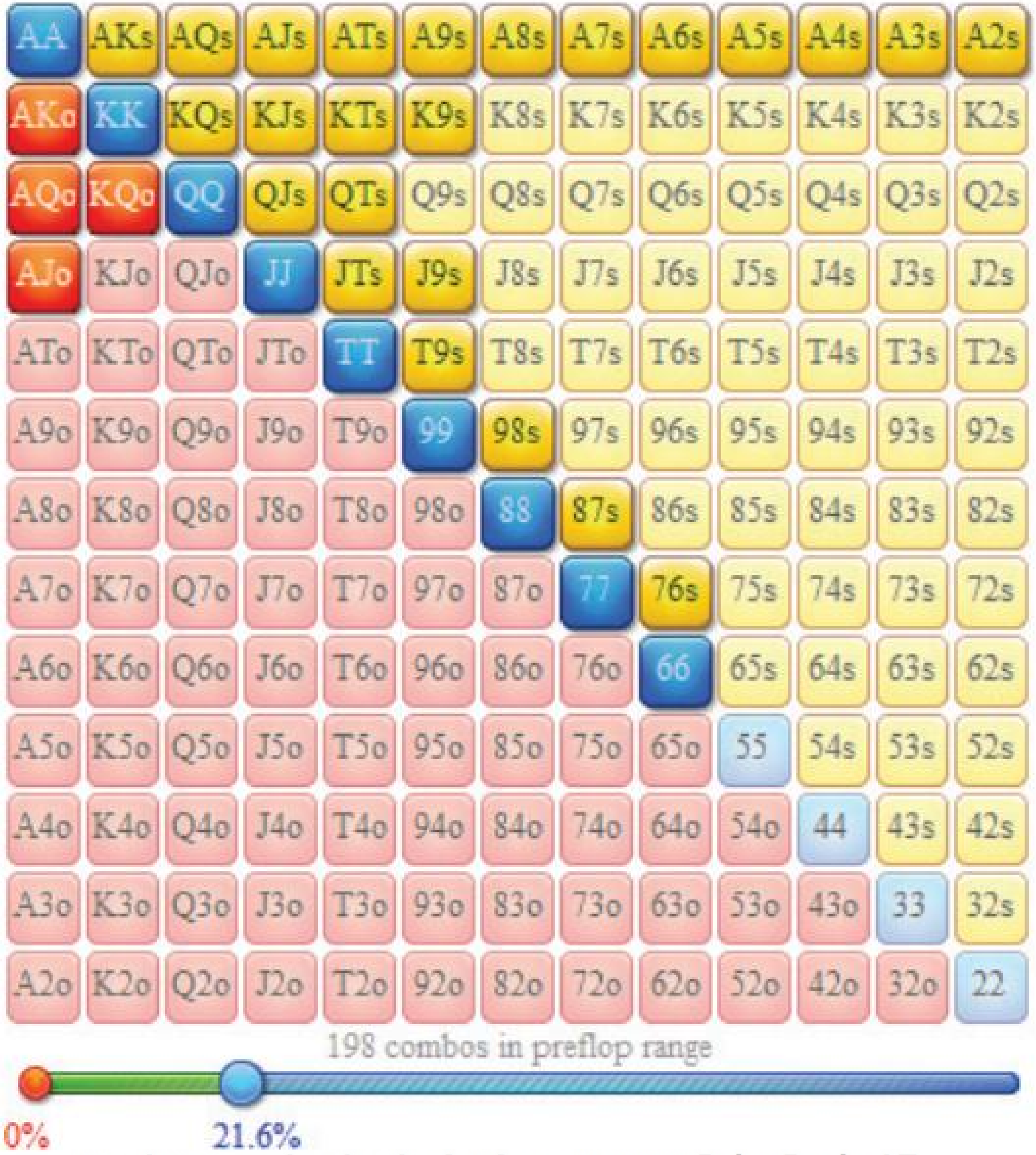
Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -6 Makeup: $27

☒ Call ☐ =EV ☐ Fold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AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
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A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

8♦ 2♠ 3♦ 7♠

? ? vs. A♦ 7♦

Overpair	33	combos	x 15	Profit	=	495
Top pair	6	combos	x 10	Profit	=	60
Set	4	combos	x 15	Profit	=	60
Two Pair	2	combos	x 15	Profit	=	30

[x] Call [ ] =EV [ ] Fold Total: 645

3♦ Q♠ 5♠ J♥

A♣ Q♣ vs. A♠ K♠

Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: 2.07 : 1

Final pot would be: 230

Your call would be % 33 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 34

Odds: 1.94 : 1

Profit : $2 Makeup: $-4

[x] Call [ ] =EV [ ] Fold

3♦ Q♠ 5♠ J♥

Q♦ Q♣ vs. A♠ K♠

Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: 2.07 : 1

Final pot would be: 230

Your call would be % 33 of the final pot.

Outs: 10

Higher equity? Call
Odds against lower? Call

Equity % 23

Odds: 3.35 : 1

Profit : $-23 Makeup: $77

[ ] Call [x] =EV [ ] Fold

3♦ Q♠ 5♠ J♥

Q♦ J♦ vs. A♠ K♠

Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: 2.07 : 1

Final pot would be: 230

Your call would be % 33 of the final pot.

Outs: 11

Higher equity? Call
Odds against lower? Call

Equity % 25

Odds: 3 : 1

Profit : $-18 Makeup: $54

☒ Call ☐ =EV ☐ Fold

3♦ Q♠ 5♠ J♥

K♥ K♦ vs. A♠ K♠

Pot: $ 80

Villain bets $ 75

Amount behind $ 75

Pot Odds: 2.07 : 1

Final pot would be: 230

Your call would be % 33 of the final pot.

Outs: 15

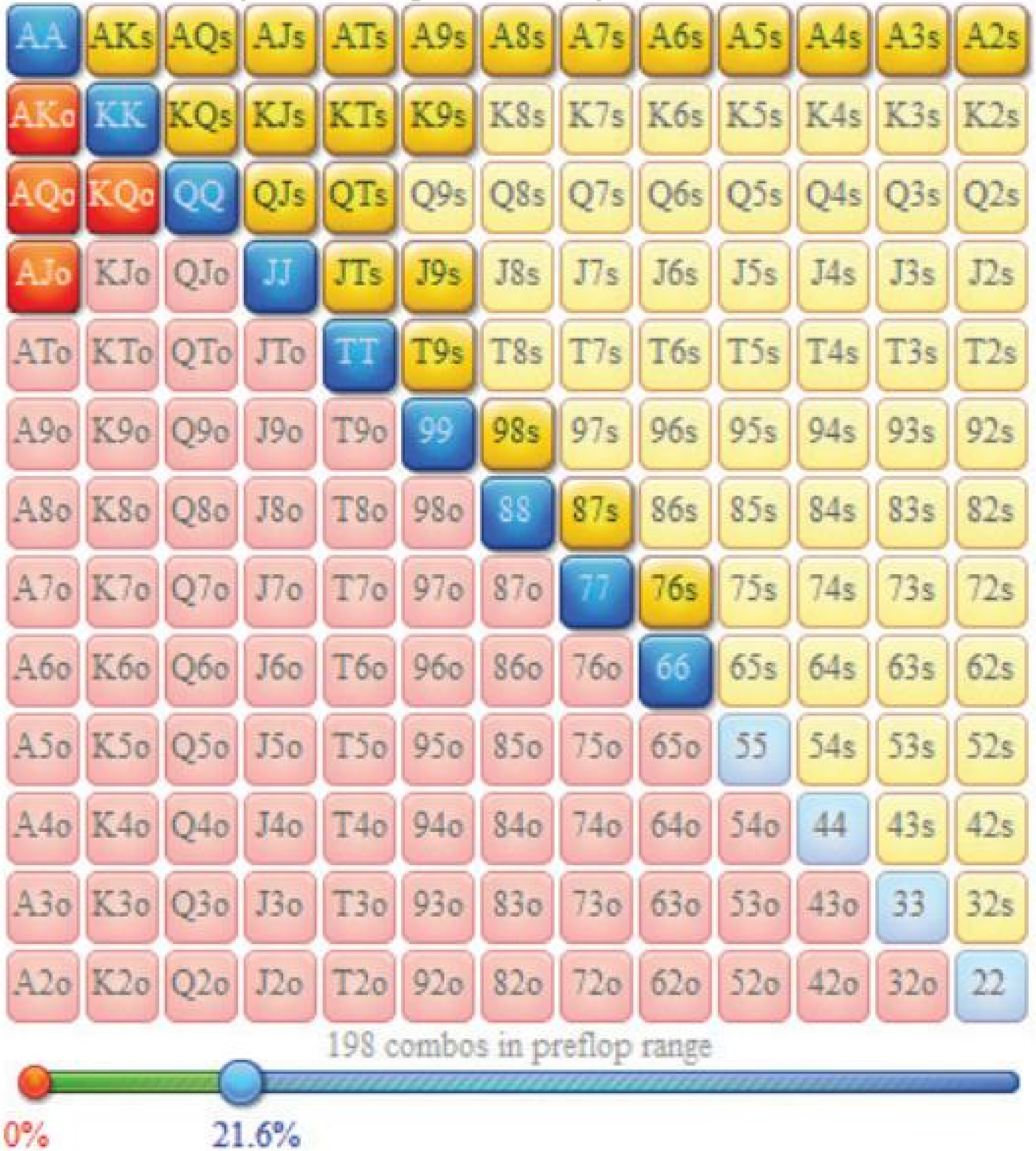
Higher equity? Call
Odds against lower? Call

Equity % 34

Odds: 1.94 : 1

Profit : $2 Makeup: $-4

☒ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
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A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
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A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

3♦ Q♠ 5♠ J♥

? ? vs. A♠ K♠

Top pair	21	combos	x	25	Profit	=	525
Set	6	combos	x	0	Profit	=	0
Two Pair	2	combos	x	6	Profit	=	12
Overpair	6	combos	x	25	Profit	=	150

☒ Call ☐ =EV ☐ Fold Total: 687

6♣ 9♦ 5♦ 3♠

J♣ J♠ vs. A♦ 7♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 18

Equity % 41

Higher equity? Call

Odds against lower? Call

Odds: 1.44 : 1

Profit: $17 Makeup: $-24

☒ Call ☐ =EV ☐ Fold

6♣ 9♦ 5♦ 3♠

7♣ 8♣ vs. A♦ 7♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 10

Equity % 23

Higher equity? Call

Odds against lower? Call

Odds: 3.35 : 1

Profit: $-11 Makeup: $37

☒ Call ☐ =EV ☐ Fold

6♣ 9♦ 5♦ 3♠

9♥ 9♠ vs. A♦ 7♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 13

Equity % 30

Odds: 2.33 : 1

Profit : $0 Makeup: $0

[x] Call [ ] =EV [ ] Fold

6♣ 9♦ 5♦ 3♠

K♦ Q♦ vs. A♦ 7♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 120

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Higher equity? Call
Odds against lower? Call

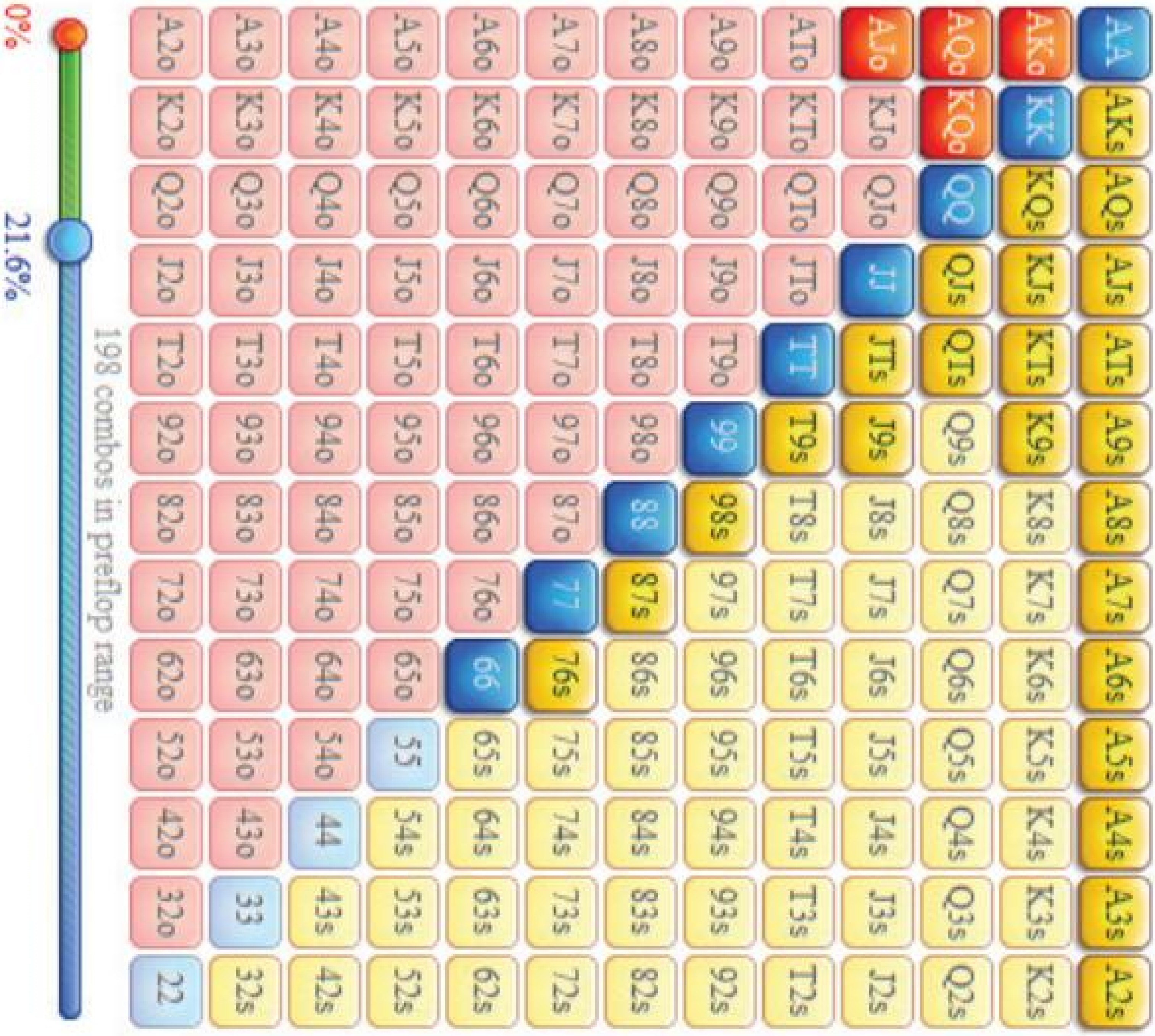
Outs: 38

Equity % 86

Odds: 0.16 : 1

Profit : $84 Makeup: $-13

[x] Call [ ] =EV [ ] Fold


198 combos in preflop range
0%
21.6%

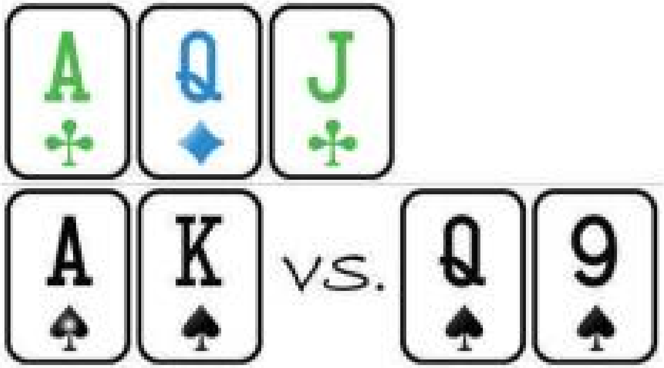
6♣ 9♦ 5♦ 3♠

? ? vs. A♦ 7♦

Overpair	27 combos	x	10 Profit	= 270
Straight	3 combos	x	20 Profit	= 60
Set	6 combos	x	40 Profit	= 240
Dominated draw	6 combos	x	20 Profit	= 120

[x] Call [ ] =EV [ ] Fold Total: 690

A♦ 5♣ 6♦	10♥ 7♦ 9♥	6♠ 5♦ 4♣
A♣ K♣ vs. 7♣ 8♣	A♠ 10♠ vs. 7♣ 8♣	J♣ J♥ vs. 7♠ 7♥
# outs 8	# outs 13	# outs 10
% 67 vs. % 33	% 54 vs. % 46	% 61 vs. % 39
2.03 : 1	1.17 : 1	1.56 : 1



outs 5

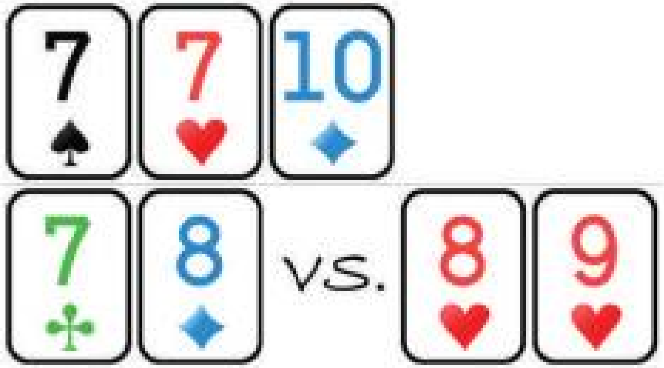
% 83 vs. % 17

4.88 : 1

outs 5

% 82 vs. % 18

4.56 : 1



outs 8

% 72 vs. % 28

2.57 : 1

8♣ 3♣ 9♦	J♠ 7♥ 7♠	J♠ 7♥ 7♠
A♣ A♥ vs. 8♠ 9♠	J♦ Q♦ vs. A♠ K♠	7♦ 8♦ vs. A♠ K♠
# outs 8	# outs 15	# outs 8
% 29 vs. % 71	% 48 vs. % 52	% 74 vs. % 26
1 : 2.45	1 : 1.08	2.85 : 1

8♣ 9♦ 2♥

A♦ K♣ vs. 7♠ 6♠

outs 14

% 51 vs. % 49

1.04 : 1

5♥ 10♥ 7♣

Q♠ J♣ vs. 9♣ 9♦

outs 6

% 26 vs. % 74

1 : 2.85

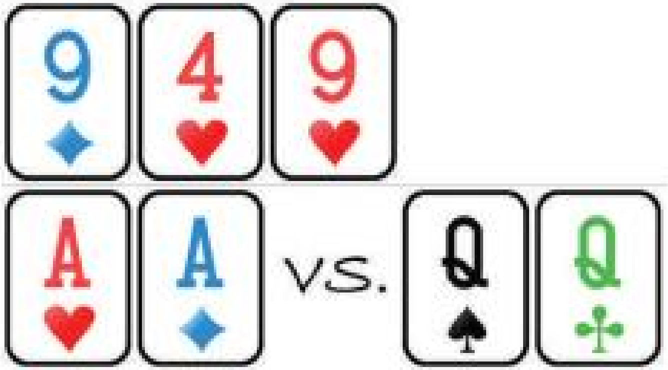
7♥ 9♠ 5♦

7♠ 7♦ vs. 9♣ 9♦

outs 1

% 5 vs. % 95

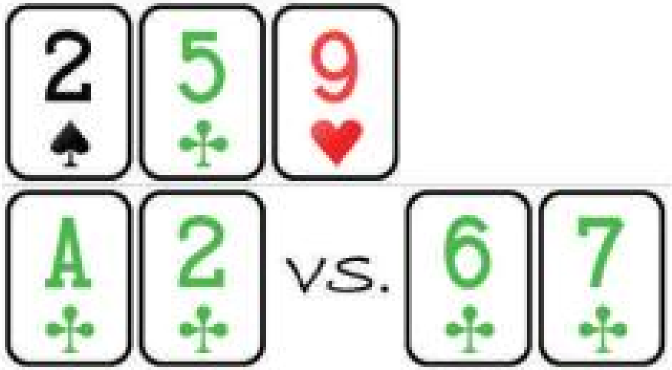
1 : 19



outs 2

% 92 vs. % 8

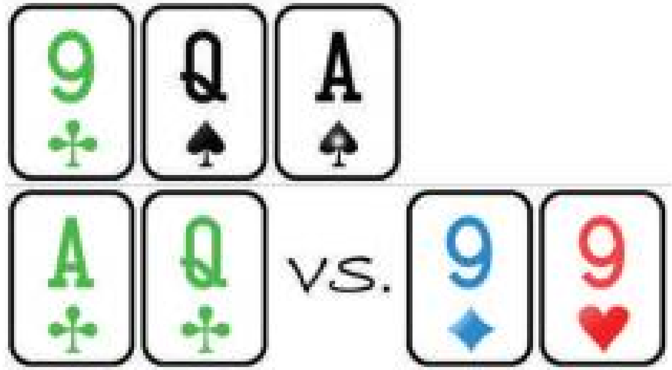
11.5 : 1



outs 10

% 62 vs. % 38

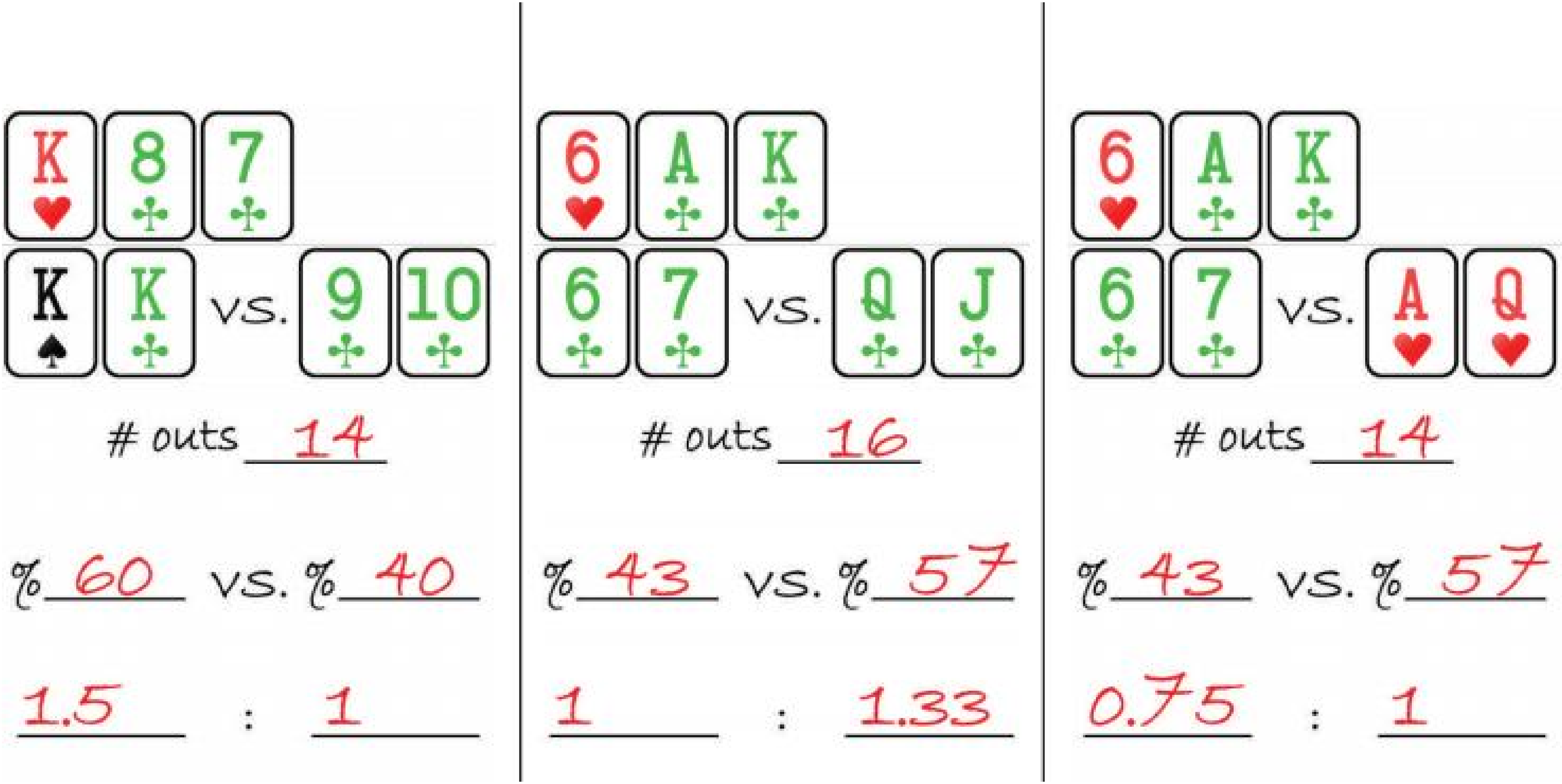
1.63 : 1



outs 4

% 21 vs. % 79

1 : 3.76


K 8 7
K K vs. 9 10
outs 14
% 60 vs. % 40
1.5 : 1
6 A K
6 7 vs. Q J
outs 16
% 43 vs. % 57
1 : 1.33
6 A K
6 7 vs. A Q
outs 14
% 43 vs. % 57
0.75 : 1

10♣ 3♠ 9♣

A♣ K♣ vs. Set	A♣ K♣ vs. Two Pair	A♣ K♣ vs. Top pair
# outs 9T - 8	# outs 9T - 14	# outs JT - 14
% 36 vs. % 64	% 50 vs. % 50	% 53 vs. % 47
A♣ K♣ vs. Weaker Overpair	A♣ K♣ vs. Dominated draw	A♣ K♣ vs. Open ender
# outs QQ - 14	# outs 56 - 6	# outs QJ - 6
% 54 vs. % 46	% 80 vs. % 20	% 70 vs. % 30

10♣ J♣ 9♦

J♦ J♠ vs. Straight

outs KQ -17

% 35 vs. % 65

J♦ J♠ vs. Pair + Open ender

outs 89 - 8

% 75 vs. % 25

J♦ J♠ vs. Flush draw

outs A2 - 8

% 66 vs. % 34

J♦ J♠ vs. Open ender + Flush draw

outs AQ -14

% 60 vs. % 40

J♦ J♠ vs. Two Pair

outs T9 -0

% 97 vs. % 3

J♦ J♠ vs. Pair + Gut shot

outs TK -4

% 85 vs. % 15

J♦ K♦ 5♣

A♠ A♣ vs. Flush draw	A♠ A♣ vs. Open ender	A♠ A♣ vs. Gut shot
# outs 89 - 9	# outs QT - 6	# outs T9 - 4
% 67 vs. % 33	% 77 vs. % 23	% 82 vs. % 18
A♠ A♣ vs. Set	A♠ A♣ vs. Two Pair	A♠ A♣ vs. Top pair
# outs 55 - 2	# outs KJ - 13	# outs KQ - 5
% 11 vs. % 89	% 27 vs. % 73	% 80 vs. % 20

3♠ Q♦ 10♥

10♠ 9♠ vs. Top pair	10♠ 9♠ vs. Two Pair	10♠ 9♠ vs. Set
# outs KQ -5	# outs QT -0	# outs QQ -0
% 25 vs. % 75	% 7 vs. % 93	% 7 vs. % 93
10♠ 9♠ vs. Open ender	10♠ 9♠ vs. Overcards	10♠ 9♠ vs. Overpair
# outs KJ -13	# outs AK -10	# outs KK -5
% 56 vs. % 44	% 65 vs. % 35	% 23 vs. % 77

J♣ 9♣ A♠

A♣ 2♣ vs. T.P.T.K.

outs AK - 12

% 45 vs. % 55

A♣ 2♣ vs. Gut shot

outs KQ - 3

% 89 vs. % 11

A♣ 2♣ vs. Open ender

outs T8 - 6

% 80 vs. % 20

A♣ 2♣ vs. Set

outs 99 - 9

% 30 vs. % 70

A♣ 2♣ vs. Two Pair

outs J9 - 14

% 50 vs. % 50

A♣ 2♣ vs. Pocket pair below TP

outs TT - 2

% 93 vs. % 7

9♠ 5♣ 6♥

J♦ J♣ vs. Overpair

\# outs QQ - 2

% 9 vs. % 91

J♦ J♣ vs. Weaker Overpair

\# outs TT - 2

% 90 vs. % 10

J♦ J♣ vs. Straight

\# outs 78 - 0

% 3 vs. % 97

J♦ J♣ vs. Pair + Gut shot

\# outs 98 - 9

% 67 vs. % 33

J♦ J♣ vs. Overcards

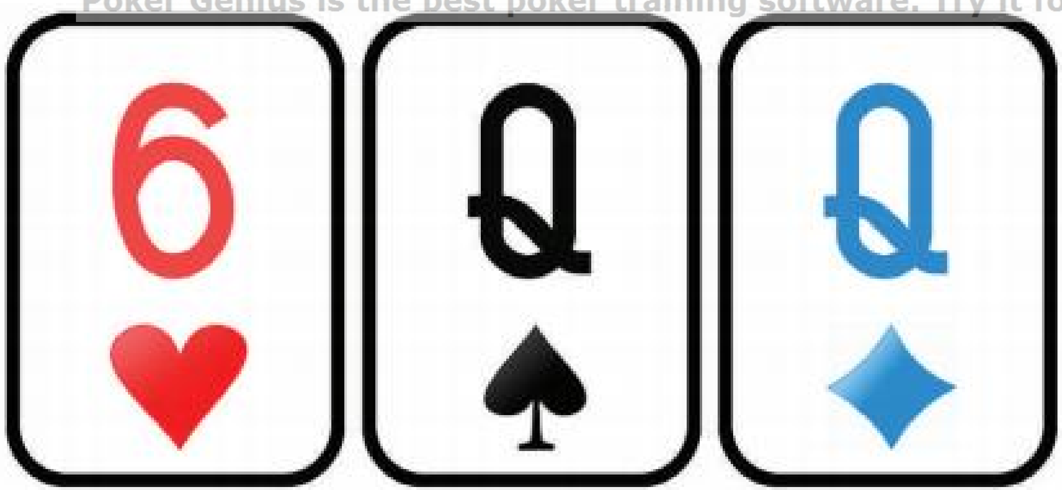
\# outs AK - 6

% 75 vs. % 25

J♦ J♣ vs. Set

\# outs 66 - 2

% 10 vs. % 90



A♠ A♦ vs. Three of a kind

outs QJ-2

% 9 vs. % 91

A♠ A♦ vs. Full House

outs 66 - 4

% 17 vs. % 83

A♠ A♦ vs. Weaker Overpair

outs KK -2

% 92 vs. % 8

A♠ A♦ vs. Pocket pair below TP

outs JJ - 2

% 92 vs. % 8

A♠ A♦ vs. No pair, No draw, < Ace high

outs K9 -0

% 98 vs. % 2

A♠ A♦ vs. Nut No Pair

outs AK -0

% 98 vs. % 2

3♠ 9♦ 7♠

8♠ 10♠ vs. Overpair

\# outs A9-18

% 63 vs. % 37

8♠ 10♠ vs. Top pair

\# outs A9-18

% 63 vs. % 37

8♠ 10♠ vs. Two Pair

\# outs 79-14

% 50 vs. % 50

8♠ 10♠ vs. Set

\# outs 99-14

% 40 vs. % 60

8♠ 10♠ vs. Nut FD

\# outs AK-12

% 40 vs. % 60

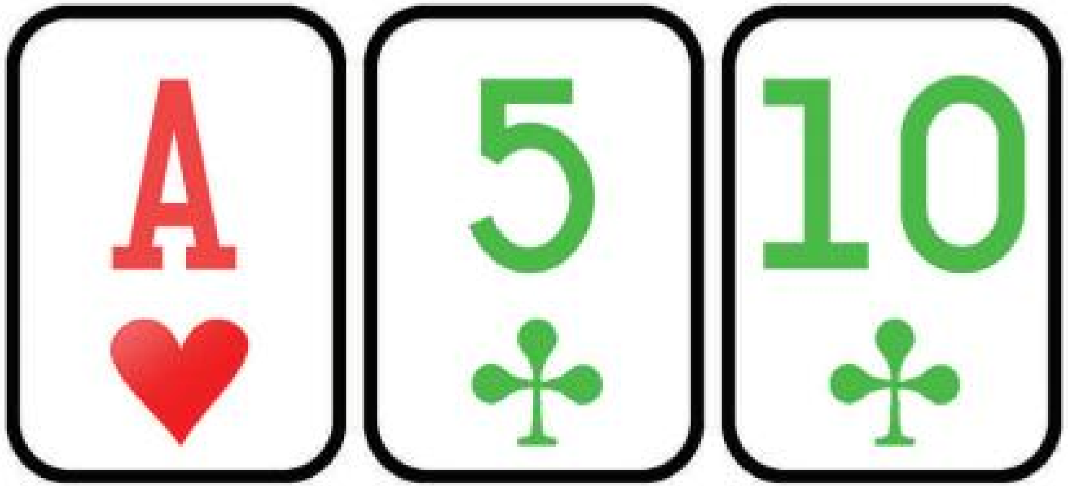
8♠ 10♠ vs. Dominated draw

\# outs 52-6

% 85 vs. % 15

3♥ 10♠ 9♠

10♥ 9♥ vs. Open ender	10♥ 9♥ vs. Open ender + Flush draw	10♥ 9♥ vs. Flush draw
# outs QJ-8	# outs QJ-15	# outs A2-15
% 69 vs. % 31	% 48 vs. % 52	% 65 vs. % 35
10♥ 9♥ vs. Overpair	10♥ 9♥ vs. Set	10♥ 9♥ vs. T.P.T.K.
# outs JJ-13	# outs 33- 4	# outs AT-3
% 71 vs. % 29	% 21 vs. % 79	% 86 vs. % 14



K♦ K♠ vs. Top pair

outs AJ-2

% 14 vs. % 86

K♦ K♠ vs. Gut shot

outs 34 - 4

% 81 vs. % 19

K♦ K♠ vs. Pair + Flush draw

outs A8-2

% 5 vs. % 95

K♦ K♠ vs. Set

outs A8-2

% 11 vs. % 89

K♦ K♠ vs. Nut FD

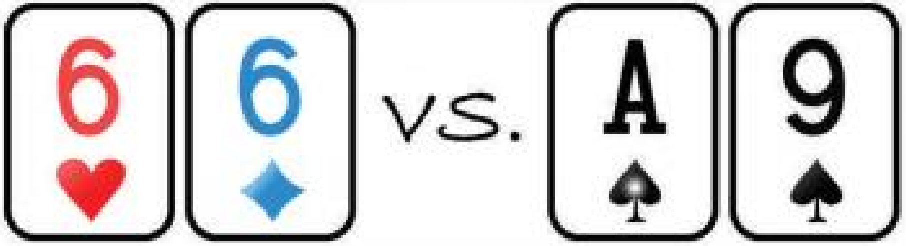
outs A4-2

% 5 vs. % 95

K♦ K♠ vs. Pocket pair below TP

outs JJ-2

% 92 vs. % 8



Pot: $ 30

Villain Shoves: $ 50

Pot Odds: 1.6 : 1

Final pot would be: 130

Your call would be % 38 of the final pot.

Outs: 8

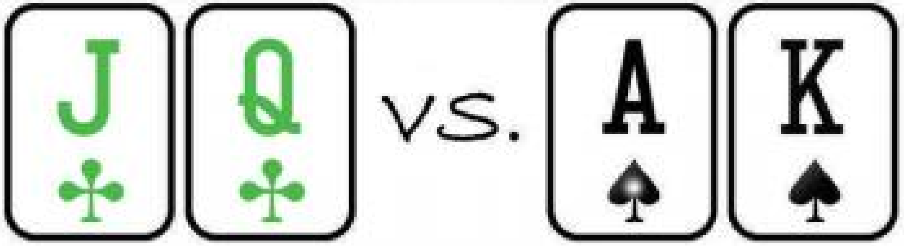
Higher equity? Call
Odds against lower? Call

Equity % 25

Odds: 3 : 1

Profit : $ -17

☐ Call ☐ =EV ☒ Fold



Pot: $ 55

Villain Shoves: $ 40

Pot Odds: 2.38 : 1

Final pot would be: 135

Your call would be % 30 of the final pot.

Outs: 11

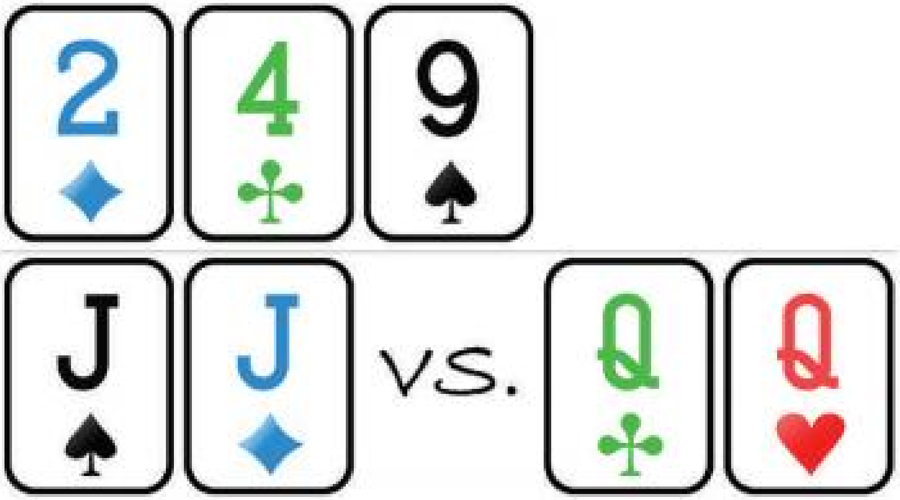
Higher equity? Call
Odds against lower? Call

Equity % 42

Odds: 1.38 : 1

Profit : $ 16

☒ Call ☐ =EV ☐ Fold



Pot: $ 120

Villain Shoves: $ 130

Pot Odds: 1.92 : 1

Final pot would be: 380

Your call would be % 34 of the final pot.

Outs: 42

Higher equity? Call
Odds against lower? Call

Equity % 92

Odds: 0.09 : 1

Profit : $ 220

☒ Call ☐ =EV ☐ Fold

Pot: $ 60

Villain Shoves: $ 90

Pot Odds: 1.67 : 1

Final pot would be: 240

Your call would be % 38 of the final pot.

Outs: 7

Higher equity? Call
Odds against lower? Call

Equity % 23

Odds: 3.35 : 1

Profit : $ -36

☐ Call ☐ =EV ☒ Fold

6♠ 5♦ 6♣

5♥ 5♠ vs. 6♥ 7♥

Pot: $ 150

Villain Shoves: $ 150

Pot Odds: 2 : 1

Final pot would be: 450

Your call would be % 33 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 7

Equity % 23

Odds: 3.35 : 1

Profit : $ -45

☐ Call ☐ =EV ☒ Fold

5♣ J♣ K♠

K♣ A♣ vs. 5♥ 5♦

Pot: $ 25

Villain Shoves: $ 20

Pot Odds: 2.25 : 1

Final pot would be: 65

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

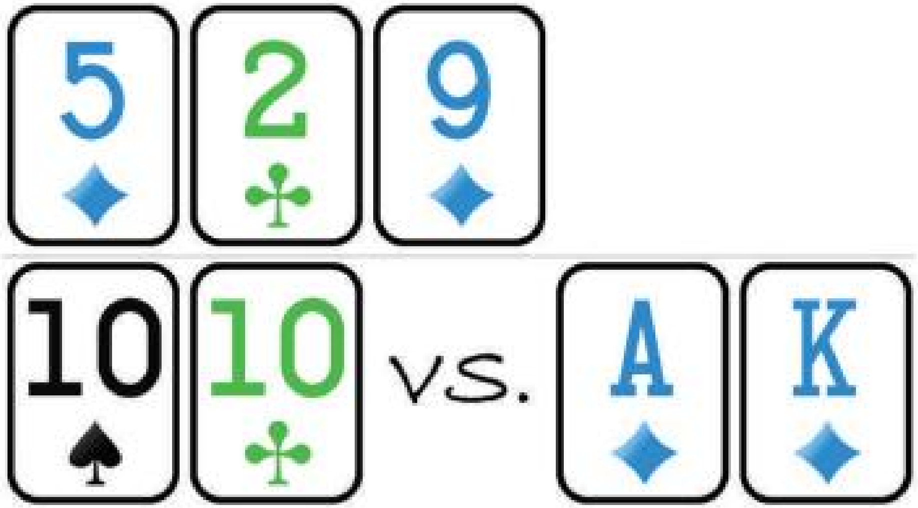
Outs: 35

Equity % 69

Odds: 0.45 : 1

Profit : $ 25

☒ Call ☐ =EV ☐ Fold



Pot: $ 75

Villain Shoves: $ 100

Pot Odds: 1.75 : 1

Final pot would be: 275

Your call would be % 36 of the final pot.

Outs: 15

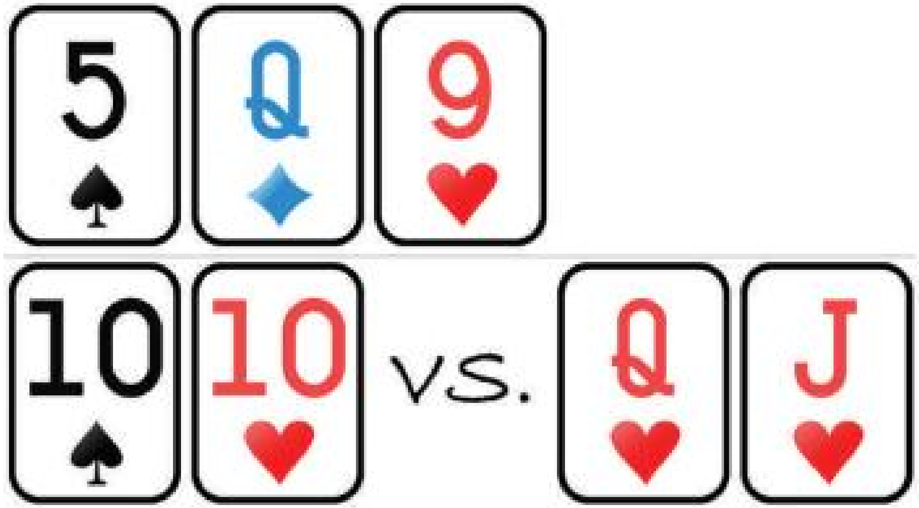
Higher equity? Call
Odds against lower? Call

Equity % 55

Odds: 0.82 : 1

Profit : $ 52

[x] Call [ ] =EV [ ] Fold



Pot: $ 120

Villain Shoves: $ 80

Pot Odds: 2.5 : 1

Final pot would be: 280

Your call would be % 29 of the final pot.

Outs: 42

Higher equity? Call
Odds against lower? Call

Equity % 90

Odds: 0.11 : 1

Profit : $ 171

[x] Call [ ] =EV [ ] Fold

5♠ J♥ 6♣

7♥ 8♥ vs. K♦ J♦

Pot: $ 105

Villain Shoves: $ 95

Pot Odds: 2.11 : 1

Final pot would be: 295

Your call would be % 32 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 36

Equity % 63

Odds: 0.59 : 1

Profit : $ 91

☒ Call ☐ =EV ☐ Fold

K♦ 2♦ 7♣

7♦ 8♦ vs. A♦ Q♦

Pot: $ 60

Villain Shoves: $ 80

Pot Odds: 1.75 : 1

Final pot would be: 220

Your call would be % 36 of the final pot.

Higher equity? Call
Odds against lower? Call

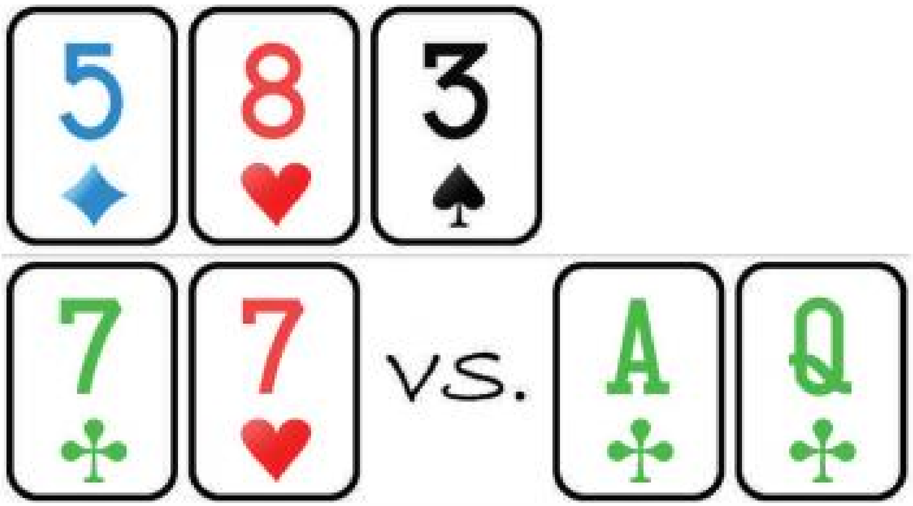
Outs: 13

Equity % 48

Odds: 1.08 : 1

Profit : $ 26

☒ Call ☐ =EV ☐ Fold



Pot: $ 60

Villain Shoves: $ 60

Pot Odds: 2 : 1

Final pot would be: 180

Your call would be % 33 of the final pot.

Outs: 6

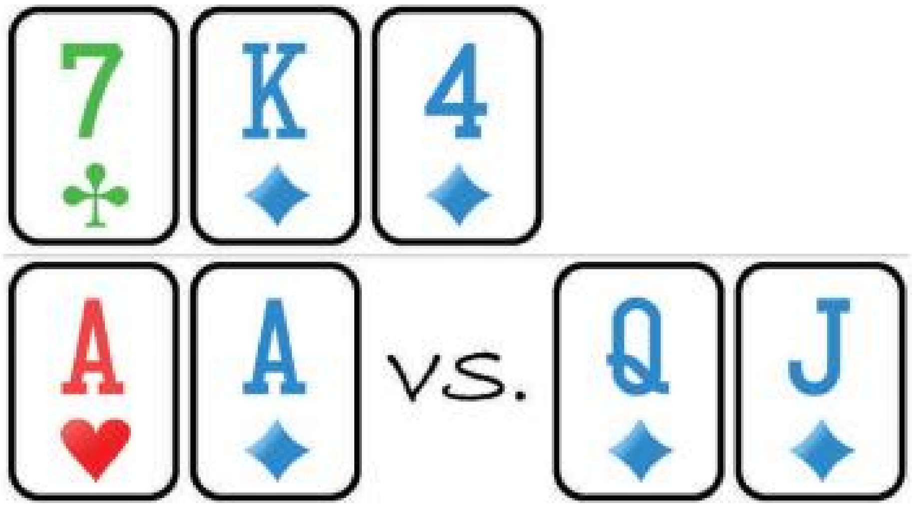
Higher equity? Call
Odds against lower? Call

Equity % 26

Odds: 2.85 : 1

Profit : $ -13

☐ Call ☐ =EV ☒ Fold



Pot: $ 55

Villain Shoves: $ 40

Pot Odds: 2.38 : 1

Final pot would be: 135

Your call would be % 30 of the final pot.

Outs: 8

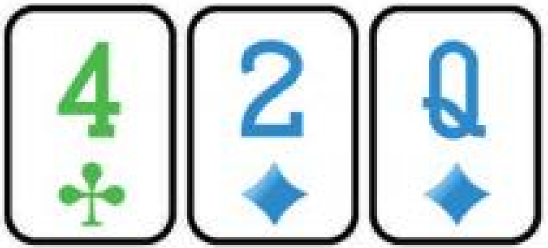
Higher equity? Call
Odds against lower? Call

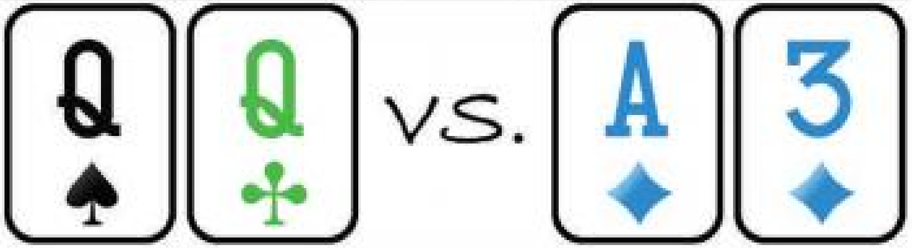
Equity % 33

Odds: 2.03 : 1

Profit : $ 4

☒ Call ☐ =EV ☐ Fold





Pot: $ 25

Villain Shoves: $ 20

Pot Odds: 2.25 : 1

Final pot would be: 65

Your call would be % 31 of the final pot.

Outs: 11

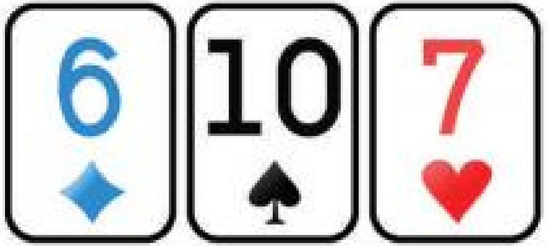
Higher equity? Call
Odds against lower? Call

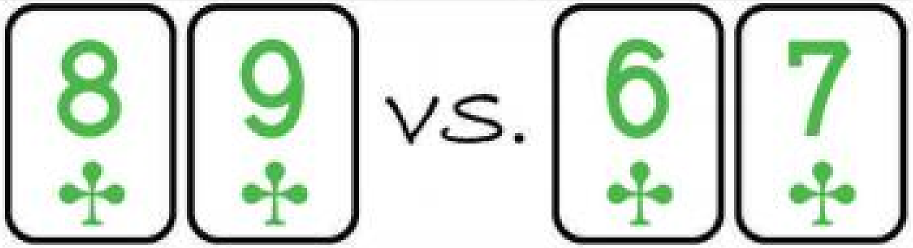
Equity % 33

Odds: 2.03 : 1

Profit : $ 1

[x] Call [ ] =EV [ ] Fold





Pot: $ 30

Villain Shoves: $ 40

Pot Odds: 1.75 : 1

Final pot would be: 110

Your call would be % 36 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -20

[ ] Call [ ] =EV [x] Fold

3♦ 5♠ 10♥

5♥ A♥ vs. J♦ J♣

Pot: $ 55

Villain Shoves: $ 45

Pot Odds: 2.22 : 1

Final pot would be: 145

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 39

Equity % 74

Odds: 0.35 : 1

Profit : $ 62

☒ Call ☐ =EV ☐ Fold

A♣ 8♠ 2♣

K♣ A♥ vs. 8♣ 7♣

Pot: $ 40

Villain Shoves: $ 40

Pot Odds: 2 : 1

Final pot would be: 120

Your call would be % 33 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 13

Equity % 44

Odds: 1.27 : 1

Profit : $ 13

☒ Call ☐ =EV ☐ Fold

Open ender + Flush draw

- [x] Call
- [ ] Fold

Pot: 275

Villain Shoves: $ 100

Pot Odds: 3.75 : 1

Final pot would be: 475

Your call would be % 21 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 60

Return from pot: ____ Odds: 0.67 : 1

Gut shot

- [ ] Call
- [x] Fold

Pot: $120

Villain Shoves: $ 80

Pot Odds: 2.5 : 1

Final pot would be: 280

Your call would be % 29 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 16

Return from pot: ____ Odds: 5.25 : 1

Pocket pair below TP

- [ ] Call
- [x] Fold

Pot: $100

Villain Shoves: $ 30

Pot Odds: 4.33 : 1

Final pot would be: 160

Your call would be % 19 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 8

Return from pot: ____ Odds: 11.5 : 1

Flush draw

- [x] Call
- [ ] Fold

Pot: $120

Villain Shoves: $ 30

Pot Odds: 5 : 1

Final pot would be: 180

Your call would be % 17 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 36

Return from pot: ____ Odds: 1.78 : 1

Flush draw

[x] Call
[ ] Fold

Pot: $200

Villain Shoves: $ 60

Pot Odds: 4.33 : 1

Final pot would be: 320

Your call would be % 19 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 36

Return from pot: ____

Odds: 1.78 : 1

Pocket pair below TP

[ ] Call
[x] Fold

Pot: $ 55

Villain Shoves: $ 35

Pot Odds: 2.57 : 1

Final pot would be: 125

Your call would be % 28 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 8

Return from pot: ____

Odds: 11.5 : 1

Open ender + Flush draw

[x] Call
[ ] Fold

Pot: $125

Villain Shoves: $ 90

Pot Odds: 2.39 : 1

Final pot would be: 305

Your call would be % 30 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 60

Return from pot: ____

Odds: 0.67 : 1

Flush draw

[x] Call
[ ] Fold

Pot: $ 98

Villain Shoves: $ 60

Pot Odds: 2.63 : 1

Final pot would be: 218

Your call would be % 28 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 36

Return from pot: ____

Odds: 1.78 : 1

Flush draw	Pot: $200
	Villain Shoves: $ 50
	Pot Odds: 5 : 1
	Final pot would be: 300
	Your call would be % 17 of the final pot.
[x] Call	Outs: 9
[ ] Fold	Equity % 36
Higher equity? Call. Odds against lower? Call.	
Return from pot: ____	Odds: 1.78 : 1

Pair + Flush draw	Pot: $ 50
	Villain Shoves: $ 40
	Pot Odds: 2.25 : 1
	Final pot would be: 130
	Your call would be % 31 of the final pot.
[x] Call	Outs: 14
[ ] Fold	Equity % 56
Higher equity? Call. Odds against lower? Call.	
Return from pot: ____	Odds: 0.79 : 1

Gut shot

Pot: $180
Villain Shoves: $ 40
Pot Odds: 5.5 : 1
Final pot would be: 260
Your call would be % 15 of the final pot.

- [x] Call
- [ ] Fold

Outs: 4
Equity % 16
Higher equity? Call
Odds against lower? Call
Odds: 5.25 : 1
Return from pot: ____

Open ender

Pot: $300
Villain Shoves: $125
Pot Odds: 3.4 : 1
Final pot would be: 550
Your call would be % 23 of the final pot.

- [x] Call
- [ ] Fold

Outs: 8
Equity % 32
Higher equity? Call
Odds against lower? Call
Odds: 2.13 : 1
Return from pot: ____

Open ender + Flush draw

Pot: $400
Villain Shoves: $250
Pot Odds: 2.6 : 1
Final pot would be: 900
Your call would be % 28 of the final pot.

- [x] Call
- [ ] Fold

Outs: 15
Equity % 60
Higher equity? Call
Odds against lower? Call
Odds: 0.67 : 1
Return from pot: ____

Pocket pair below TP

Pot: $400
Villain Shoves: $ 100
Pot Odds: 5 : 1
Final pot would be: 600
Your call would be % 17 of the final pot.

- [ ] Call
- [x] Fold

Outs: 2
Equity % 8
Higher equity? Call
Odds against lower? Call
Odds: 11.5 : 1
Return from pot: ____

Open ender

- [x] Call
- [ ] Fold

Pot: $320

Villain shoves: $200

Pot Odds: 2.6 : 1

Final pot would be: 720

Your call would be % 28 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 32

Return from pot: ____

Odds: 2.13 : 1

Gut shot + Flush draw

- [x] Call
- [ ] Fold

Pot: $320

Villain shoves: $200

Pot Odds: 2.6 : 1

Final pot would be: 720

Your call would be % 28 of the final pot.

Outs: 13

Higher equity? Call
Odds against lower? Call

Equity % 52

Return from pot: ____

Odds: 0.92 : 1

Flush draw

- [x] Call
- [ ] Fold

Pot: $ 70

Villain shoves: $ 40

Pot Odds: 2.75 : 1

Final pot would be: 150

Your call would be % 27 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 36

Return from pot: ____

Odds: 1.78 : 1

Overcards

- [x] Call
- [x] Fold

Pot: $ 90

Villain shoves: $ 40

Pot Odds: 3.25 : 1

Final pot would be: 170

Your call would be % 24 of the final pot.

Outs: 6

Higher equity? Call
Odds against lower? Call

Equity % 24

Return from pot: ____

Odds: 3.17 : 1

Nut FD

Pot: $100

Villain Shoves: $ 50

Pot Odds: 3 : 1

Final pot would be: 200

Your call would be % 25 of the final pot.

[x] Call

[ ] Fold

Outs: 12

Higher equity? Call

Odds against lower? Call

Equity % 48

Return from pot: ____ Odds: 1.08 : 1

Gut shot

Pot: $ 45

Villain Shoves: $ 20

Pot Odds: 3.25 : 1

Final pot would be: 85

Your call would be % 24 of the final pot.

[ ] Call

[x] Fold

Outs: 4

Higher equity? Call

Odds against lower? Call

Equity % 16

Return from pot: ____ Odds: 5.25 : 1

7♦ A♦ Q♠

A♥ K♥ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 44

Odds: 1.27 : 1

Profit : $ 34

☒ Call ☐ =EV ☐ Fold

7♦ A♦ Q♠

7♥ 7♣ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 31

Odds: 2.23 : 1

Profit : $ 0

☐ Call ☒ =EV ☐ Fold

7♦ A♦ Q♠

A♣ Q♣ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 35

Odds: 1.86 : 1

Profit : $ 10

☒ Call ☐ =EV ☐ Fold

7♦ A♦ Q♠

8♦ 9♦ vs. K♦ Q♦

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 44

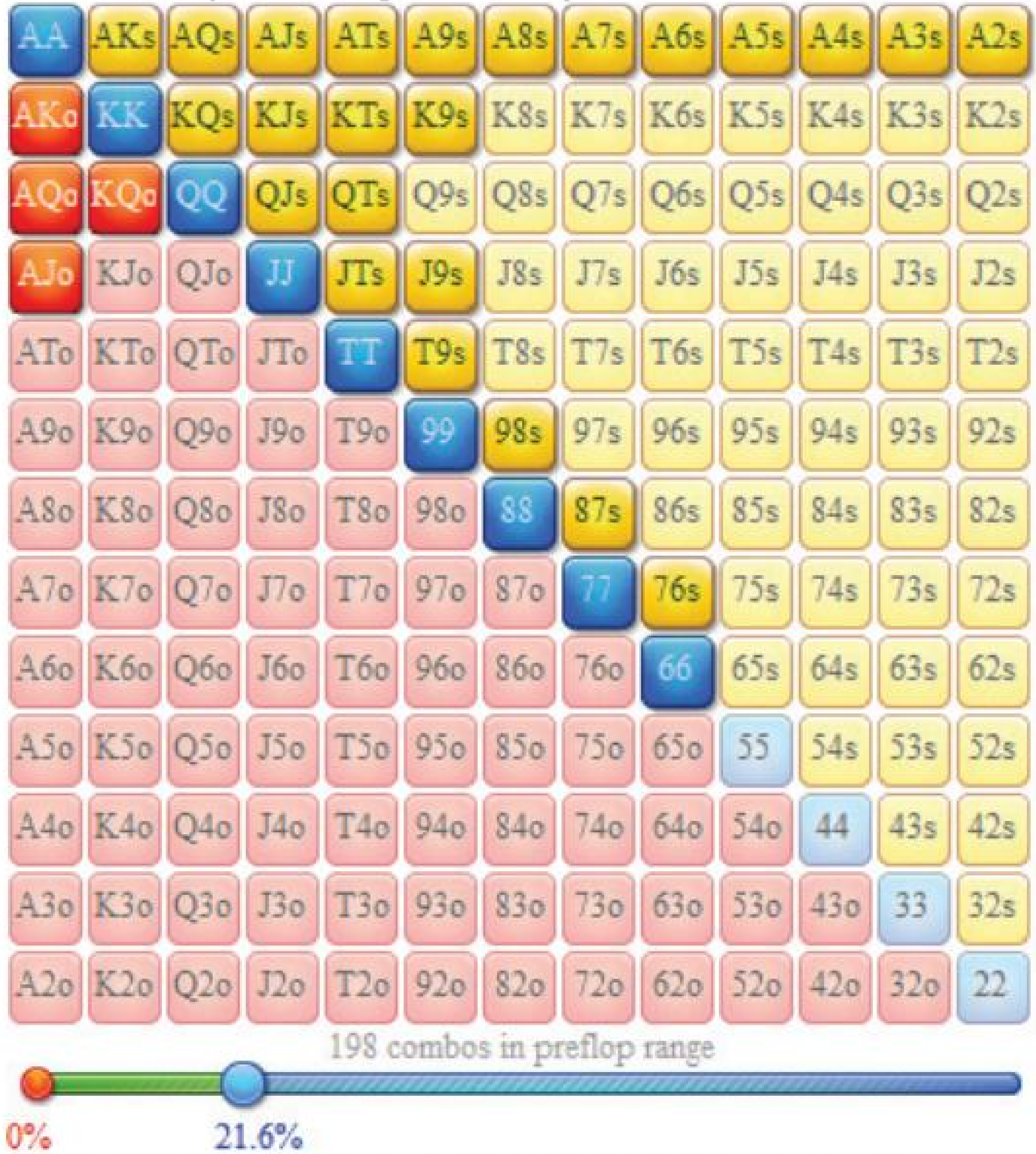
Higher equity? Call
Odds against lower? Call

Equity % 97

Odds: 0.03 : 1

Profit : $ 172

☒ Call ☐ =EV ☐ Fold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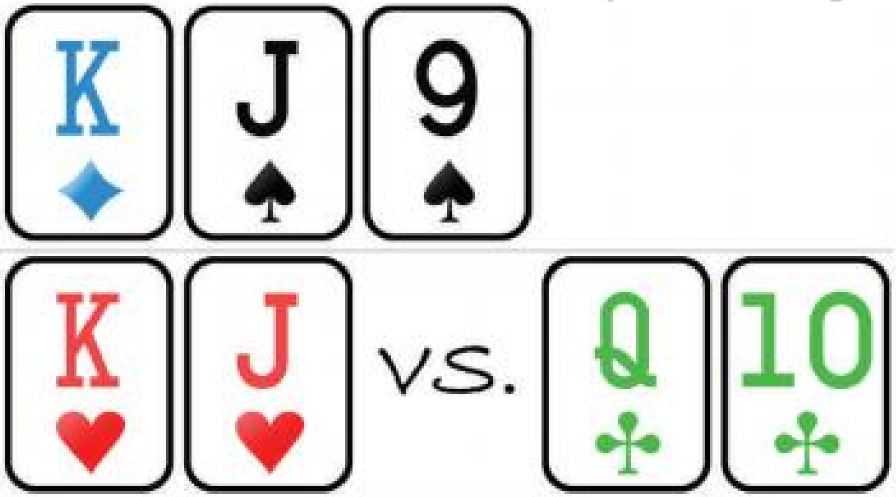
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

7♦ A♦ Q♠

? ? vs. K♦ Q♦

Top pair	45	combos	x	34	Profit	= 1530
Set	7	combos	x	0	Profit	= 0
Two Pair	9	combos	x	35	Profit	= 315
Dominated draw	4	combos	x	172	ofit	= 688

[x] Call [ ] =EV [ ] Fold Total: 2533



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

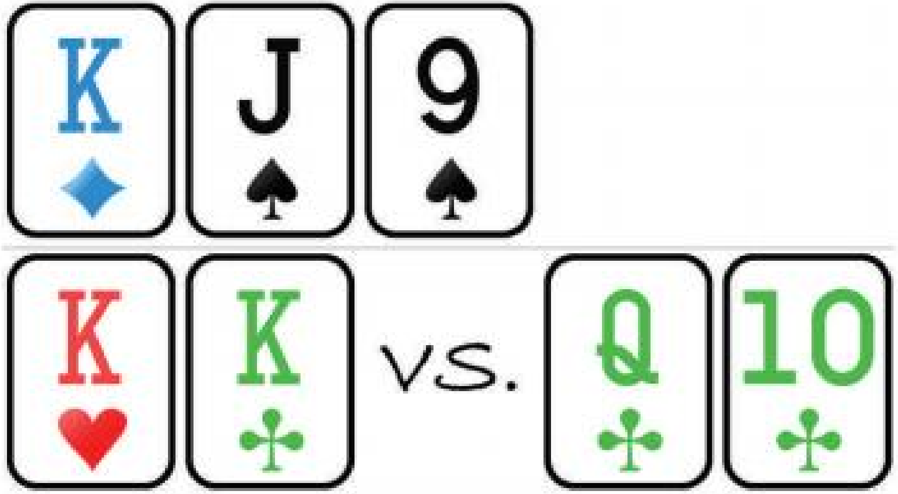
Outs: 40

Equity % 82

Odds: 0.22 : 1

Profit : $ 133

☒ Call ☐ =EV ☐ Fold



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 27

Equity % 82

Odds: 0.22 : 1

Profit : $ 133

☒ Call ☐ =EV ☐ Fold

K♦ J♠ 9♠

A♠ K♠ vs. Q♣ 10♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 35

Higher equity? Call
Odds against lower? Call

Equity % 60

Odds: 0.67 : 1

Profit : $ 75

☒ Call ☐ =EV ☐ Fold

K♦ J♠ 9♠

A♠ Q♠ vs. Q♣ 10♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 32

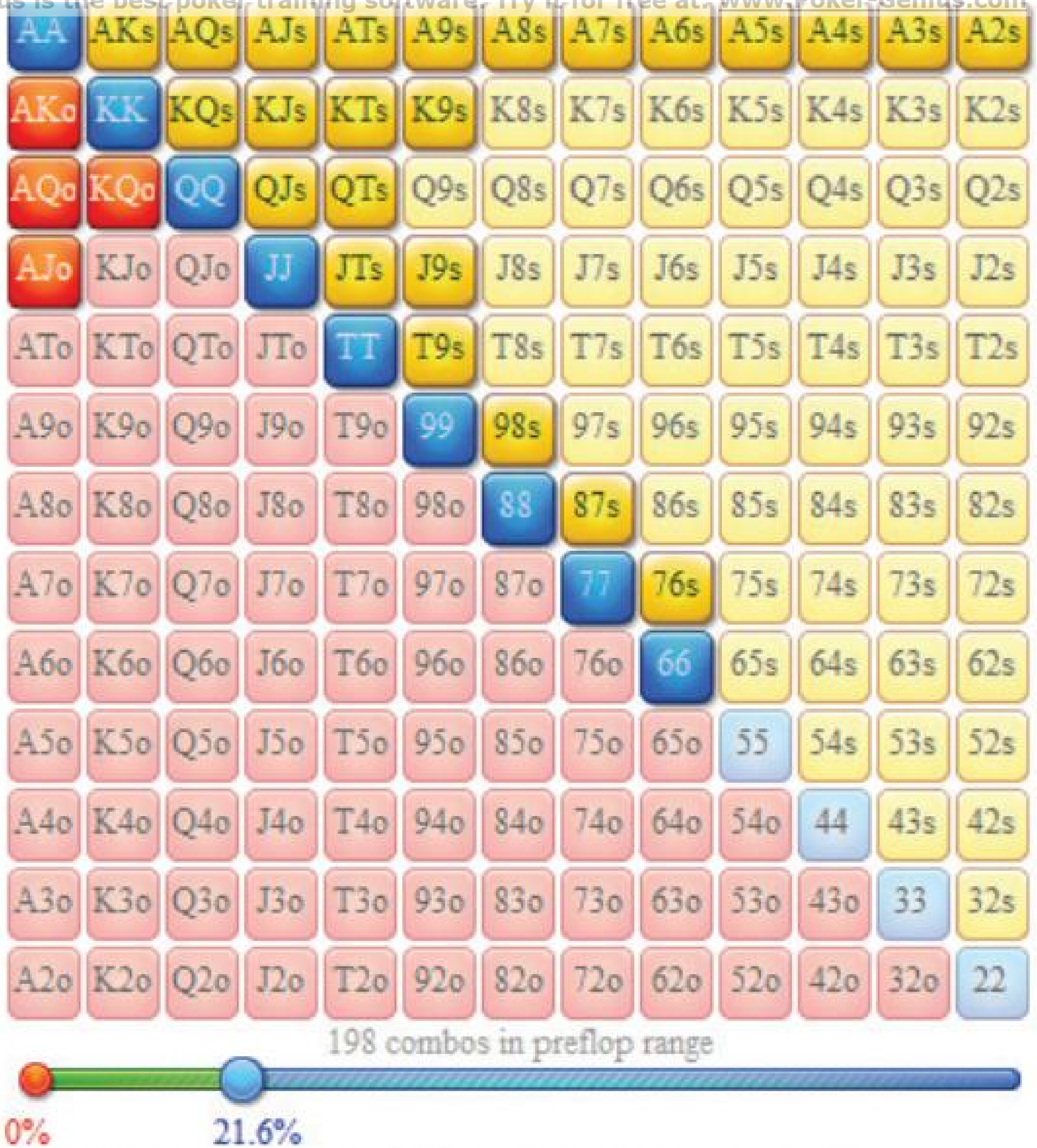
Higher equity? Call
Odds against lower? Call

Equity % 57

Odds: 0.75 : 1

Profit : $ 68

☒ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
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A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

K♦ J♠ 9♠

? ? vs. Q♣ 10♣

Two Pair	7 combos	x	133 Profit	= 931
Set	9 combos	x	133 Profit	= 1197
Pair + Flush draw	3 combos	x	75 Profit	= 225
Nut FD	10 combos	x	68 Profit	= 680

☒ Call ☐ =EV ☐ Fold Total: 3033

9♣ 3♠ 8♦

9♠ 9♦ vs. Q♦ Q♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 2

Equity % 10

Odds: 9 : 1

Profit : $ -55

☐ Call ☐ =EV ☒ Fold

9♣ 3♠ 8♦

J♠ 10♠ vs. Q♦ Q♣

Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2.25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

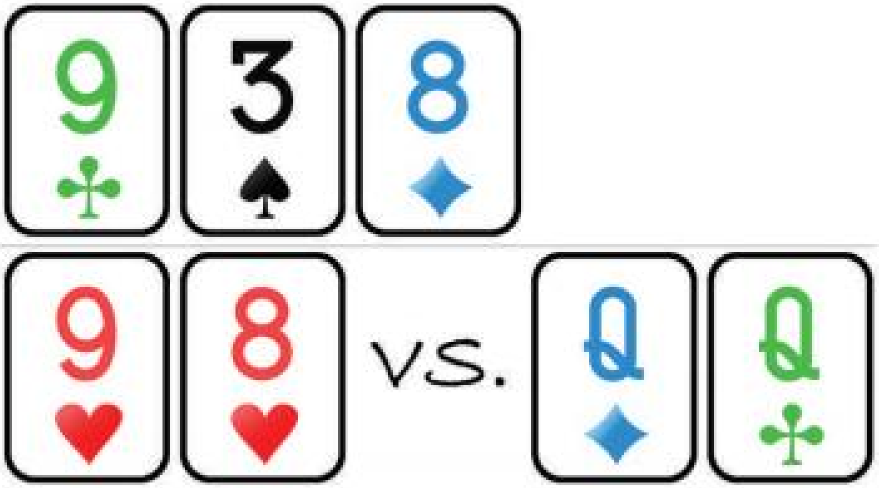
Outs: 36

Equity % 73

Odds: 0.37 : 1

Profit : $ 109

☒ Call ☐ =EV ☐ Fold



Pot: $ 100

Villain Shoves: $ 80

Pot Odds: 2,25 : 1

Final pot would be: 260

Your call would be % 31 of the final pot.

Outs: 13

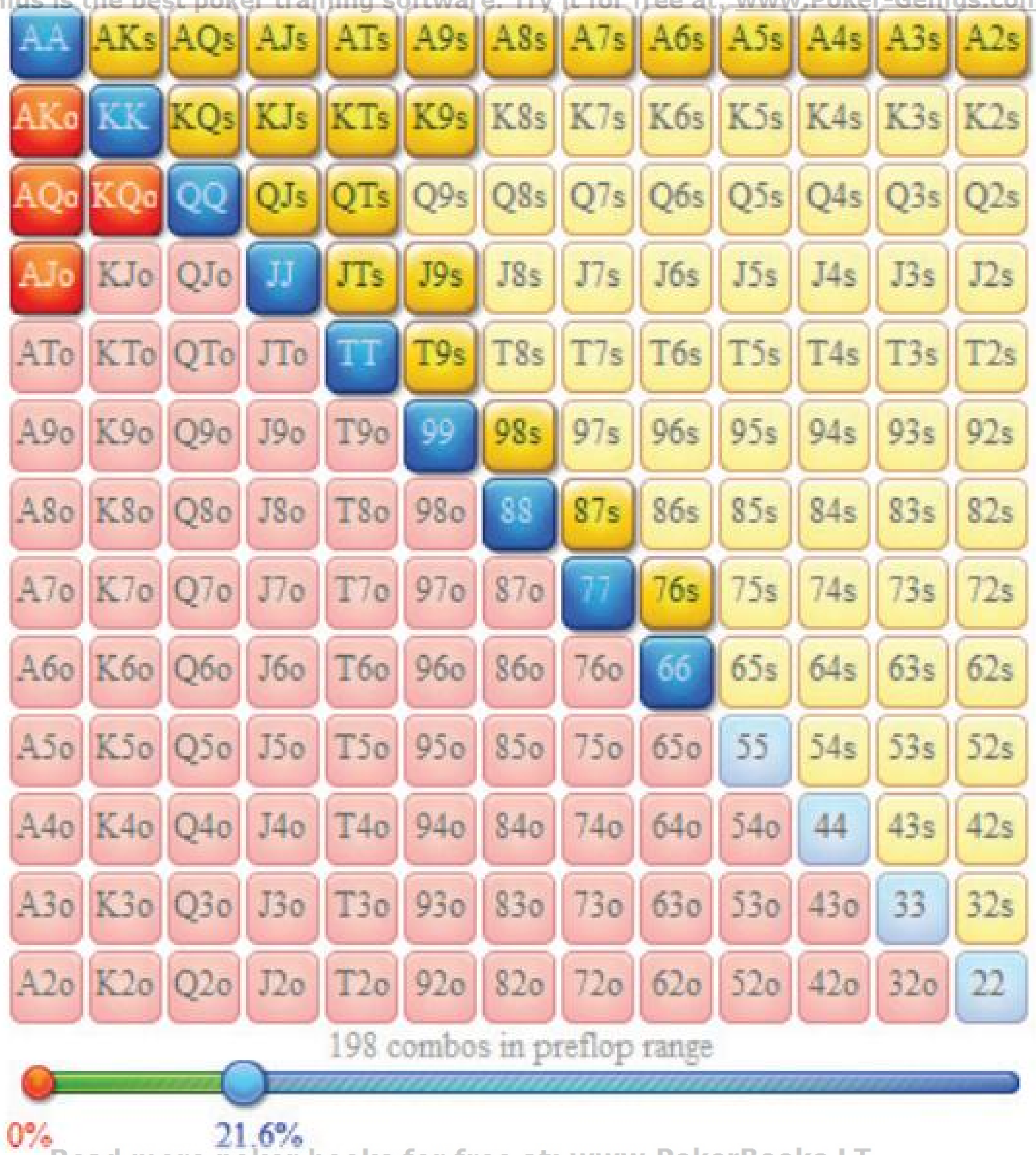
Higher equity? Call
Odds against lower? Call

Equity % 27

Odds: 2,7 : 1

Profit : $ -10

☐ Call ☐ =EV ☒ Fold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AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

9♣ 3♠ 8♦

? ? vs. Q♦ Q♣

Set	6	combos	x	-55	Profit	= -330
Open ender	8	combos	x	109	Profit	= 872
Two Pair	2	combos	x	-10	Profit	= -20

☒ Call ☐ =EV ☐ Fold Total: 522

8♦ 9♦ 8♥

7♠ A♠ vs. 10♥ J♥

Pot: $ 45

Villain bets $ 40

Amount behind $ 120

Pot Odds: 2.13 : 1

Final pot would be: 125

Your call would be % 32 of the final pot.

Outs: 13

Higher equity? Call
Odds against lower? Call

Equity % 29

Odds: 2.45 : 1

Profit : $-4 Makeup: $10

☒ Call ☐ =EV ☐ Fold

8♦ 9♠ 8♥

7♠ A♠ vs. 10♥ J♥

Pot: $ 45

Villain bets $ 40

Amount behind $ 120

Pot Odds: 2.13 : 1

Final pot would be: 125

Your call would be % 32 of the final pot.

Outs: 13

Higher equity? Call
Odds against lower? Call

Equity % 29

Odds: 2.45 : 1

Profit : $-4 Makeup: $10

☒ Call ☐ =EV ☐ Fold

10♠ 3♥ 6♥

A♣ 10♣ vs. 7♥ 8♥

Pot: $ 45

Villain bets $ 45

Amount behind $ 30

Pot Odds: 2.13 : 1

Final pot would be: 125

Your call would be % 32 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 13

Equity % 27

Odds: 2.7 : 1

Profit : $-6 Makeup: $16

☒ Call ☐ =EV ☐ Fold

Q♦ 8♣ 4♣

A♣ Q♣ vs. 9♦ 10♥

Pot: $ 30

Villain bets $ 25

Amount behind $ 100

Pot Odds: 2.2 : 1

Final pot would be: 80

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

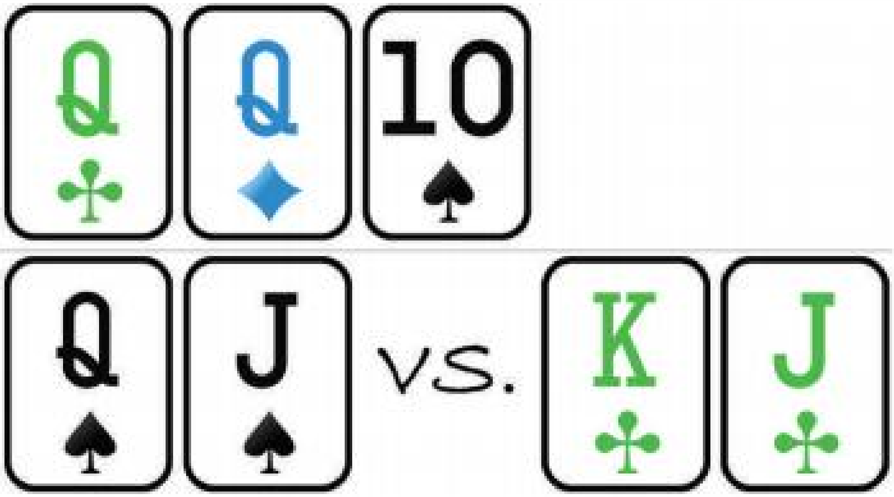
Outs: 3

Equity % 7

Odds: 13.29 1

Profit : $-19 Makeup: $253

☐ Call ☐ =EV ☒ Fold



Pot: $ 45

Villain bets $ 35

Amount behind $ 110

Pot Odds: 2.29 : 1

Final pot would be: 115

Your call would be % 30 of the final pot.

Outs: 8

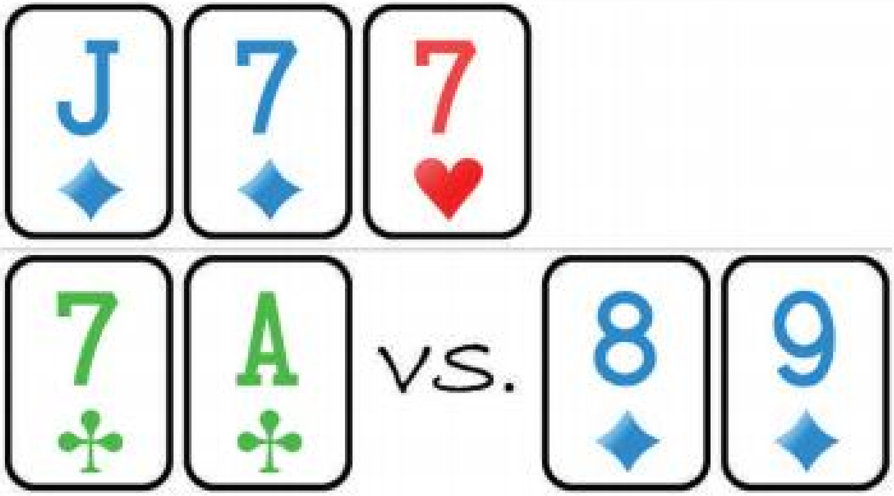
Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -14 Makeup: $64

[x] Call [ ] =EV [ ] Fold



Pot: $ 35

Villain bets $ 20

Amount behind $ 150

Pot Odds: 2.75 : 1

Final pot would be: 75

Your call would be % 27 of the final pot.

Outs: 11

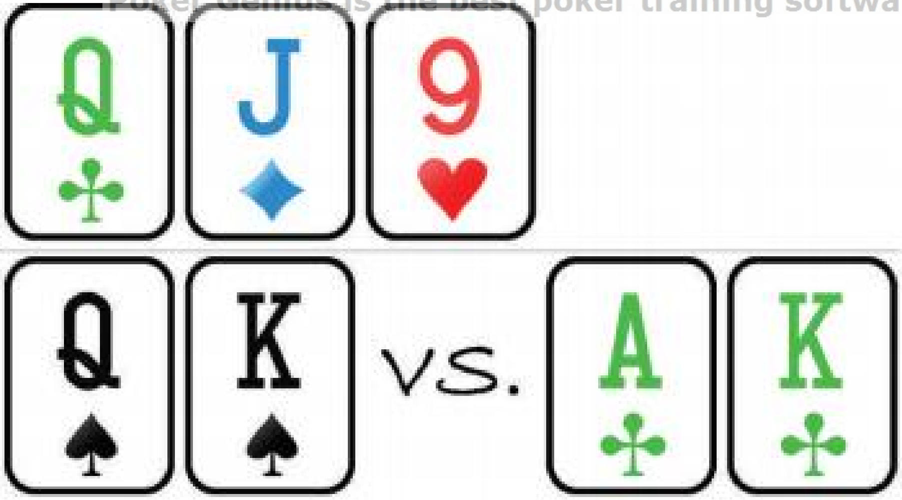
Higher equity? Call
Odds against lower? Call

Equity % 24

Odds: 3.17 : 1

Profit : $ -2 Makeup: $6

[x] Call [ ] =EV [ ] Fold



Pot: $ 80

Villain bets $ 60

Amount behind $ 130

Pot Odds: 2.33 : 1

Final pot would be: 200

Your call would be % 30 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 7

Equity % 15

Odds: 5.67 : 1

Profit : $-30 Makeup: $170

☐ Call ☐ =EV ☒ Fold

Pot: $ 35

Villain bets $ 20

Amount behind $ 110

Pot Odds: 2.75 : 1

Final pot would be: 75

Your call would be % 27 of the final pot.

Higher equity? Call
Odds against lower? Call

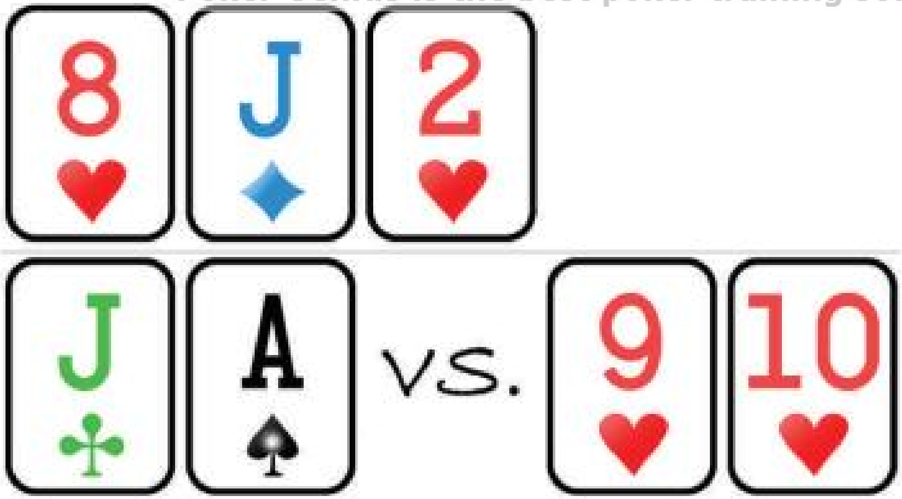
Outs: 2

Equity % 4

Odds: 24 : 1

Profit : $-17 Makeup: $408

☐ Call ☐ =EV ☒ Fold



Pot: $ 25

Villain bets $ 20

Amount behind $ 120

Pot Odds: 2.25 : 1

Final pot would be: 65

Your call would be % 31 of the final pot.

Outs: 15

Higher equity? Call
Odds against lower? Call

Equity % 33

Odds: 2.03 : 1

Profit : $1 Makeup: $-2

[x] Call [ ] =EV [ ] Fold

Pot: $ 30

Villain bets $ 20

Amount behind $ 200

Pot Odds: 2.5 : 1

Final pot would be: 70

Your call would be % 29 of the final pot.

Outs: 10

Higher equity? Call
Odds against lower? Call

Equity % 22

Odds: 3.55 : 1

Profit : $-5 Makeup: $18

[x] Call [ ] =EV [ ] Fold

10♠ A♠ 3♠

7♠ 8♠ vs. K♠ K♦

Pot: $ 40

Villain bets $ 35

Amount behind $ 150

Pot Odds: 2.14 : 1

Final pot would be: 110

Your call would be % 32 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 7

Equity % 16

Odds: 5.25 : 1

Profit : $-18 Makeup: $95

- [x] Call
- [ ] =EV
- [ ] Fold

K♦ 10♥ K♥

A♣ K♣ vs. 7♥ 8♥

Pot: $ 35

Villain bets $ 25

Amount behind $ 110

Pot Odds: 2.4 : 1

Final pot would be: 85

Your call would be % 29 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 8

Equity % 18

Odds: 4.56 : 1

Profit : $-9 Makeup: $41

- [x] Call
- [ ] =EV
- [ ] Fold

K♥ 8♠ 5♠

A♣ K♣ vs. 6♥ 7♥

Pot: $ 55

Villain bets $ 40

Amount behind $ 120

Pot Odds: 2.38 : 1

Final pot would be: 135

Your call would be % 30 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $-16 Makeup: $73

☒ Call ☐ =EV ☐ Fold

3♦ 5♣ A♥

A♦ K♦ vs. A♣ 2♣

Pot: $ 30

Villain bets $ 20

Amount behind $ 110

Pot Odds: 2.5 : 1

Final pot would be: 70

Your call would be % 29 of the final pot.

Outs: 7

Higher equity? Call
Odds against lower? Call

Equity % 16

Odds: 5.25 : 1

Profit : $-9 Makeup: $47

☒ Call ☐ =EV ☐ Fold

Pot: $ 10

Villain bets $ 10

Amount behind $ 110

Pot Odds: 2.5 : 1

Final pot would be: 70

Your call would be % 29 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 20

Odds: 4 : 1

Profit : $-6 Makeup: $24

☒ Call ☐ =EV ☐ Fold

Pot: $ 40

Villain bets $ 20

Amount behind $ 200

Pot Odds: 2.5 : 1

Final pot would be: 70

Your call would be % 29 of the final pot.

Outs: 11

Higher equity? Call
Odds against lower? Call

Equity % 24

Odds: 3.17 : 1

Profit : $-4 Makeup: $13

☒ Call ☐ =EV ☐ Fold

8♣ 2♥ 8♦

A♠ 8♠ vs. 9♦ 9♣

Pot: $ 25

Villain bets $ 20

Amount behind $ 110

Pot Odds: 2.25 : 1

Final pot would be: 65

Your call would be % 31 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 4

Odds: 24 : 1

Profit : $ -18 Makeup: $ 432

☐ Call ☐ =EV ☒ Fold

A♥ A♣ 8♣

K♦ K♣ vs. 7♣ 6♣

Pot: $ 60

Villain bets $ 35

Amount behind $ 85

Pot Odds: 2.71 : 1

Final pot would be: 130

Your call would be % 27 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -12 Makeup: $ 55

☒ Call ☐ =EV ☐ Fold

4♠ 5♣ 6♥

J♥ J♠ vs. 6♦ 8♦

Pot: $ 25

Villain bets $ 15

Amount behind $ 100

Pot Odds: 2.67 : 1

Final pot would be: 55

Your call would be % 27 of the final pot.

Outs: 9

Higher equity? Call
Odds against lower? Call

Equity % 20

Odds: 4 : 1

Profit : $ -4 Makeup: $16

☒ Call ☐ =EV ☐ Fold

2♥ 4♦ 9♠

9♦ J♥ vs. 8♣ 8♠

Pot: $ 35

Villain bets $ 25

Amount behind $ 150

Pot Odds: 2.75 : 1

Final pot would be: 75

Your call would be % 27 of the final pot.

Outs: 2

Higher equity? Call
Odds against lower? Call

Equity % 4

Odds: 24 : 1

Profit : $ -17 Makeup: $408

☐ Call ☐ =EV ☒ Fold

K♣ Q♦ 4♠

K♦ Q♣ vs. J♦ 10♦

Pot: $ 90

Villain bets $ 80

Amount behind $ 250

Pot Odds: 2.13 : 1

Final pot would be: 250

Your call would be % 32 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -35 Makeup: $160

☒ Call ☐ =EV ☐ Fold

A♦ 8♦ 6♥

A♣ K♣ vs. 6♦ 7♦

Pot: $ 55

Villain bets $ 45

Amount behind $ 300

Pot Odds: 2.22 : 1

Final pot would be: 145

Your call would be % 31 of the final pot.

Outs: 14

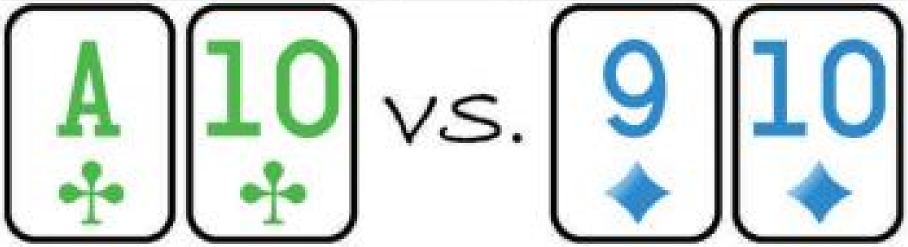
Higher equity? Call
Odds against lower? Call

Equity % 31

Odds: 2.23 : 1

Profit : $0 Makeup: $0

☒ Call ☐ =EV ☐ Fold



Pot: $ 70

Villain bets $ 55

Amount behind $ 110

Pot Odds: 2.27 : 1

Final pot would be: 180

Your call would be % 31 of the final pot.

Outs: 6

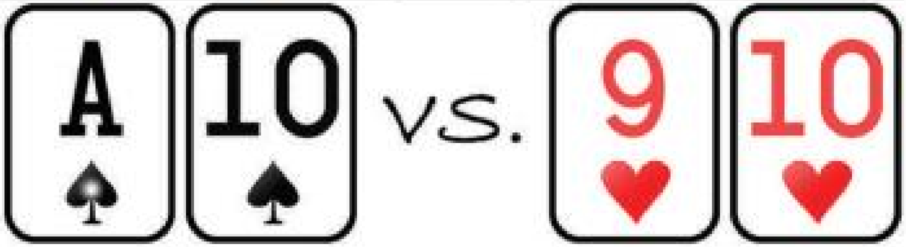
Higher equity? Call
Odds against lower? Call

Equity % 13

Odds: 6.69 : 1

Profit: $-32 Makeup: $214

[x] Call [ ] =EV [ ] Fold



Pot: $ 85

Villain bets $ 60

Amount behind $ 90

Pot Odds: 2.42 : 1

Final pot would be: 205

Your call would be % 29 of the final pot.

Outs: 3

Higher equity? Call
Odds against lower? Call

Equity % 7

Odds: 13.29 1

Profit: $-45 Makeup: $598

[ ] Call [ ] =EV [x] Fold

A♥ J♦ 7♠

A♣ 3♣ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 9

Odds: 10.11 : 1

Profit : $ -32 Makeup: $324

☐ Call ☐ =EV ☒ Fold

A♥ J♦ 7♠

A♣ J♣ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 9

Odds: 10.11 : 1

Profit : $ -32 Makeup: $324

☐ Call ☐ =EV ☒ Fold

A♥ J♦ 7♠

7♥ 7♣ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 4

Higher equity? Call
Odds against lower? Call

Equity % 9

Odds: 10.11 : 1

Profit : $- 32 Makeup: $324

☐ Call ☐ =EV ☒ Fold

A♥ J♦ 7♠

K♦ Q♦ vs. 8♦ 9♦

Pot: $ 60

Villain bets $ 45

Amount behind $ 180

Pot Odds: 2.33 : 1

Final pot would be: 150

Your call would be % 30 of the final pot.

Outs: 6

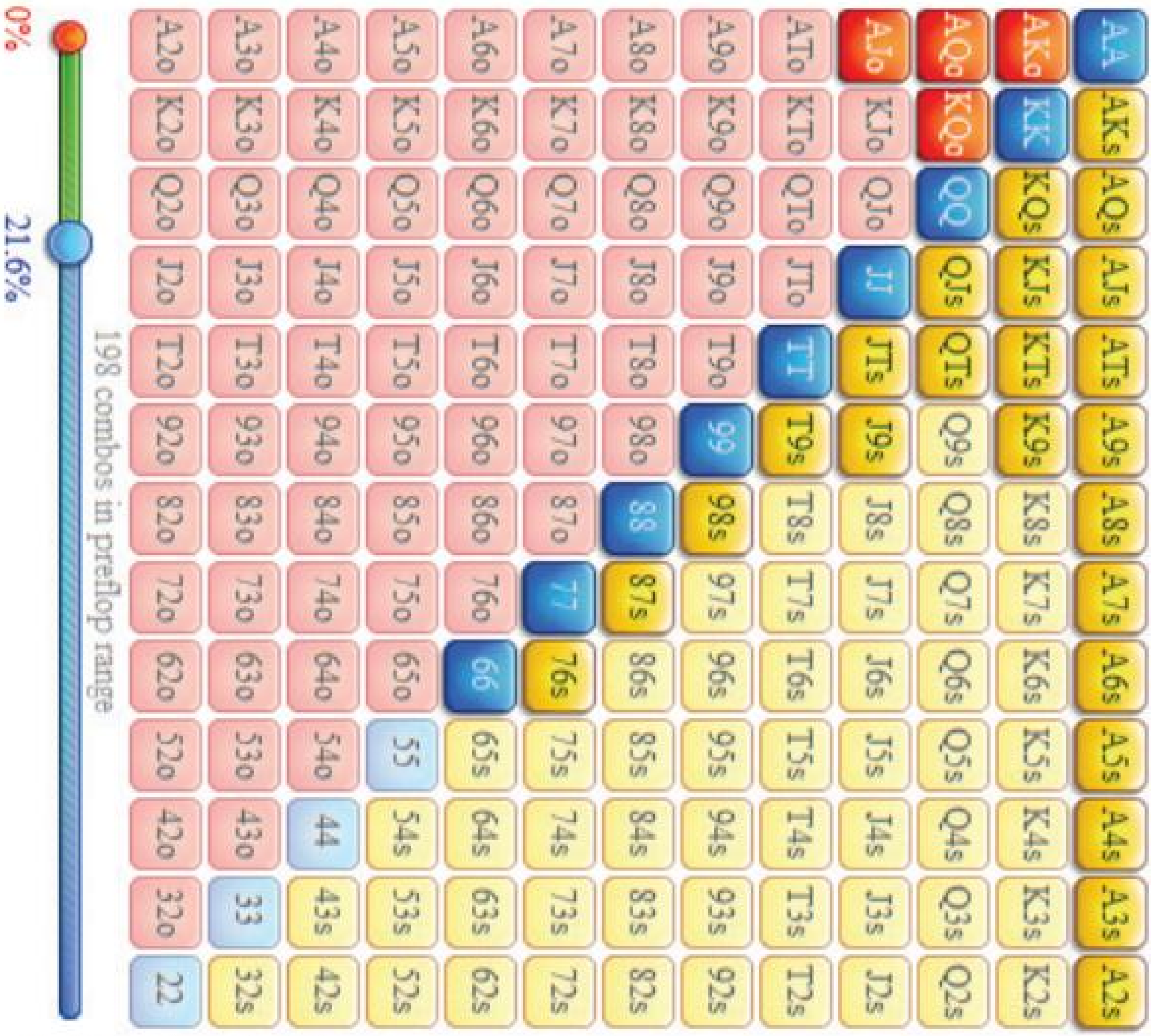
Higher equity? Call
Odds against lower? Call

Equity % 9

Odds: 10.11 : 1

Profit : $- 32 Makeup: $324

☐ Call ☐ =EV ☒ Fold



0%
21.6%
198 combos in preflop range

A♥ J♦ 7♠

? ? vs. 8♦ 9♦

Top pair	46 combos	x	-20	Estimated Return	= -920
Two Pair	11 combos	x	15	Estimated Return	= 165
Set	9 combos	x	15	Estimated Return	= 135
Gut shot	30 combos	x	-40	Estimated Return	= -1200

☐ Call ☐ =EV ☒ Fold Total: -1820

9♠ J♥ 6♥

J♣ A♣ vs. 7♠ 8♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: 2.23 : 1

Final pot would be: 210

Your call would be % 31 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $-27 Makeup: $123

☐ Call ☒ =EV ☐ Fold

9♠ J♥ 6♥

10♠ Q♠ vs. 7♠ 8♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: 2.23 : 1

Final pot would be: 210

Your call would be % 31 of the final pot.

Outs: 10

Higher equity? Call
Odds against lower? Call

Equity % 22

Odds: 3.55 : 1

Profit : $-19 Makeup: $67

☐ Call ☐ =EV ☒ Fold

9♠ J♥ 6♥

A♥ K♥ vs. 7♠ 8♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: 2.23 : 1

Final pot would be: 210

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

Outs: 10

Equity % 22

Odds: 3.55 : 1

Profit : $-19 Makeup: $67

☐ Call ☐ =EV ☒ Fold

9♠ J♥ 6♥

6♦ 6♠ vs. 7♠ 8♠

Pot: $ 80

Villain bets $ 65

Amount behind $ 200

Pot Odds: 2.23 : 1

Final pot would be: 210

Your call would be % 31 of the final pot.

Higher equity? Call
Odds against lower? Call

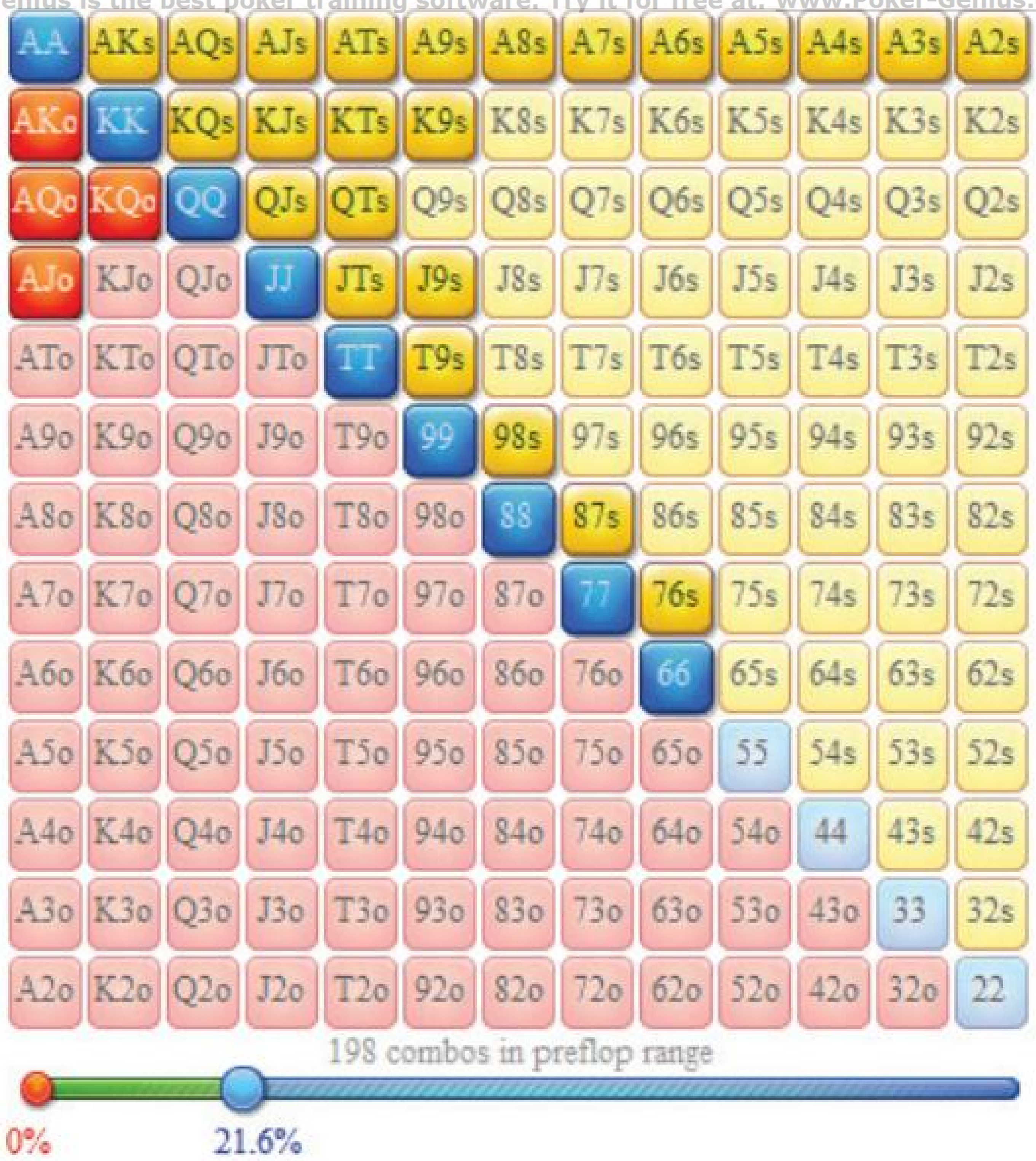
Outs: 8

Equity % 18

Odds: 4.56 : 1

Profit : $-27 Makeup: $123

☒ Call ☐ =EV ☐ Fold


AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

9♠ J♥ 6♥

? ? vs. 7♠ 8♠

Top pair	21 combos	x	15	Estimated Return	= 315
Open ender	7 combos	x	-20	Estimated Return	= -140
Nut FD	9 combos	x	-20	Estimated Return	= -180
Set	9 combos	x	15	Estimated Return	= 135

☒ Call ☐ =EV ☐ Fold Total: 130

5♥ Q♣ 2♣

A♠ Q♠ vs. A♣ K♣

Pot: $ 90

Villain bets $ 80

Amount behind $ 155

Pot Odds: 2.13 : 1

Final pot would be: 250

Your call would be % 32 of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 27

Odds: 2.7 : 1

Profit : $ -13 Makeup: $35

☒ Call ☐ =EV ☐ Fold

5♥ Q♣ 2♣

K♠ K♦ vs. A♣ K♣

Pot: $ 90

Villain bets $ 80

Amount behind $ 155

Pot Odds: 2.13 : 1

Final pot would be: 250

Your call would be % 32 of the final pot.

Outs: 12

Higher equity? Call
Odds against lower? Call

Equity % 27

Odds: 2.7 : 1

Profit : $ -13 Makeup: $35

☒ Call ☐ =EV ☐ Fold

5♥ Q♣ 2♣

5♦ 5♣ vs. A♣ K♣

Pot: $ 90

Villain bets $ 80

Amount behind $155

Pot Odds: 2.13 : 1

Final pot would be: 250

Your call would be % 32 of the final pot.

Outs: 8

Higher equity? Call
Odds against lower? Call

Equity % 18

Odds: 4.56 : 1

Profit : $ -35 Makeup: $160

☐ Call ☒ =EV ☐ Fold

5♥ Q♣ 2♣

J♦ J♥ vs. A♣ K♣

Pot: $ 90

Villain bets $ 80

Amount behind $155

Pot Odds: 2.13 : 1

Final pot would be: 250

Your call would be % 32 of the final pot.

Outs: 15

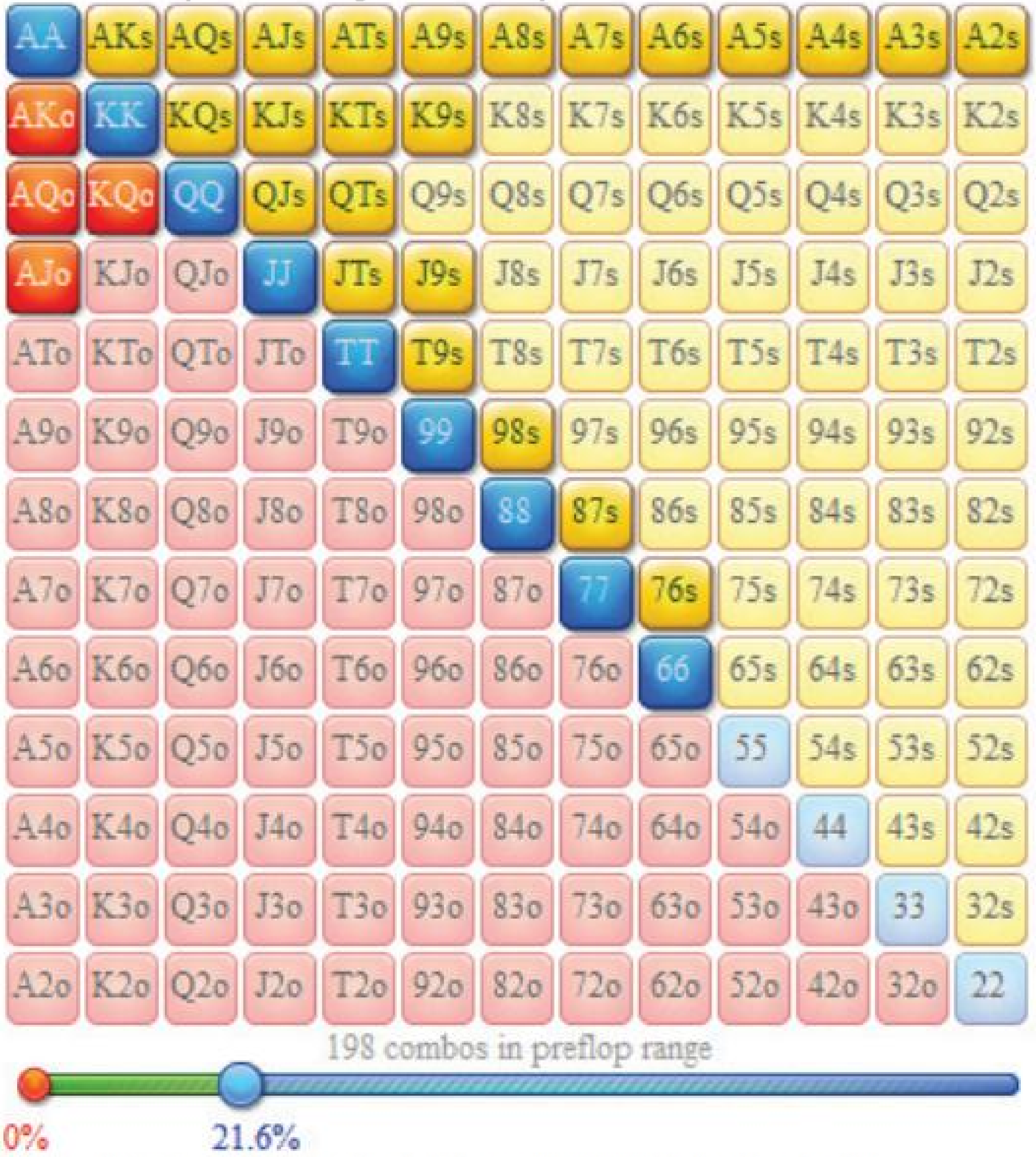
Higher equity? Call
Odds against lower? Call

Equity % 31

Odds: 2.23 : 1

Profit : $ -3 Makeup: $7

☒ Call ☐ =EV ☐ Fold

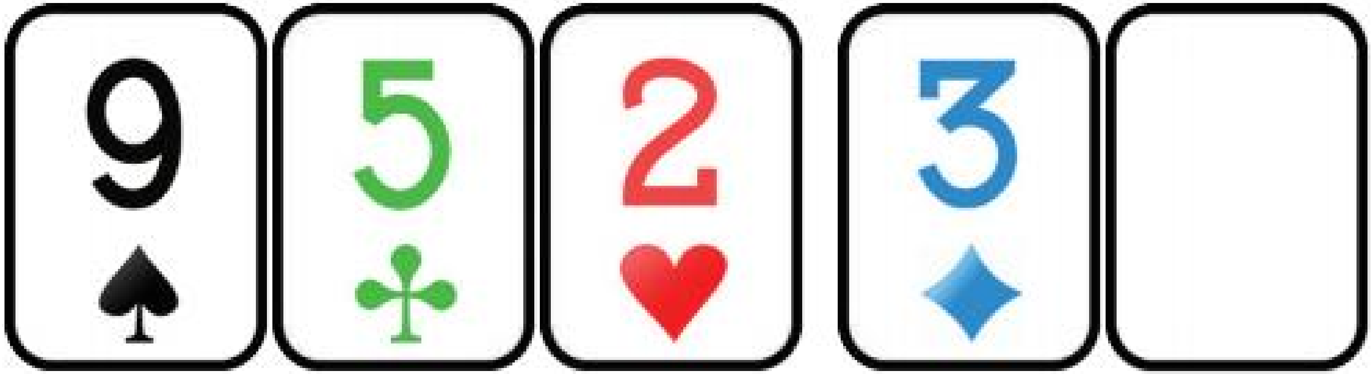

AA AKs AQs AJs ATs A9s A8s A7s A6s A5s A4s A3s A2s
AKo KK KQs KJs KTs K9s K8s K7s K6s K5s K4s K3s K2s
AQo KQo QQ QJs QTs Q9s Q8s Q7s Q6s Q5s Q4s Q3s Q2s
AJo KJo QJo JJ JTs J9s J8s J7s J6s J5s J4s J3s J2s
ATo KTo QTo JTo TT T9s T8s T7s T6s T5s T4s T3s T2s
A9o K9o Q9o J9o T9o 99 98s 97s 96s 95s 94s 93s 92s
A8o K8o Q8o J8o T8o 98o 88 87s 86s 85s 84s 83s 82s
A7o K7o Q7o J7o T7o 97o 87o 77 76s 75s 74s 73s 72s
A6o K6o Q6o J6o T6o 96o 86o 76o 66 65s 64s 63s 62s
A5o K5o Q5o J5o T5o 95o 85o 75o 65o 55 54s 53s 52s
A4o K4o Q4o J4o T4o 94o 84o 74o 64o 54o 44 43s 42s
A3o K3o Q3o J3o T3o 93o 83o 73o 63o 53o 43o 33 32s
A2o K2o Q2o J2o T2o 92o 82o 72o 62o 52o 42o 32o 22
198 combos in preflop range
0%
21.6%

5♥ Q♣ 2♣

? ? vs. A♣ K♣

Top pair	24 combos	x 20	Estimated Return	= 480
Overpair	6 combos	x 20	Estimated Return	= 120
Set	3 combos	x 0	Estimated Return	= 0
Pocket pair below TP	36 combos	x 0	Estimated Return	= 0

☒ Call ☐ =EV ☐ Fold Total: 600



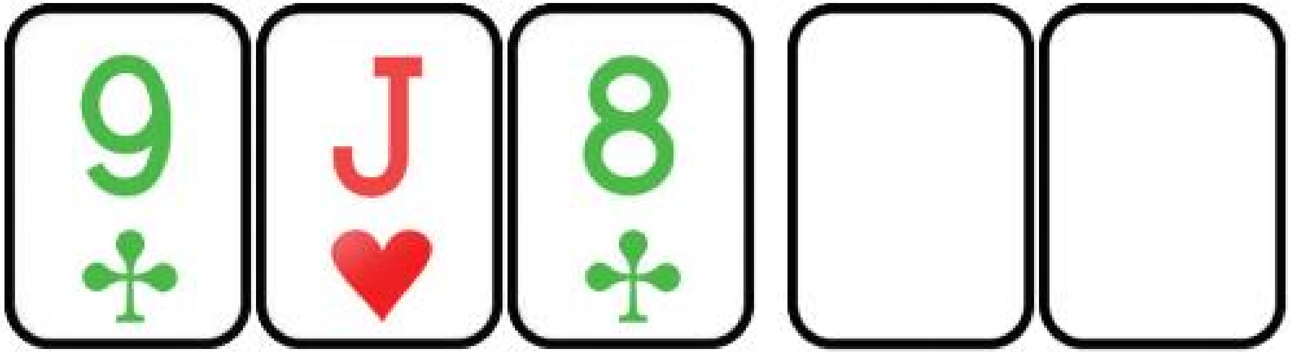
Pot: Villain bets $30 into $50
$150 stacks before you call
Vilain will call with JJ or better

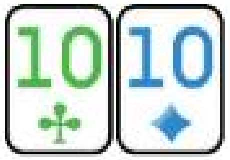
Equity when called: %___18___

Loss when called: ___90___

Win when folded to: ___80___

Required folding % to break even: ___53___





Pot: Villain bets $25 into $30

$150 stacks

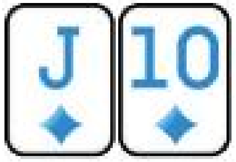
Vilain will call with top pair or better, two overs and a flush draw or better

Equity when called: %__35__

Loss when called: __35__

Win when folded to: __55__

Required folding % to break even: __39__



Pot: $110

$50 stacks

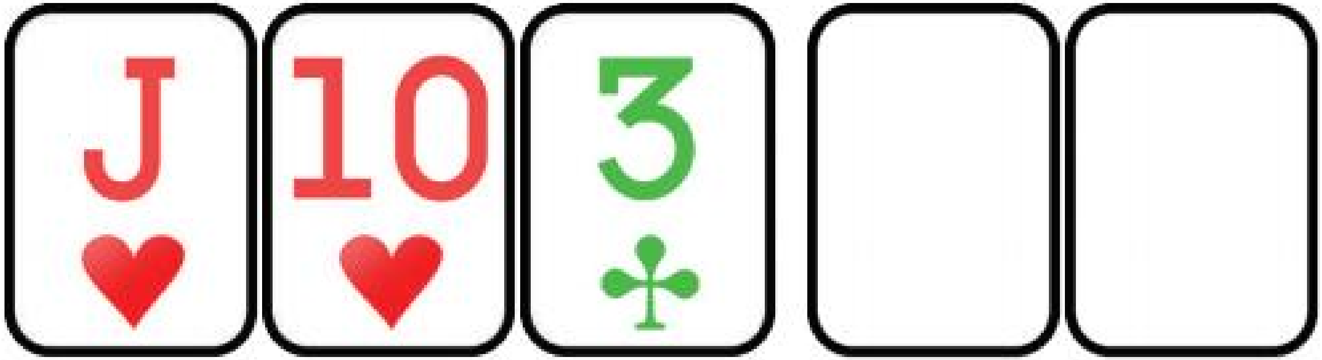
Vilain will call with top pair or better

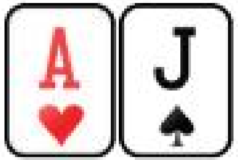
Equity when called: %__85__

Loss when called: ___0__

Win when folded to: __110__

Required folding % to break even: ___0__





Pot: $50

$35 stacks

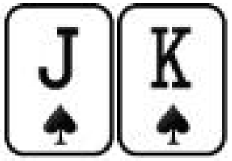
Vilain will call with any pair any draw

Equity when called: %__65___

Loss when called: __0___

Win when folded to: __50___

Required folding % to break even: __0___



Pot: $100

$90 stacks

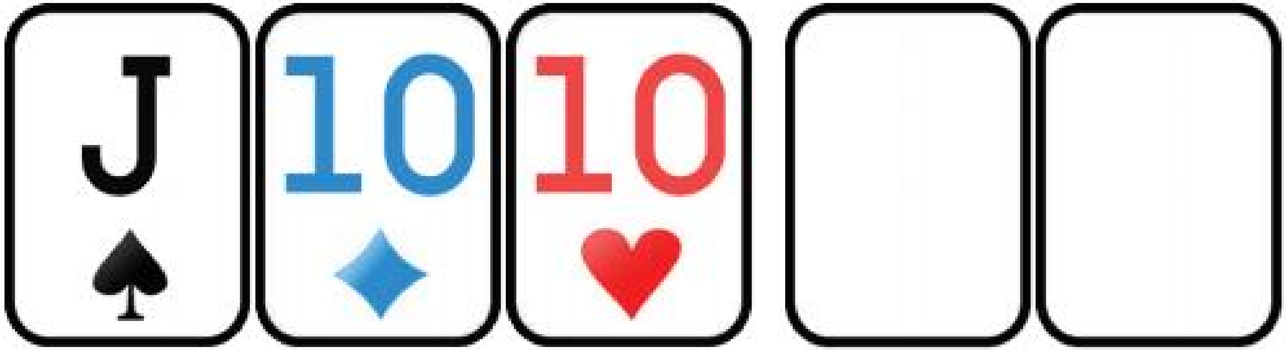
Villain will call with any boat or better

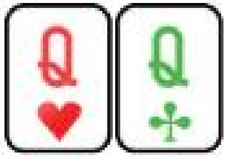
Equity when called: %__10__

Loss when called: __60__

Win when folded to: _100__

Required folding % to break even: __38__





Pot: $75

$150 stacks

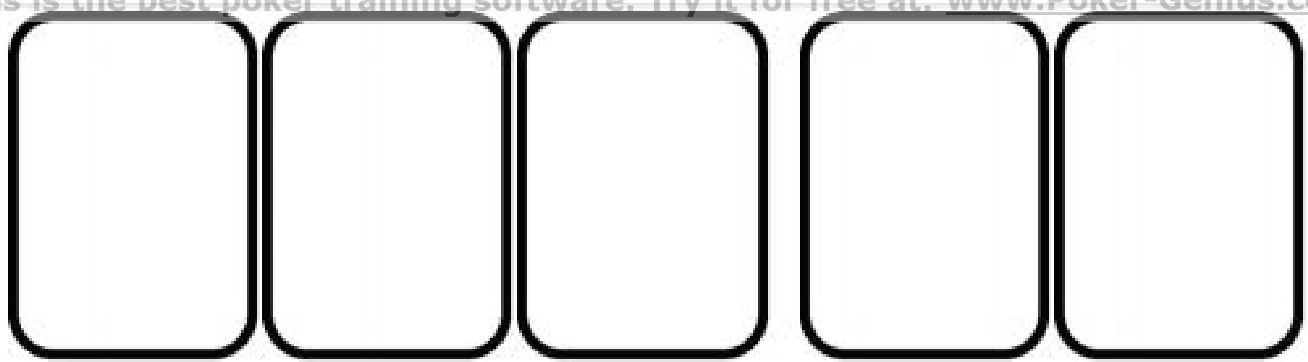
Villain will call with top pair or better or with an open ended straight draw or AK with back door flush

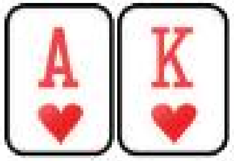
Equity when called: %__47___

Loss when called: ____0___

Win when folded to: __150___

Required folding % to break even: ___0____





Pot: Villain bets $30 into $50

$120 stacks before you call

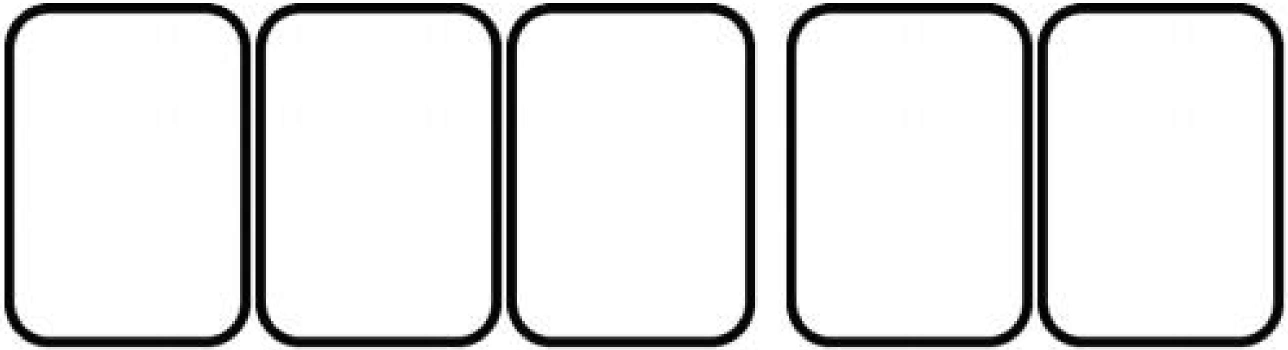
Villain will call with AQ+ or 99+

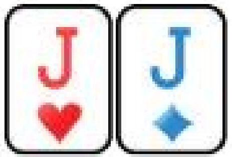
Equity when called: %__51__

Loss when called: __0___

Win when folded to: __80___

Required folding % to break even: __0___





Pot: $30 into $50

$200 stacks

Villain will call with QQ+ and AKs

Equity when called: %__25__

Loss when called: __90__

Win when folded to: __80__

Required folding % to break even: __52__

APPENDIX

Combinatorics You Can Use at the Table.

This is a reprint from the appendix of Poker Plays You Can Use

When I make a big call or laydown at the table, I will make note of it and then do the math at home. It can take a while using Flopzilla to figure out if you did the right thing. How can you do the same kind of analysis at the time when the information is the most valuable? First, as you run these analyses away from the table, you will build up intuition and pattern recognition. It will be much like how you no longer need to run a simulation to know that AK vs. QQ is about 50/50. This is an approximation but a useful one. The system outlined here is also an approximation, but it is something that can be done at the table. That is worth something.

This system is meant for use on the river when bluff catching. When Villain bets into you, the critical decision is how often that bet is a value bet and how often it is a bluff. You need to approximate the amount of combinations in each category.

Here is a classification of the final boards that we can have:

	No flush draw	Missed flush draw (front **or** back door)	Missed flush draws (front **and** back door)	3-flush	4-flush	5-flush
Unpaired	A♣ 3♦ 7♠ J♥ K♠	A♣ 3♦ 7♠ J♣ K♠	A♣ 3♦ 7♦ J♣ K♠	A♣ 3♦ 7♦ J♦ K♠	A♣ 3♦ 7♦ J♦ K♦	A♦ 3♦ 7♦ J♦ K♦
Paired	A♣ 7♦ 7♠ J♥ K♠	A♣ 7♦ 7♠ J♣ K♠	A♣ 3♦ J♦ J♣ K♠	A♣ 3♦ J♦ K♦ J♣	A♦ 3♦ J♦ J♣ K♦	N/A
Double Paired	A♣ 7♦ 7♠ J♥ J♠	A♠ 7♦ 7♠ J♥ J♦	A♠ 7♦ 7♠ J♦ J♥	A♠ 7♦ 7♠ J♦ J♠	N/A	N/A
Tripped	A♣ 7♦ 7♠ J♥ 7♣	A♣ 7♣ 7♠ J♥ 7♦	A♣ 7♣ 7♠ J♠ 7♦	A♠ 7♣ 7♠ J♠ 7♦	N/A	N/A
Full House	A♣ 7♦ 7♠ A♥ 7♣	A♣ 7♦ 7♣ A♥ 7♠	A♣ 7♦ 7♣ A♦ 7♠	N/A	N/A	N/A
Quads	7♥ 7♦ 7♠ 7♣ A♥	7♥ 7♦ 7♠ A♥ 7♣	N/A	N/A	N/A	N/A

The grey regions do not rely on combinatorics at the table as much and are less common. We will be focusing on unpaired and single paired boards from rainbow to a possible flush.

On unpaired boards, we are most likely to want to count combinations of plausible holdings by Villain where he hit or was drawing to:

- Flushes (missed or hit)
- Straights (missed or hit)
- Sets
- Two pairs
- Top pair with a range of kickers

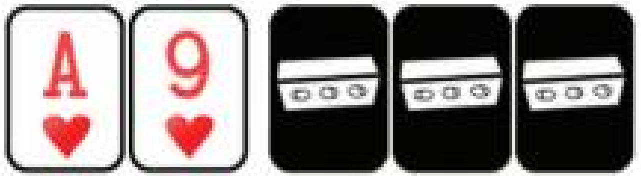
What follows are estimates that can be done at the table quickly and are easily memorized. A quick reference is at the end of them all. There are other factors you can bring in to refine them such as unsuited connectors like QJo are played more often than 56o and holding blockers. You can make refinements at your discretion later. For instance, you might believe there are any suited cards in Villain's range and need to modify that count.

Two card flush counts:

The flushes are the hardest to count and are why this system was invented.

Here are typical boards by the river where you might want to count flushes or missed flush draws. All of this depends on how many suited cards are in Villain's range. These charts are reasonable for your average low stakes live player.

or



	Villain might hold Ace	Villain might hold King	Villain might hold suited connectors
All (3 flush)	9	9	~7 (depends on board)
Simplified	7	3	3

Modify the above for each condition:

- -2 for every other high board flush card (9-Q)
- +2 for every low board flush card (2-5)
- +2 if they play one-gappers
- +2 if they play suited garbage
- +2 again if they really play any suited garbage
- +2 on two-flush boards
- -2 for each flush card in your hand except A and K
- +2 if AK are both not with Villain (just a correction)

What do you do with these charts? Look at the board and your hand. If you cannot see the Ace of flush, Villain might have it. That means there are nine Ax hands he can have. In the final row, we give our lessened estimate of how many are in his range because not all of them are played all the time.

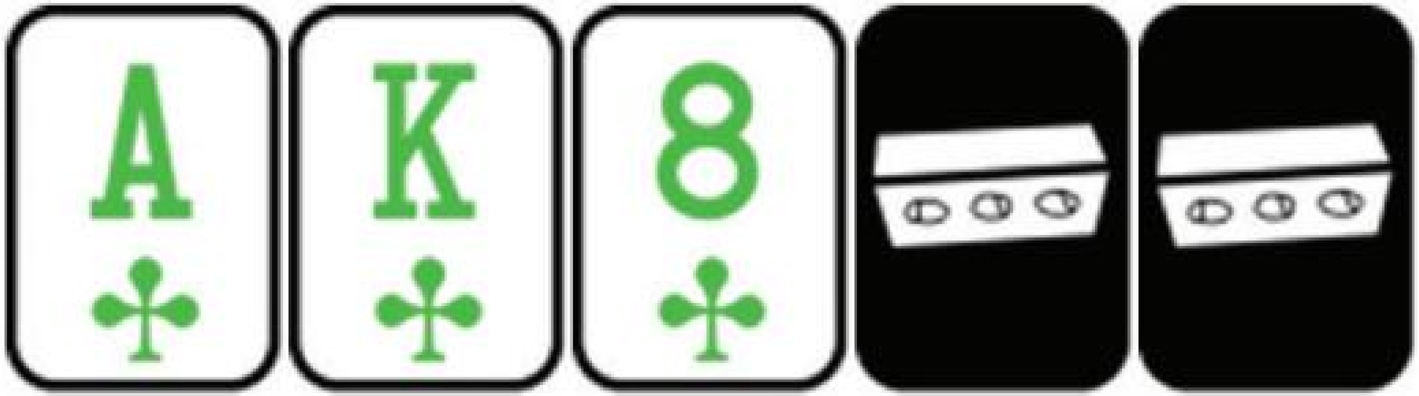
The same with King high flush draws. This one is lessened even more because they are not as attractive as Ax.

Suited connectors will vary widely based on the board having blockers. This was also simplified for expediency. Count these if you think Villain can play suited connectors.

Add up the values from the bottom row that apply to this Villain and board.

Next, we need to modify this base value based on the situation to get the final count. Look at each case and make the modification to your count. Note that if you can see both the Ace and King, then we need to add two to their count, mostly as a correction.

Let us look at three seemingly similar boards to see that these approximations make sense.



Against a villain who does not play suited gappers, this system gives five combos

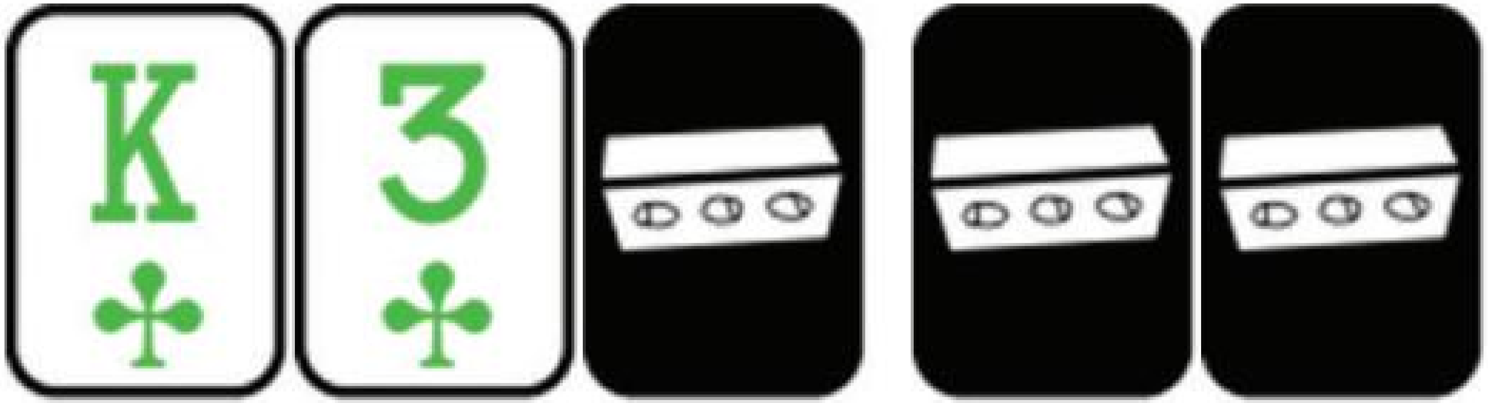
- 3 for Suited connectors
- 2 to compensate for AK on board

A different three-flush board.

This system gives 17 combos

- 7 for suited Aces
- 3 for suited Kings
- 3 for suited connectors
- 4 because low cards do not block many flushes

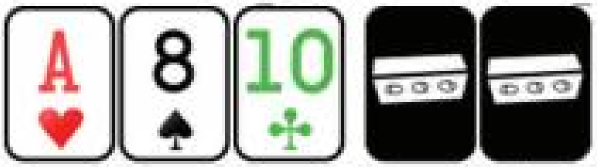
A final board where the flush draw never got there.

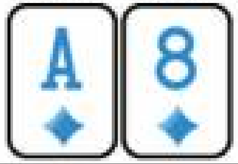
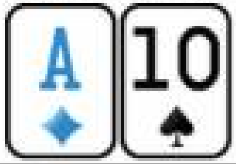


This system gives 14 combos

- 7 for suited Aces
- 3 for suited connectors
- 2 for low card
- 2 for missed flush

Two card straights counts:



	Suited only 	Suited or unsuited 
Blocker in hand	1-2	6
Unblocked	2-3	9
Simplified	2 per pair	7 per pair

*(unsuited are played less)

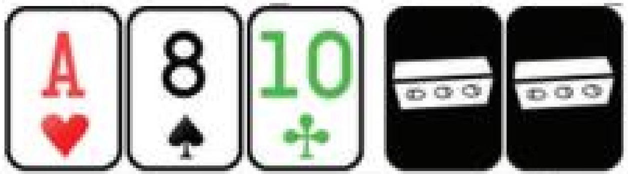
Here, you can have blockers in hand. Villain can play the specific two ranks either suited or unsuited. The simplified counts reflect the fact that unsuited cards get played less often. The higher the two ranks, the less this is true. You can modify a bit as needed.

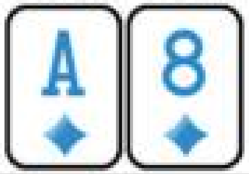
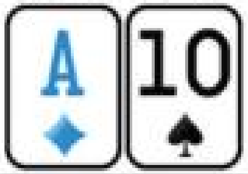
Sets- count per rank:

	Unblocked	Blocked
All	3	1
Simplified	3	1

Sets are easy to count.

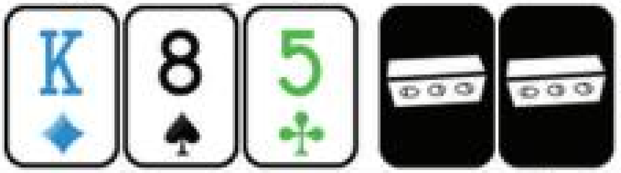
Two pair- count per pair of ranks:

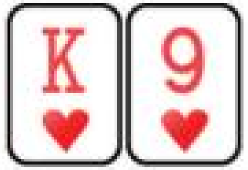
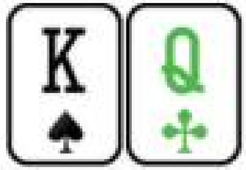


	Suited only 	Suited or unsuited 
Blocker in hand	1-2	6
Unblocked	2-3	9
Simplified	2 per pair	7 per pair

Very similar to two card straight counts.

Single board pair- count by kicker ranks:



	Suited only 	Suited or unsuited 
Pair blocker in hand	2	8-9
Unblocked	3	12
Simplified	2 per rank	10 per rank

There are a lot more of these to count if you are concerned about them.

Even with this simplified counting scheme, this can be hard to keep in your head. Thankfully, you have a whole bunch of chips in front of you. Use them as counters. Make a pile of "bluffs" and start putting chips in there as you count them. Do the same for value hands. Depending on how many chips you have, you could consider them all the same value and compare the heights of the piles. This makes reducing the fraction much easier. A pile of 12 chips versus 4 chips can quickly be halved twice to become 3 to 1. Even if you had 13 chips to 4 chips, this is close enough to work at the tables.

Let us try this system on some boards:

From the betting, we think Villain has

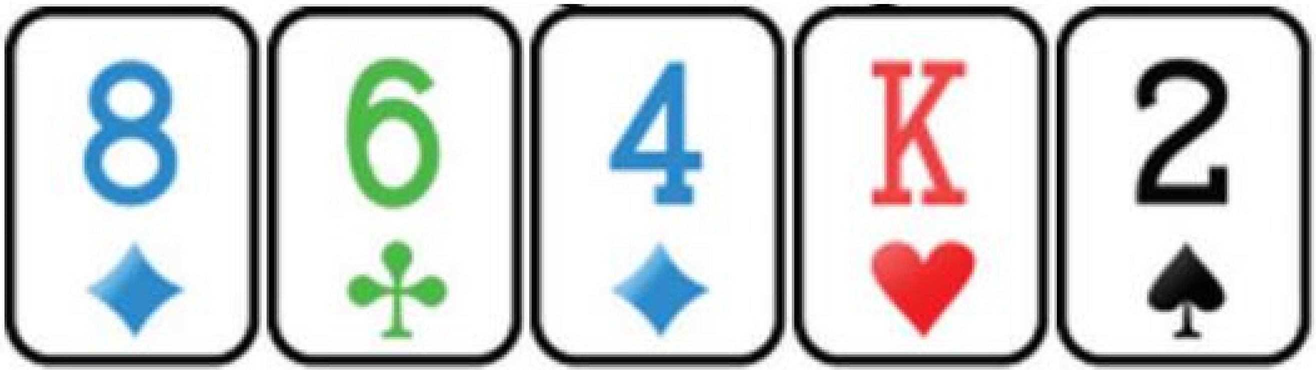
- Bluff: missed club flush
- Bluff: missed 67s or 78s
- Value: two pair- 45s
- Value: Sets- 44, 55, 99

- Clubs: 14 combos
  - 7 combos for the Ace
  - 3 combos for suited connectors
  - 2 combos for the low flush card
  - 2 combos because flush missed
- Straights: 6 combos
  - (4-1) combos for 67s (flushes already counted)
  - (4-1) combos for 78s (flushes already counted)

- Two pair: 2 combos
  - 2 combos of 45s
- Sets: 9 combos
  - 3 combos each for (4,5,9)

This yields 20 bluffs versus 11 value

Think about a board where we hold the Ace of flush and King of spades. Do we believe Villain is bluffing the flush or flopped a straight? Villain is in the Big Blind defending against our Button raise so he will play one-gappers, a wide range of suited garbage, and 75o.



- Diamonds: 12 combos
  - 3 for the King
  - 3 for suited connectors
  - 2 for 1-gappers
  - 2 for the low card
  - 2 for flush missing
  - 2 for suited garbage

    - 2 for real suited garbage

  - Straight: 10 combos

    - 10 combos for the 57

While these are simply approximations, they are easy to remember and calculate.

On paired boards, all the estimates above are fine if you remember the board pair does not count towards two pair since estimates are for using both cards to pair. With paired boards you will also want to count open trips and full houses.

For counting full houses there are two kinds on single paired boards:

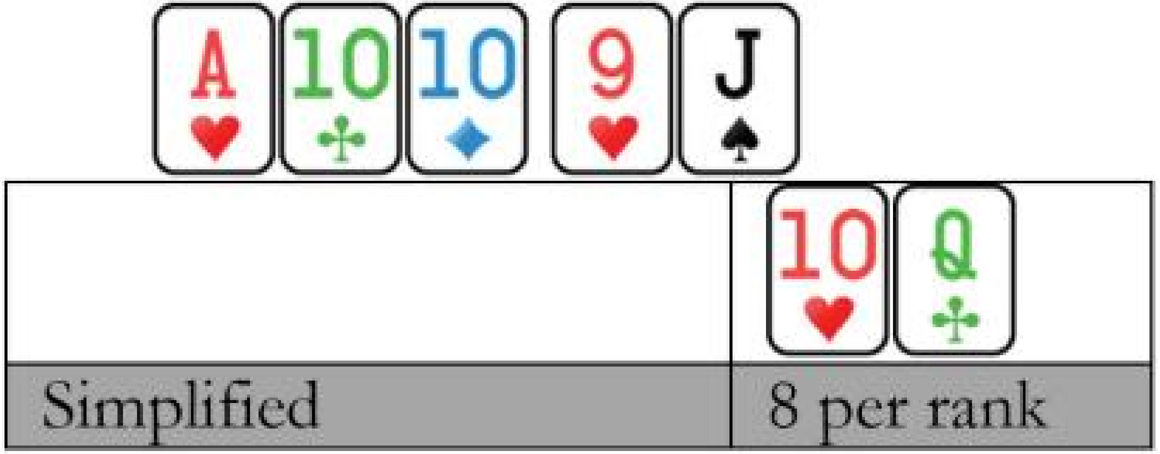
- Pocket pairs
- Unpaired hole cards matching the board pair and one other

Full house- count by type and rank:

A♥ 10♣ 10♦ 9♥ J♠

	Paired only 9♦ 9♠	Unpaired 10♠ 9♦
Simplified	3 per rank	6 per rank

Open Trips- count by kicker rank:



The value of this system is that it is easy to do in your head or by counting out chips at the table. When you are counting these out, contemplating your action, it just looks like you are playing with your chips.

Simplified Combinatorics for Needing Two Cards

Flushes: 7-3-3 (Ace, King, connectors)

- -2 for every board flush card (9-Q)
- +2 for every (2-5)
- +2 if they play one-gappers
- +2 if they play suited garbage
- +2 again if they really play any suited garbage
- +2 on two-flush boards
- -2 for each flush card in your hand except A and K
- +2 if AK are both not with Villain (just a correction)

Straights: 4-10 (Suited, either)

Sets: 3-1 (Unblocked, blocked)

Two pair: 2-7 (Suited, either)

Single pair per kicker: 2-10 (Suited, either)

Full houses: 3-6 (pocket pairs, unpaired holding)

Open Trips: 8 per rank of kicker

Computer Tools

The answer key for this book was created with a calculator, pen and paper and a few computer tools:

Flopzilla

This excellent software is available from Flopzilla.com. This is excellent for counting combos. Just press tab to go from percentage mode to combo mode. Flopzilla is not really made for hand on hand analysis, you need to make the range just one combo and put the other hand in as the "dead cards" for that analysis. Flopzilla is not able to do range on range calculations either. You can also get the equities on just the flop or turn instead of all the way to the river. The hotness visualization makes it easy to count outs.

Equilab

This software from PokerStrategy.com shines for hand on hand analysis and range on range analysis. It does not count combos or outs as well. It is easier for solving many of the problems in this book when you are doing them very quickly, but does not have as much information for study.

Fold Equity Calculator

This is a web page that works on mobile or PC:

http://RedChipPoker.com/fold-equity-calculator/

It is a simple fold equity calculator and that is all it does. It was developed by us at Red Chip Poker, so if you have improvements, let us know.

These tools are all essentials. It is not a matter of either/or, but both. There are also similar poker calculators for mobile. The author uses Poker Cruncher on iPhone but there are lots of great alternatives.

Obligatory Silly Painting

Final thank you to Laura for being a huge grammar geek.

About the Author

After the great success of his first book, Poker Plays You Can Use, in the spring of 2015 Doug quit his 9-to-5 engineering job to do this kind of stuff full-time in Las Vegas. He runs Red Chip Poker along with James Sweeney, Ed Miller and Christian Soto.

Doug does poker coaching by the hour and in three day boot camp style engagements. Say hello any time you see him at the tables or give him a call to tune up your game:

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