GOOD AT BAD

A Short Guide to Muck Poker



RAY ZORFOLD

Good at Bad

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Ray Zorfold

“This is fun but incredibly tilting. Perfect game.”

Aaron Barone
Pro Poker Player

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Muck Poker is the home of Hold'em Low, its variations, and Lowmaha (Omaha Low). The strategy lessons in chapters 2-9 use standard Hold'em Low. Chapters 10-19 explain what changes when you take a different seat.

Engineered and delivered using frontier AI models and proprietary agentic infrastructure.

No guarantee of winning is made.

Contents

It Started as a Joke	5
Meet Hold'em Low	7
Your Cards Are Optional	10
Before You Put Chips In	14
The Board Helps Them Too	17
Is the Next Card Worth It?	21
Give Them a Decision	27
Your Turn	32
Before You Blame the Cards	36
Hold'em Low Short Deck	38
All-in or Fold	39
Short Deck All-in or Fold	40
The Nit Game	41
Red or Black	42
Nit + Red or Black	43
The AK Game	44
Introducing Lowmaha	45
Crazy Pineapple Low	46
Double Board Bomb Pots	47
Going Further: Read the Solver	48
Keep This Page Handy	53
Your Seat Is Open	55

CHAPTER 1

It Started as a Joke

April Fools' ended. We kept building.

Muck Poker started as an April Fools' joke. Take Texas Hold'em, keep the betting, and let the worst hand win. We call that game Hold'em Low. Muck Poker is the room we built around it. Finally, a use for all those cards you complain about.

I got into poker during the early-2000s boom, playing online and around the East Coast, especially Atlantic City. After Black Friday, I drifted away. I had a kid. Life got busy. Poker had to wait.

When I got back into it, I still loved the game. Eventually, that led to building a version where pocket aces are a problem. A perfectly reasonable way to spend your time.

The joke was easy to explain. Playing it gave us something to argue about.

You'd flop a pair and start hoping for cards that let you leave it out. You'd improve on the turn, feel briefly pleased with yourself, then realize the same card helped the other player more. You could still bluff, still make a good call, and still talk yourself into a terrible one. Changing which hand wins hadn't cured any of that.

That was enough to keep us building after April Fools'. We worked on the tables, added bots and tournaments, and kept getting pulled back into the game itself. What should you actually play? When was a call worth it? Which Hold'em habits helped, and which ones were quietly costing you chips?

Bob and his dog Larry came over from another project I was working on. I put them at the table, and the projects became one. Bob has the confidence of a man who has never reviewed a hand. Larry has reviewed several. Their relationship is under some strain.

The strategy questions eventually led to solved charts and a trainer. Now there's a book. We've put a concerning amount of work into an April Fools' joke.

But I wanted to understand what we'd built, and this is the guide I wanted when we started. We'll work out which five cards count, what the board does for both players, and whether you should pay to see another card. You'll follow Larry through the hands, usually with Bob across the table.

Make your decision before reading the answer. If you get it wrong, nobody needs to know. Bob would tell you he knew it all along.

You can play online or deal it at your home game. You don't need a solver to start. Just a deck, some chips, and friends who already insist they only lose because they get bad cards.

When you're ready to move tables, start with what changes. Short Deck changes the cards. All-in or Fold changes the betting. A side game gives you something else to win or owe while the hand plays out. Lowmaha changes which five cards you can take to showdown. Cash games and tournaments are ways to play those rules: in cash you can leave with your stack; in a tournament you play for a finish.

Let's see about those bad cards.

CHAPTER 2

Meet Hold'em Low

Let’s play one hand.

In Hold'em Low, **the lowest poker hand wins**. No pair beats a pair. A pair beats two pair. For two unpaired hands, compare the highest cards first, then work down: 8-6-4-3-2 beats 8-6-5-3-2.

You get two private cards. Everyone shares the board: three cards on the **flop**, one on the **turn**, and one on the **river**. There is betting before the flop and after each stage.

At showdown, your hand is the lowest five-card combination you can make from all seven cards. You can use both private cards, one, or neither. Aces are always high.

What are my legal actions?

- **Check:** pass without betting, when there’s no outstanding bet to match.
- **Bet:** put chips in first during this betting round.
- **Call:** match the current bet.
- **Raise:** increase the current bet.
- **Fold:** leave this hand and give up your claim to its pot.

If everyone else folds, you win without showing your cards. If two or more players reach showdown, the lowest hand wins. Equal winning hands split the pot.

Larry and Bob take a seat

Larry is Bob's dog. Bob believes this makes him the responsible adult. Larry is waiting for evidence.

We'll follow Larry's decisions, with Bob across the table. When I ask what you would do, take Larry's seat.

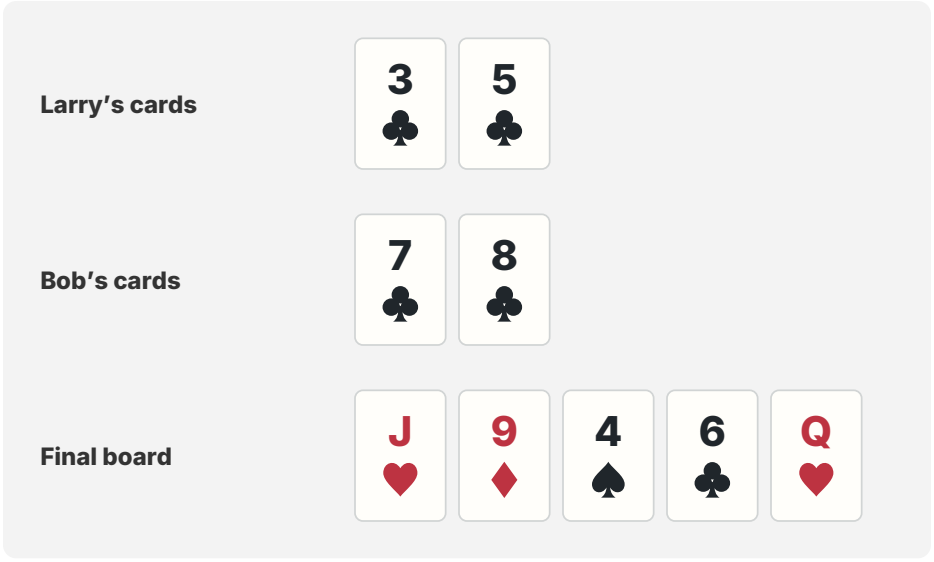
Heads-up means two players. Each starts with 100 big blinds, written **100 BB**. A big blind is our unit of chips. The small blind posts 0.5 BB; the big blind posts 1 BB.

Larry is the big blind with **3♣ 5♣**. Bob has the button, the marker that sets the action order. Heads-up, the button is also the small blind: Bob acts first before the flop and last afterward. His cards stay hidden until showdown.

Street	Action	Pot after action
Blinds	Bob posts 0.5. Larry posts 1.	1.5 BB
Preflop	Bob raises to 2.5. Larry adds 1.5 to call.	5 BB
Flop: J♥ 9♦ 4♠	Larry checks. Bob checks.	5 BB
Turn: 6♣	Larry checks. Bob checks.	5 BB
River: Q♥	Larry checks. Bob bets 2.5. Larry calls 2.5.	10 BB

Before the river bet, Larry has 97.5 BB left. After his call, each player has put 5 BB into the pot and has 95 BB behind. No chips have vanished between streets.

Now Bob turns his cards over



Larry’s lowest five are **9-6-5-4-3**. Bob’s are **9-8-7-6-4**. The nines match; Larry’s six beats Bob’s eight. Larry collects the 10 BB pot and finishes with 105 BB. Bob finishes with 95 BB.

Larry called without knowing Bob’s cards. Chapter 6 revisits that decision with several possible holdings.

CHAPTER 3

Your Cards Are Optional

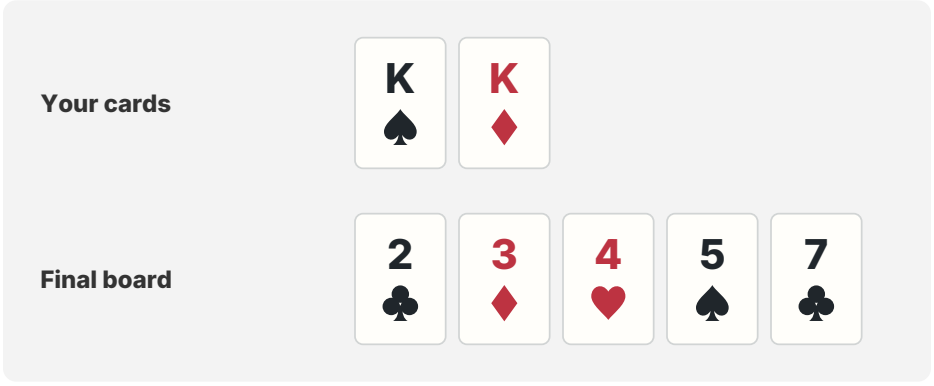
Two, one, or none. Five cards still have to count.

You've been dealt two kings. Terrible news. But those kings aren't glued to your final hand.

Leave either or both private cards out when they do not help. Only your lowest five-card combination counts.

Two kings. Zero obligation.

Your move: Larry has the kings below. Pick his five before reading the answer. How many kings must he keep?



Your lowest five are **7-5-4-3-2**. All five come from the board. Both kings sit this one out.

That's the best possible final Hold'em Low hand: 7-5-4-3-2 in mixed suits.

> **But everyone still in the hand can use that board too. Nobody can beat it. You split the pot among the eligible players.**

Bob gets to use those five too. Larry would like that rule reviewed.

Sometimes you use one

You hold **2♠ K♦**. The final board is **3♣ 4♦ 5♥ 7♠ 9♣**.

Your two replaces the board's nine. Your lowest five are again **7-5-4-3-2**. You use one hole card and four board cards. The king contributes absolutely nothing.

Sometimes you use both

You hold **7♠ 2♠**. The final board is **5♦ 4♣ 3♥ K♥ K♦**.

Use both hole cards with the five, four, and three. That makes **7-5-4-3-2**. Leave both board kings out.

Your move: bench the ace

Larry has A♥ 3♣. The board is 2♦ 4♠ 6♥ 8♣ K♦. Choose his lowest five before reading below.

LARRY HAS AN ACE. DOES HE HAVE TO KEEP IT?

LARRY **SHARED BOARD**



Choose five. Leave two. Read the answer below.

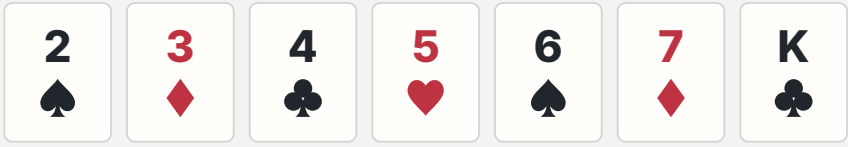
Answer: 8-6-4-3-2. Keep Larry's three; leave the ace and king out. If Bob holds a three and a seven, he can use the board's two, four, and six to make 7-6-4-3-2. His seven-high beats Larry's eight-high, so this is not an automatic tie.

Why seven-high, not six-high?

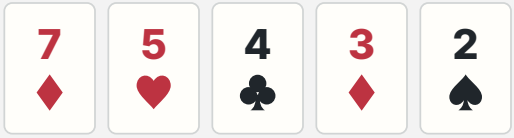
Five distinct ranks topped by a six must be 6-5-4-3-2. Those five form a straight, which loses to a high-card hand (no pair, straight, or flush). Seven-high lets you leave a gap: **7-5-4-3-2**, the best final hand when the suits are mixed.

KEEP THE GAP. LEAVE THE STRAIGHT.

SEVEN AVAILABLE CARDS



SELECTED FIVE



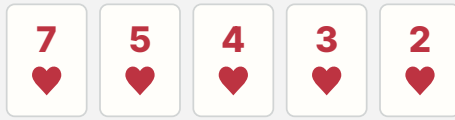
7-high

No pair. No straight.

Leave out the six and king.

From these seven cards, leave out the six and king. Keep 7-5-4-3-2. A straight can appear among your cards without being your selected final hand.

POSSIBLE FINAL HANDS AT THE RIVER

01	**No pair**	
02	**One pair**	
03	**Two pair**	
04	**Flush**	
05	**Full house**	

Hold'em Low. Best at the top. Lowest five of seven.

With seven cards available, you can always avoid selecting trips, a straight, quads, or a straight flush. A flush is forced only when all seven cards share a suit. A full house is forced by four cards of one rank and three of another.

For one pair, compare the pair first, then the remaining cards from highest downward. For two pair, compare the higher pair first, then the lower pair, then the fifth card. Lower wins at the first difference. Suits never break ties.

Try it: cover the selected hand in a diagram, choose your five, then compare.

CHAPTER 4

Before You Put Chips In

Your starting cards are only the first part of the decision.

Two aces arrive. In Hold’em, you’re delighted. In Hold'em Low, you’ve brought two of the highest cards in the deck, and they match. Excellent work.

A useful starting hand gives you low, distinct ranks to work with. But your two cards are only part of the story. The board, the price, and the players still to act all matter.

Start with low and unpaired

A hand like **2♠ 3♦** gives you two small ranks. If the board cooperates, both can contribute to a low five-card hand.

Compare that with **K♠ K♦**. To finish without a pair, you must leave at least one king out. To finish below king-high, you must leave both out and play the board.

The price and position still matter. You can check kings for free in the big blind if nobody raises; facing a raise requires a new decision.

Ask three questions before entering

First, what can my cards contribute? Low distinct ranks can replace higher board cards. A high pair needs more help. Second, what is the price? A free check and a large call are different decisions. Third, who can still act? A player behind you can raise and change the price again.

Same board. Different contribution.

Larry brings 2♠ 3♦. Bob brings K♠ K♦. On 4♣ 5♥ 7♠ 9♦ K♣, which private cards actually earn their seat?

LOW CARDS DO THE WORK

SHARED BOARD



PRIVATE CARDS	SELECTED FIVE
LARRY	
	
BOB	
	

Larry makes 7-5-4-3-2. Bob can only use K-9-7-5-4. The pair of kings looks impressive until you ask what it contributes.

Suited connectors aren’t a bonus prize

In Hold’em, connected and suited cards offer drawing potential. In Hold'em Low, focus on how those ranks help you make a lower final hand.

Connected low cards can still be useful because they’re low. A straight cannot be your selected final hand at the river: with seven cards available, you can break the sequence and choose a lower five.

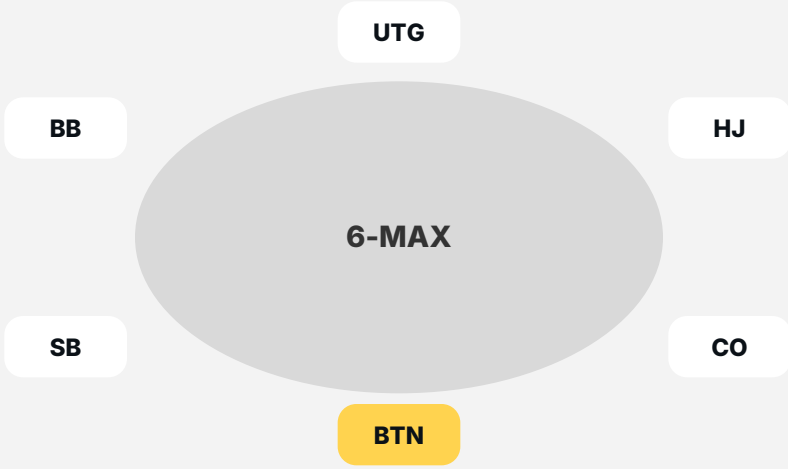
In Hold'em Low, only seven cards of the same suit force a river flush. Otherwise, you can include an off-suit card to break it. Don’t reject a hand merely because its suits match.

Position changes the decision

At a six-handed table, an early player must make a choice while several opponents still have all their options. A player on the button sees what those players did first. After the flop, the button acts last when still in the hand.

In the chart, **BTN** is the button, **SB** the small blind, and **BB** the big blind. **UTG** (under the gun) acts first preflop; **HJ** (hijack) and **CO** (cutoff) are the next two seats.

POSITION AT A SIX-HANDED TABLE



Preflop starts UTG. Postflop starts left of the button.

Late position lets you see more of the action before deciding. A table full of folds presents a different situation from a raise and two calls, even if your cards have not changed.

Heads-up has a special order: the button posts the small blind and acts first before the flop, then acts last after the flop.

CHAPTER 5

The Board Helps Them Too

Same cards. Different turn. Different lesson.

Same flop. Two possible turns.

Take Larry's seat with 2♠ 3♦ against Bob's 4♣ 5♣. Bob's cards are exposed for this lesson. Each new board card belongs to both players.

ONE FLOP. TWO VERY DIFFERENT TURNS.

LARRY		BOB		FLOP		
2♠	3♦	4♣	5♣	2♥	6♦	K♠

4♥	**LARRY LEADS** K-6-4-3-2 beats K-6-5-4-2
7♥	**BOB LEADS** 7-6-5-4-2 beats K-7-6-3-2

On the flop, you had a pair of twos. They had king-high with no pair. You were behind.

Start with the seven. It gives you a fifth distinct rank. You can finally leave out one of the twos and make **K-7-6-3-2**. No pair. Much better.

Then look across the table. They can use **7-6-5-4-2**, leaving the king out altogether.

> **Larry improved to king-high. Bob improved to seven-high. Larry is still losing.**

Now imagine a four instead

Go back to that same flop and replace the turn seven with **4♥**.

- **Your lowest five:** K-6-4-3-2
- **Their lowest five:** K-6-5-4-2

Now you're ahead. Both hands start with a king and a six, but your four is lower than their five. The four gave you a useful new rank while duplicating one they already held.

That's why "a card that improves me" and "an out that puts me ahead" are different things.

Read both hands, not just your own

Every time a board card arrives, ask:

- What are my lowest five now?
- Could this card let them drop a high card or escape a pair?
- Which hands am I actually beating?

You cannot see their cards while deciding. Think about the hands they could have, based on the board and their actions. A small board card can help several of those hands at once.

And don't stop at the turn. A hand that's ahead now can lose on the river.

Drawing your way out of trouble

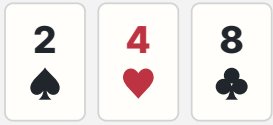
New hand. Larry has 2♣ 7♦. Bob has 6♣ 9♦. The flop is 2♠ 4♥ 8♣. We're showing Bob's cards so you can follow both hands.

AN ESCAPE, NOT A REPLACEMENT

LARRY



FLOP



BOB



TURN



LARRY: 8-7-5-4-2

BOB: 8-6-5-4-2

Both improve. Bob still leads.

Larry has a pair of twos. Bob has nine-high with no pair. Bob is ahead, and is taking this as evidence of his considerable talent.

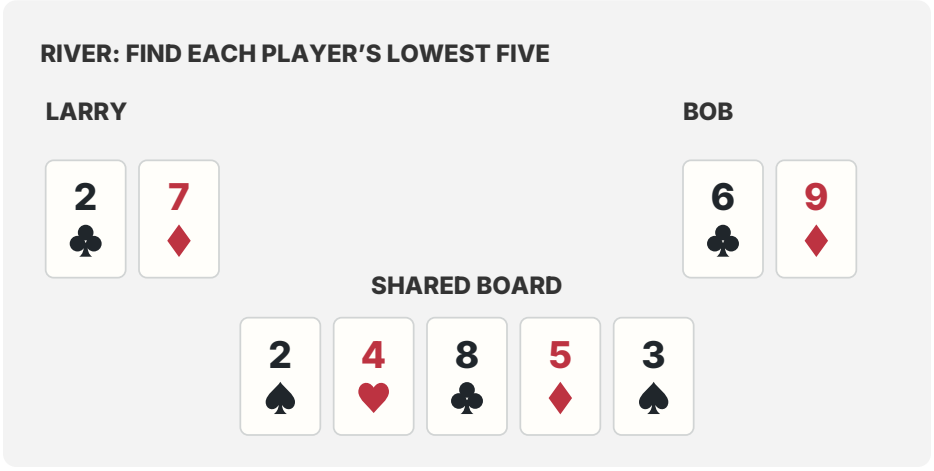
The turn is 5♦. Larry can leave out one of his twos and make **8-7-5-4-2**. He hasn't discarded a card. He now has six to choose from.

Bob drops his nine and makes **8-6-5-4-2**. Their eights match; Bob's six beats Larry's seven.

> **Larry escaped the pair. He hasn't escaped Bob.** Improving your hand and taking the lead are two different jobs.

The river changes the argument

Your move: The river is 3♠. Pick each player's lowest five before reading on. Can Bob use his six?



Larry makes **7-5-4-3-2**, the best possible hand in standard Hold'em Low. Bob could choose 6-5-4-3-2, but that's a straight. He leaves his six out and plays **8-5-4-3-2**, the board.

Larry wins. Behind with a pair. Still behind without it. Ahead on the river. Bob would like to revisit the talent discussion.

That's drawing your way out of trouble: new cards let you leave an unwanted combination out of your final five. You're still drawing toward a better hand. It just happens to be one ordinary Hold'em would find disappointing.

Lowball players know the feeling. Razz also lets you leave a paired card out of your lowest five, although its rankings differ. In 2-7 draw, you physically discard unwanted cards. Here, the new cards belong to everyone. Your escape can be their escape too.

Being ahead now isn't the same as winning at showdown. Chapter 6 asks what a chance to improve is worth paying for.

CHAPTER 6

Is the Next Card Worth It?

A cheap draw and an expensive draw are different hands.

In Hold’em, you might count the cards that complete your straight. In Hold'em Low, you might count the cards that let you escape a pair. Either way, the question is the same: is the price of calling worth your chance of winning?

Return to Larry’s 2♠ 3♦ against Bob’s 4♣ 5♣ on Chapter 5’s flop. Keep Bob’s cards exposed so we can count every outcome exactly.

SIX OUTS. NOT QUITE THE RIGHT PRICE.

LARRY		BOB		FLOP		
2♠	3♦	4♣	5♣	2♥	6♦	K♠

231 WINS / 990 RUNOUTS

23.3%
LARRY'S EQUITY

25%
PRICE TO CALL

Call 50 / final pot 200 = 25%

FOLD: the call loses about 3.33 on average.

Exact exposed hands. All-in flop call. No ties or rake.

Six cards put you ahead

The three remaining fours and three remaining fives are your immediate outs: cards that put you in front on the turn.

Suppose the turn is **4♥**. Each player selects their lowest five:

- **You:** K-6-4-3-2
- **Them:** K-6-5-4-2

King matches king. Six matches six. Your four beats their five. You're ahead.

But a seven wouldn't do it. You'd have K-7-6-3-2, while they could drop the king and make 7-6-5-4-2. You improved, but they improved more.

Six outs, two cards to come

A familiar poker shortcut is to multiply your outs by four when both the turn and river are still to come:

> **6 outs × 4 ≈ 24%**

It lands close in this example. That does not make "outs × 4" a reliable equity formula for every Hold'em Low draw. The river can change who wins, even after a helpful turn.

For this exact matchup, we checked all 990 possible turn-and-river combinations with the Hold'em Low evaluator: **231 wins, 759 losses, and no ties.** Your actual equity, or expected share of the pot, is **23.3%.**

Is the call worth it?

There's 100 in the pot. Your opponent goes all-in for 50. You must call 50, and the final pot would be 200.

> **Required equity = your call ÷ the final pot**
> **50 ÷ 200 = 25%**

You need 25% equity. You have 23.3%. **Fold on the math.**

Calling would return about 46.67 on average from the final pot, against the 50 you put in. That's an average loss of about 3.33 per call in this exact situation.

Same calculation. Different cards to root for.

Pot odds don't change because the hand rankings are upside down. Compare the cost of calling with your chance of winning. In this hand, you're hoping to escape a pair and finish with a lower unpaired hand.

At the table, you'll estimate your chance against the range of hands they could hold.

Keep the denominator honest

For a call, divide what you must add by the total pot after you add it. If the pot was 100 and they bet 50, there is 150 in front of you. Your 50 makes the final pot 200. Dividing 50 by 150 answers a different question and gives the wrong calling threshold.

THE PRICE OF A CALL

Pot before the bet: 100. No rake.

BET SIZE	CHIPS	EQUITY NEEDED
Quarter pot	25	**16.7%**
Half pot	50	**25.0%**
Three-quarter pot	75	**30.0%**
Pot	100	**33.3%**
Twice pot	200	**40.0%**

Call / final pot

These are the equity thresholds for each price. Compare them with your estimate against the opponent's possible hands.

Will you have to pay again?

The flop example used an all-in bet. That detail matters. Calling finishes the betting between those players, and both the turn and river arrive without another payment.

If stacks remain, a flop call may buy only the turn. Your opponent can bet again. You cannot automatically compare a two-card draw estimate with the price of seeing one card and declare the call profitable.

For a quick next-card estimate, divide useful remaining cards by unseen cards. In our exact exposed-hand example, six immediate outs among 45 unseen cards make a 13.3% chance of turning one of those cards. That is not the same as 23.3% final equity across both remaining cards.

At the table, their private cards are unknown. Your unseen-card count and your estimate of which cards are useful depend on that uncertainty.

When the shortcut misleads

An apparent out can put you ahead temporarily and still lose by the river. Another card may improve both players, but improve them more. Sometimes you already have the winning hand, so counting only improvement cards badly understates your chance of winning.

Equity also includes ties. Winning half a pot contributes half as much as winning the whole thing. If an example has ties, count those shares rather than pretending every non-loss is a full win.

Use simple outs estimates when the useful cards are clear. Use the game's evaluation tools for more complicated comparisons. And when reviewing a mistake, write down whether the mistake was the price, the hand reading, or the assumption that another card would be free.

Now put their cards face down

Take Larry's seat again in the complete hand from Chapter 2. You hold **3♣ 5♣** on **J♥ 9♦ 4♠ 6♣ Q♥**. You check. Bob bets 2.5 BB into 5 BB. Calling makes a 10 BB pot, so you need **25%**.

Your 9-6-5-4-3 beats some hands and loses to others. Start with three possible holdings:

Bob could hold	Their lowest five	Your result
2♠ 3♦	9-6-4-3-2	Lose
7♣ 8♣	9-8-7-6-4	Win
K♠ K♦	Q-J-9-6-4	Win

Build the possibilities before the percentages

The betting line was a small preflop raise, checks on the flop and turn, then a half-pot river bet. Begin with hands that could reasonably take that route:

• **Better hands betting for value.** The 2♠ 3♦ holding makes a lower nine-high hand. Earlier checks do not rule it out.

• **Worse hands that still bet.** The 7♣ 8♣ holding makes a higher nine-high hand. Some players bet it too confidently.

• **Bluffs.** The kings cannot improve on the board, but a player can still try to win by making you fold.

A showdown where Bob bet a weak hand would give us a reason to include more bluffs or overconfident bets. We would need repeated observations to estimate how often he does it.

For this exercise, limit the range to these three holdings and test two sets of assumed weights after the bet.

If you assign those three hands weights of **80%, 10%, and 10%** after the bet, you win 20% of the time. Calling returns 0.20 × 10 − 2.5 = **−0.5 BB** on average. Fold beats calling.

If the weights are **60%, 20%, and 20%**, your equity is 40%. The same call returns 0.40 × 10 − 2.5 = **+1.5 BB**. Calling beats folding. This comparison does not evaluate raising.

Against someone whose shown river bets have mostly been strong, give the value-heavy estimate more attention. Against someone you have repeatedly seen bet worse hands or bluff, test the wider estimate. If reasonable estimates fall on both sides of 25%, you do not yet have a clear call. Larry can glare at Bob all evening. It still will not turn his cards face up.

CHAPTER 7

Give Them a Decision

Know whether your bet wants a call or a fold.

Start with the value bet

A value bet tries to get called by a worse Hold'em Low hand. If you have a strong low hand and think the opponent can call with a higher unpaired hand or a pair, a bet can build a pot you expect to win.

The size still matters. A small bet may be called by hands that would fold to a large bet. A large bet wins more when called, but may receive fewer calls.

Before betting, name some worse hands that might call. If you cannot, ask whether you are actually bluffing, checking for a showdown, or simply moving chips because it is your turn.

On a final board of 4♣ 5♥ 7♠ 9♦ K♣, holding 2♠ 3♦ gives you 7-5-4-3-2. An opponent holding 2♣ 6♦ makes 7-6-5-4-2. If that worse seven-high hand will call, your bet can earn value. Whether it calls depends on the price and the player.

A decent hand that should check

Keep Larry's familiar **3♣ 5♣** on **J♥ 9♦ 4♠ 6♣ Q♥**, but change the seat and pot. You are now on the button in Larry's seat. Bob checks the river. There is **10 BB** in the pot. You can check to showdown or bet 5 BB.

For this exercise, give Bob 7♣ 8♣ three times out of four and 2♠ 3♦ one time out of four. You beat the first hand and lose to the second. Assume they fold the worse hand to your bet, call with the better hand, and never raise.

Your choice	What happens	Average chips returned from here
Check	Win 10 three times in four; lose nothing more otherwise.	7.5 BB
Bet 5	Win 10 when they fold; lose your new 5 when they call.	6.25 BB

Returns count only chips won or lost from this decision. Earlier contributions are already committed.

Checking earns 1.25 BB more on average. Your hand wins often, but the bet makes every worse hand fold and every better hand call.

Change Bob's response, keep the cards

Now suppose the worse hand also calls the 5 BB bet. You win the existing 10 plus their 5 three times out of four, and lose your 5 one time out of four. Betting returns **10 BB** on average, versus 7.5 BB for checking.

These are teaching models of Bob's responses, not measured frequencies. The practical question is which worse hands he will call with.

Then consider the bluff

Yes, you can bluff in Hold'em Low. You don't need the lowest hand if everyone else folds.

A bluff is a bet that tries to make a better Hold'em Low hand give up.

What are you pretending to have?

Your bet can represent low cards that improve on the board, rather than the pairs and strong conventional poker hands a Hold'em player might expect.

Take a final board of **4♣ 5♥ 7♠ 9♦ K♣**.

- A player holding **2♠ 3♦** can make **7-5-4-3-2**.
- A player holding **K♠ K♦** can only play the board: **K-9-7-5-4**.

The kings could represent 2♠ 3♦ to an opponent who might fold. Someone actually holding 2♠ 3♦ has the best possible hand and no hand-strength reason to fold.

We would need to compare the available bluffing hands and Bob's likely responses before choosing kings for this bet.

The price of a bluff

There's 100 in the pot. You bet 50 on the river. Assume your opponent either folds or calls, and your hand always loses when called.

- When they fold, you win the existing **100**.
- When they call, you lose the **50** you just bet.

> **Break-even fold rate = bet ÷ (pot + bet)**
> **50 ÷ 150 = 33.3%**

If they fold more than one-third of the time, that pure bluff makes chips on average under these assumptions. If they fold less, it loses chips.

A larger bluff needs more folds. Betting 100 into 100 requires a fold rate above 50% if you never win when called.

This is different from the 25% equity needed to call a half-pot bet. One calculation prices your opponent's call. The other prices your attempt to make them fold.

Needing one-third folds does not mean you should bluff one-third of the time. Required success rate and strategy frequency are different quantities.

THE PRICE OF A PURE BLUFF

Pot before the bet: 100. No rake.

BET SIZE	CHIPS	FOLDS NEEDED
Quarter pot	25	**20.0%**
Half pot	50	**33.3%**
Three-quarter pot	75	**42.9%**
Pot	100	**50.0%**
Twice pot	200	**66.7%**

Bet / (pot + bet)

Same bluff. Different audience.

Keep the river bluff at 50 into 100, with a hand that always loses when called. Imagine two opponents:

Assumed response	Average result of betting
Folds 40%; calls 60%	0.40 × 100 − 0.60 × 50 = +10
Folds 20%; calls 80%	0.20 × 100 − 0.80 × 50 = −20

Both opponents call more often than they fold. The first still folds enough for this bluff to profit; the second does not.

You will not know someone's exact fold rate. Look for repeated behavior in comparable spots. A player who calls small river bets with weak hands gives you a reason to favor value bets and cut back pure bluffs. One surprising call is not a complete scouting report.

Some boards tell a terrible bluff story

If the final board itself is **7-5-4-3-2 in mixed suits**, everyone can play the best possible hand. You cannot credibly represent a better one.

A player who understands that board has no hand-strength reason to fold.

Likewise, bluffing into several opponents requires all of them to give up for you to win uncontested. More people means more hands you need to get past.

Before bluffing: name the better hands you want to fold, explain why your betting line is believable, and check whether this opponent actually folds those hands.

CHAPTER 8

Your Turn

Ten decisions. Put your answer down before reading ours.

Use standard Hold'em Low rules throughout. All cards shown in a situation belong to that situation only. When a question asks for a final hand, the river has been dealt.

1. Bench the kings

Your cards are 7♠ and 2♠. The final board is 5♦, 4♣, 3♥, K♥, K♦. Which five cards count, and how many private cards did you use?

2. Everyone has the same invitation

You hold two kings. The final board is 2♣, 3♦, 4♥, 5♠, 7♣. An opponent is still in the hand. Can they beat your selected hand? Can you beat theirs?

3. Break the tie

One player's selected final hand is 8-6-4-3-2. Another's is 8-6-5-3-2. Both are unpaired and neither is a flush. Who wins, and which comparison decides it?

4. The helpful-looking seven

You hold 2♠ and 3♦. Your opponent holds 4♣ and 5♣. The flop is 2♥, 6♦, K♠. The turn is 7♥. You escape your pair. Are you ahead?

5. The price of curiosity

The pot is 120. Your opponent goes all-in for 60. Calling costs you 60. What equity do you need to break even? Assume no deductions and no other players.

6. Same pot, bigger story

The pot is 120. You are considering a river bluff of 120. Assume one opponent, no raises, and that you always lose when called. How often must they fold for the bluff to break even?

7. No escape hatch

Your seven available ranks are 2-2-2-2-3-3-3, using legal distinct cards. Can you make two pair? What is your lowest five-card hand?

8. The second bill

On the flop, you estimate roughly 24% equity by the river. Your opponent bets, but both of you will still have plenty of chips after a call. Is comparing that 24% with the current pot odds enough to settle the decision?

9. Ahead, but should you bet?

You act last on the river after a check. The pot is 10 BB. You win at showdown 75% of the time. A 5 BB bet makes every worse hand fold, every better hand call, and nobody raise. Which earns more: betting or checking?

10. A useful observation

You have repeatedly seen an opponent call small river bets with weak hands. Does that make you more interested in pure bluffs, bets with strong hands, or neither? What should you still check before betting?

The answers

1. Both kings sit out

Use 7-5-4-3-2, including both private cards. You do not have to retain either king merely because there are two on the board. Your five selected cards are mixed suits and unpaired. This is the best possible final Hold'em Low hand.

2. A shared best hand

Both players can use the full board for 7-5-4-3-2. Neither can improve on the best possible hand, so eligible players split the pot.

3. Compare past the matching cards

The hand with the four wins. The eights match. The sixes match. Four is lower than five. Do not compare totals or average card values. Work from the highest card down until you find a difference.

4. Better is not best

No. Your lowest five are K-7-6-3-2. The opponent can make 7-6-5-4-2 and leave the king out. You improved from a pair to no pair, but they have a lower unpaired hand.

5. A quarter of the final pot

The final pot after calling would be 120 + 60 + 60 = 240. Your call costs 60. The threshold is 60 divided by 240, or 25%. The all-in condition means no further betting decision interrupts the trip to showdown.

6. Half the time

The break-even fold rate is 120 ÷ (120 + 120), or 50%. A fold wins the existing 120. A call loses your new 120 under the assumptions. More than half folds is profitable; fewer than half is not. This is not a recommendation to bluff half your hands.

7. A forced full house

You cannot make two pair with a fifth card of a different rank because only two ranks exist. Choose three twos and two threes. That full house is better in Hold'em Low than three threes and two twos. Four of a kind is avoidable, but a full house is not.

8. You may have to pay again

No. Your estimate includes both future cards, but the call may only buy the turn. Future bets, folds, raises, and the chance of improving all matter. The clean all-in calculation from chapter six cannot be transplanted unchanged into a hand with betting still to come.

9. Check and let worse hands lose

Checking returns 0.75 × 10 = 7.5 BB on average. Betting returns 0.75 × 10 − 0.25 × 5 = 6.25 BB. Check.

10. Give the calls something to lose to

Favor value bets over pure bluffs when this behavior applies to the current spot. Still identify worse hands that can call, choose a sensible size, and consider the board and prior action.

CHAPTER 9

Before You Blame the Cards

A short checklist for a longer evening.

Find your five first

Before evaluating a river bet, identify your actual lowest five. Leave out the two cards that do not help. If your private cards are both unused, notice that. If the board supplies the best possible hand to everyone, notice that too.

Read their side of the board

Ask what changed for the opponent. A small card can replace their king. A new rank can rescue their pair. Your hand improving is not proof that your position improved.

Price the actual decision

Separate the pot before the bet, the bet you face, and your call. Use the final pot after calling for pot odds. If more betting can happen, do not pretend a flop call guarantees two cards for one price.

Name the job of your bet

A value bet wants worse hands to call. A bluff wants better hands to fold. Some hands are better checked. If your explanation is only “I wanted to see where I was,” slow down and identify what response you expect.

Stop charging yourself for curiosity

You do not need to call to prove that an opponent has it. Fold when your estimate and the price do not justify continuing. Save the interesting hand for review instead of paying for an answer every time.

Review a hand

A good call can lose. A bad bluff can work. Keep the cards, positions, pot, bet, and your reasoning. Review whether the decision made sense with the information available then, before the next card explained everything.

Practice one thing at a time

Keep a decision notebook. Record the cards, action, price, and your reason. Name the mistake you find, then change one input and try again. Start with choosing your five, then comparing hands, then pricing calls. Practice making the decision before looking at the answer.

Use Muck GTO practice for specific situations, and read the assumptions attached to any chart or solver result. Standard Hold'em Low, Short Deck, different table sizes, and different stacks do not all share one answer.

Finally, stop when you are no longer making deliberate choices. The game will still be here tomorrow.

CHAPTER 10

Hold'em Low Short Deck

Count the cards in the deck and the chips already in the pot.

What comes out of the deck?

Larry deals from a deck of twos through tens, four of each rank. That leaves 36 cards. As in Hold'em Low, each player gets two private cards and can use either, both, or neither. A mixed-suit 7-5-4-3-2 is still the best possible hand. One ranking changes: a full house beats a flush.

What does it cost Bob to see the flop?

Six players ante 10 apiece. Larry is on the button and posts another 10 as a live blind. Count the pot before anyone acts: 60 in antes plus the live 10 makes 70. Bob has already put in 10, but that was his ante. If the action reaches him without a raise, it costs him another 10 to call.

Give Larry the same decision

Suppose everyone calls. Larry has already posted both his ante and his live blind. He can check and see the flop, or raise. Bob and Larry each have 20 in the pot at this point. What matters is how the chips got there.

CHAPTER 11

All-in or Fold

The stacks are short. Work out the price before you look at the hand.

Start in the small blind

Bob and Larry start heads-up with 200 chips each at blinds of 10 and 20. Bob posts 10. He can fold or move in for his remaining 190. He cannot make his usual raise to 45. If Larry folds, Bob takes the blinds. If Larry calls, the board runs out and the lowest hand wins.

Now take Larry’s seat

Bob moves in. Larry has already posted 20. How much more does he have to put in, and what will the pot be if he calls? Count both stacks before reading on.

Price the call

Larry owes 180. Calling makes a final pot of 400, so he needs 180 ÷ 400, or 45% equity, to break even on chips. The table starts ten big blinds deep, which is why a single decision can commit both stacks. When checking is free, Larry can still check. Facing an all-in heads-up, he can only match what Bob has at risk.

CHAPTER 12

Short Deck All-in or Fold

Keep the Short Deck posting rules. Change what you can bet.

Set up the hand

Bob and Larry sit at a six-handed table with 100 chips each. The deck runs from two through ten. Each seat antes 10, and the button posts another 10 as a live blind. Everyone starts ten button blinds deep. The Short Deck rankings still decide a showdown.

Count Bob’s stack

Bob is first to act. He has 90 left after his ante and there are already 70 chips in the pot. He can fold or put in the remaining 90. He cannot just match the button’s 10 to see a flop. Larry, waiting on the button, has 80 behind because he posted twice.

Compare the two tables

In the previous chapter there were 30 chips in the middle when Bob faced his first decision. Here there are 70. Even before you give Bob cards, the reward for getting everyone to fold has changed. Start with the forced bets each time you price a shove.

CHAPTER 13

The Nit Game

Watch the last two markers at a four-handed table.

Which wins count?

Everyone starts with a NIT marker. Winning a contested pot outright clears yours, including a side pot you win alone. A chop leaves your marker in place. So does a walk when the table folds to your big blind.

Bob and Larry still have theirs

The blinds are 10/20. Two players have cleared their markers. Bob bets the river and Larry, his last opponent in the hand, folds. Bob takes the pot and clears his marker. Larry is now the only player holding one.

Count the payment

With enough chips behind, Larry pays five big blinds to each of the other three players. At this stake that is 100 apiece, or 300 altogether. Everyone gets a fresh marker for the next round. When you read Bob’s river bet, remember what winning that pot was worth to him beyond the chips on the felt.

CHAPTER 14

Red or Black

The flop can settle one pot while the other is still being played.

Make the color call

At 10/20, four players each put five big blinds into the color pot. Bob and one other player pick red. Larry and the fourth player pick black. There are 400 chips in the middle for this side game, separate from the chips they bet on their hands.

Turn over the flop

The flop is 2♥ 5♣ 9♦. Two red cards are one short. The 400 carries over, the choices stay locked, and the players finish the poker hand normally. When the next hand starts, nobody pays a second ante for that same color pot.

Count Bob’s share

The next flop is 3♥ 8♦ K♥. All three cards are red. Each red caller gets 200, a gain of 100 after accounting for the original ante. Bob can fold his poker hand and keep that payment. If nobody in the round picked the winning color, the antes are refunded. The players choose again for the next round.

CHAPTER 15

Nit + Red or Black

Follow Bob through two hands. Keep the color pot and the NIT marker separate.

On the flop

Bob has a NIT marker and calls black. Larry calls red. The flop comes 2♣ 6♠ 9♣. The black callers share the color pot. Bob folds to Larry's turn bet. What does Bob take out of the hand?

At the end of the hand

Bob keeps his color payout. Larry takes the poker pot. If Larry was holding a marker, that outright win clears it. Bob still has his, because calling the color correctly did nothing to settle who won the poker hand.

Change the flop

A new color round begins. This time the flop is mixed. Bob bets the river and Larry folds. Now Bob clears his marker, while the color pot carries over with the calls still locked. The five-big-blind color ante and the last marker holder's payment are separate obligations, even when they come due on the same hand.

CHAPTER 16

The AK Game

What is an uncontested pot worth when Bob holds ace-king?

Check the table rule

At an AK Game table, winning a pot while holding an ace and a king earns a payment from the other seats. The hand itself follows Hold'em Low rules. At showdown Bob may use either, both, or neither of his private cards. For the bonus, it matters which two he was dealt.

Play the turn

Bob holds A♠ K♦ at a four-handed 10/20 table. He bets the turn. Larry is the last opponent and folds. Before counting the poker pot, work out how much the bonus adds if all three other players can cover the payment.

Count the bonus

Each opponent pays five big blinds, or 100 chips. Bob receives 300 on top of the pot. A bluff can therefore earn more here than the same bluff at a standard table. If Larry calls, though, Bob still has to play the river. The bonus changes the reward for winning. It leaves his cards exactly as he found them.

CHAPTER 17

Introducing Lowmaha

The same board gives Bob seven-high in Hold'em Low and queen-high in Lowmaha.

Choose two from your hand

Lowmaha is Omaha Low at Muck Poker. You get four private cards and must use exactly two with exactly three from the board. Aces are high. The lowest hand takes the whole pot, with no eight-or-better requirement. As usual, a player who gets everyone to fold wins without a showdown.

Read Bob’s hand

The board is 7♣ 5♦ 4♥ 3♠ 2♣. In Hold'em Low, everyone can play those five for the nuts. In Lowmaha, Bob looks down at A♦ K♥ Q♣ J♠. Which two private cards can he afford to use? His lowest two are the queen and jack. With the four, three and deuce from the board, Bob finishes with Q-J-4-3-2.

Now turn over Larry’s cards

Larry holds 2♦ 3♣ K♠ A♥. He can supply the deuce and three himself, leaving the seven, five and four for his three board cards. Lay out his five in the order shown below: two private cards, then three shared cards. Larry wins with 7-5-4-3-2. Both players saw the same river. Only Larry could use it to make seven-high.

Larry’s two + three



CHAPTER 18

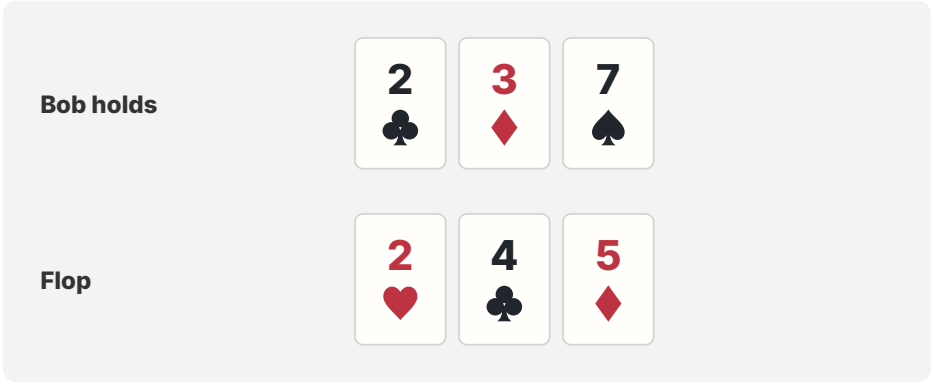
Crazy Pineapple Low

Bob’s smallest card is the one he should throw away.

The discard comes after the betting

In this upcoming variation, each player gets three hole cards. Play the preflop and flop betting rounds with all three. If you’re still in when the flop betting ends, discard one face down. From the turn on, ordinary Hold'em Low rules apply. You can use either, both, or neither of the two cards you kept.

Which card can Bob spare?



Bob checks and Larry checks back. The deuce looks like a keeper until Bob notices there’s already one on the board. Keeping the three and seven gives him five different ranks right now: 7-5-4-3-2, the best possible low. Discarding the seven would leave Bob with a pair of deuces on this flop.

Once Bob has those five, no turn or river can make him use a worse hand. Larry can still catch up and split the pot. That distinction matters when Bob decides how much to bet.

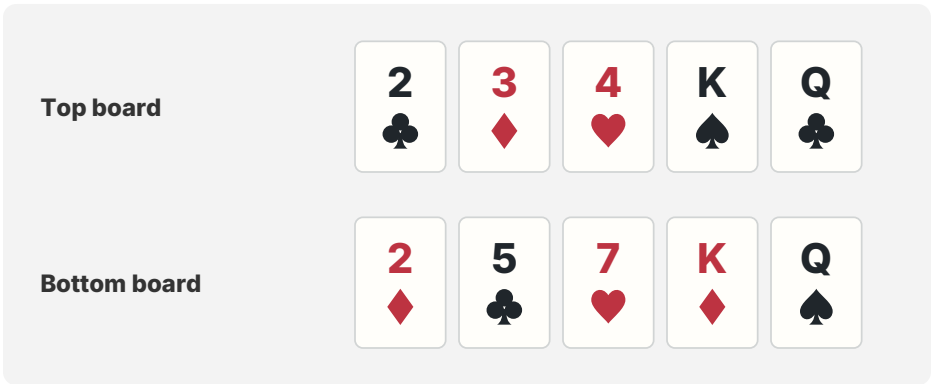
CHAPTER 19

Double Board Bomb Pots

Bob has the nuts. Larry calls. Both have read the hand correctly.

One pot, two boards

In this upcoming format, everyone antes and sees two flops before the first bet. A bet applies to both boards. Each gets its own turn and river. At showdown, make a separate Hold'em Low hand on each board with the same two hole cards. Each board is worth half the pot.



Read each board on its own

Bob holds 5♥ 7♣. On top, his five and seven complete 7-5-4-3-2. On the bottom, both ranks are already there. Larry holds 3♣ 4♦, exactly the ranks missing from the bottom board. He makes the same seven-low there that Bob makes on top.

If the pot is 100 chips, they collect 50 each. Before betting the river, Bob should ask what Larry could call with that Bob beats on both boards. If each wins one, every extra chip Larry calls simply comes back to its owner.

Going Further: Read the Solver

Optional study. You already know enough to sit down.

A solver compares decisions inside a specified model: particular rules, hands, stacks, and bet sizes. It gives you a baseline to study. It cannot know whether the opponent at your table behaves like its model.

GTO means game theory optimal: a strategy designed to resist exploitation. Practical tools approximate that target. Start by reading the situation and the main action; you do not need to memorize every percentage.

Start with the situation

The chart on the next page is taken from Muck GTO's stored heads-up preflop strategy. It is the small blind's opening decision with 100 big blinds per player, blinds of 0.5 and 1, no ante, and no rake. The small blind is also the button in heads-up play.

Here you can fold, limp (call without raising) by adding 0.5 BB, raise to 2.5 BB, or go all-in for 100 BB. Other table sizes and variants have different strategies.

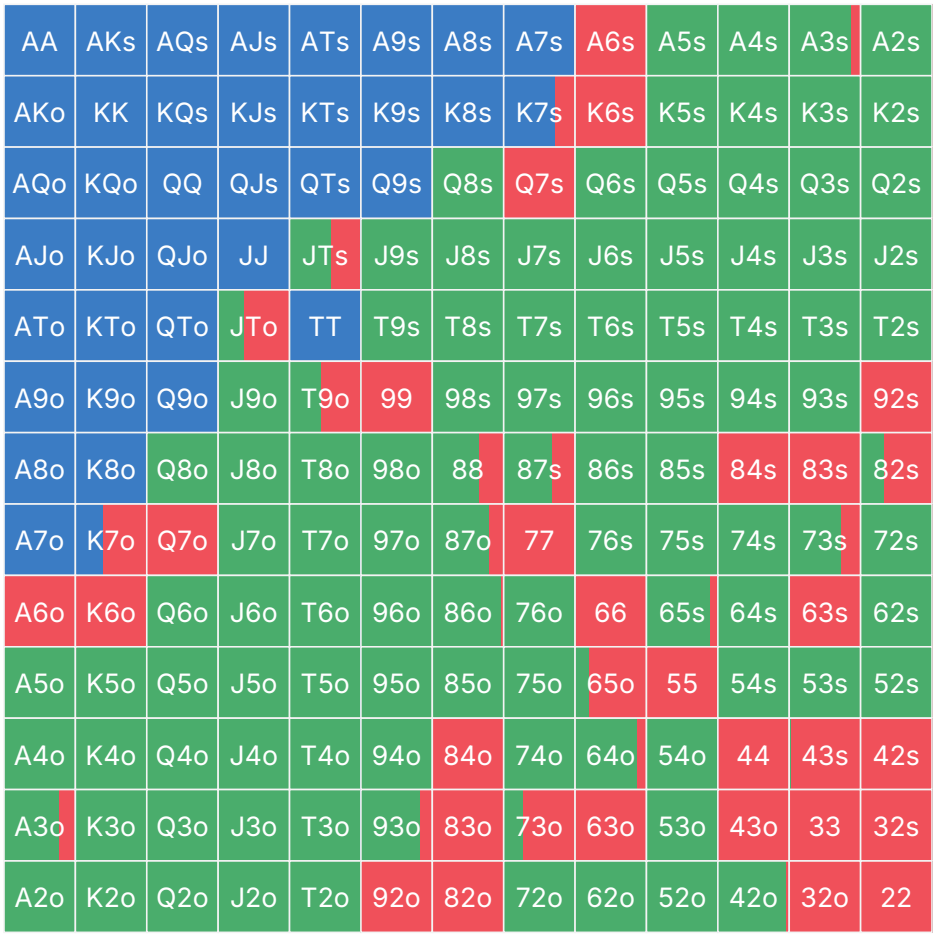
How to read the grid

The diagonal contains pairs. Above it are suited hands, marked "s." Below it are offsuit hands, marked "o." A square represents a starting-hand class. Split colors show a mix of actions for that class at this decision.

Squares are hand classes, not equally likely deals. For larger cells, use the full-size companion PDF or scan the code following the grid.

HEADS-UP: SMALL BLIND FIRST TO ACT

100 BB • Hold'em Low • blinds 0.5 / 1 • no ante or rake



s = suited • o = offsuit • diagonal = pairs

Stored model snapshot. This is one spot, not a universal range.

Muck GTO opening strategy, October 2026 snapshot. All 169 hand classes were matched against the project's stored opening model for this edition. This checks the chart transcription, not the model's strategic optimality.

EXPLORE THE CHART

Heads-up study · 100 BB

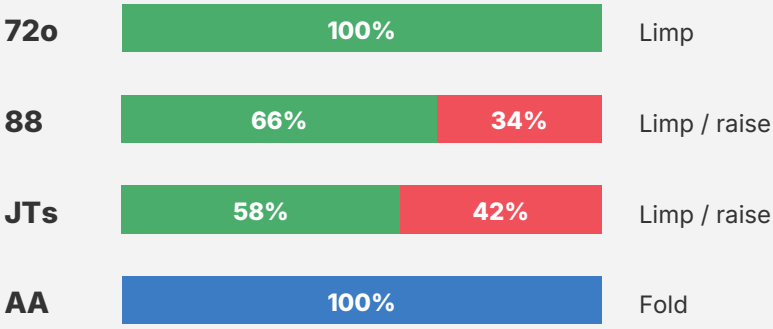
muckpoker.net/muckgto.php?players=2

A mix is still a decision

In this snapshot, 7-2 offsuit limps. Eights limp about 66% and raise about 34%. Jack-ten suited limps about 58% and raises about 42%. Aces fold. Your old Hold'em instincts may wish to file a complaint.

READ A MIX, NOT A COMMAND

Same heads-up opening node as the range grid.



Percentages are action frequencies, not chances of winning.

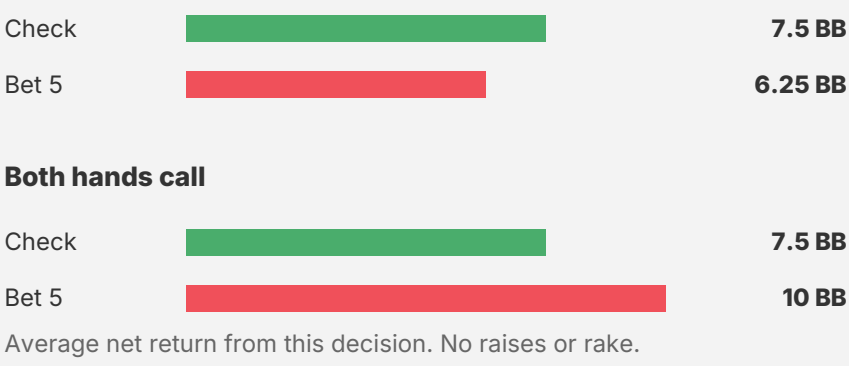
A 34% raise frequency does not mean the hand wins 34% of the time. It describes how often the model takes that action when it holds that hand in this spot. Equity and action frequency answer different questions.

Start with a model you can check

Chapter 7's river example is a small decision model you can verify without software. When worse hands fold and better hands call, checking returns 7.5 BB and betting returns 6.25 BB. When both hands call, betting returns 10 BB.

SAME CARDS. DIFFERENT RESPONSE.

Pot 10 BB. Bet 5 BB. You win at showdown 75%.



Average net return from this decision. No raises or rake.

The input that changed was the opponent's response. A larger solver considers many more hands and choices, but the same lesson applies: understand what was assumed before treating the answer as advice.

What the trainer score measures

The trainer's score reflects how frequently the model chooses your action, relative to its most frequent action. It does not directly measure chips lost.

For study, read both the result and the action mix. When the interface labels a spot as an estimate, keep that qualification attached to what you learn.

Use it for one question at a time

YOUR FIRST SOLVER SESSION

01 **Match the spot**
Players, stacks, seat, board and betting line.

02 **Choose before you peek**
Write the action and a one-sentence reason.

03 **Read the mix**
Check frequencies and any estimate label.

04 **Change one thing**
Try a different board, hand or position.

Start with a hand from this book. Explain your choice before checking the solver. Then change one input and compare. A different position, a different turn card, or a different price can teach more than memorizing a screen of colors.

Keep This Page Handy

Rules, terms, and useful numbers.

Standard Hold'em Low and Hold'em Low Short Deck

Feature	Standard Hold'em Low	Hold'em Low Short Deck
Deck	52 cards, 2 through ace	36 cards, 2 through 10
Lowest five	Any five of seven	Any five of seven
Possible final hands, best first	No pair; one pair; two pair; flush; full house	No pair; one pair; two pair; full house; flush
Forced bets	Standard blind tables use small and big blinds	Everyone antes; button adds a live ante

The core strategy examples use standard Hold'em Low. In Lowmaha you must play exactly two hole cards and three board cards. Hold'em Low Short Deck is not the separate best-hand-wins Short Deck Hold’em format. Check the table’s rules before playing.

The words at the table

Board: the shared cards. **Hole cards:** your private cards, two in Hold'em Low and four in Lowmaha. **Flop:** the first three board cards. **Turn:** the fourth. **River:** the fifth.

Out: a remaining card that improves your situation, often by putting you ahead. It may not guarantee a final win. **Equity:** your expected share of the pot across possible outcomes, including ties.

Range: a set of possible hands, not a single guessed holding. **Position:** your place in the action order. **Value bet:** a bet seeking calls from worse hands. **Bluff:** a bet seeking folds from better hands.

Pot odds: the price a call offers relative to the pot. **Showdown:** comparing the remaining players' hands. **Playing the board:** using all five shared cards and neither private card.

Ace note: Aces are always high. A-2-3-4-5 is an ace-high hand, not a straight.

Pots and calculation notes

If players go all-in for different amounts, the game separates the main pot and side pots. You can win only from the pots your chips made you eligible for.

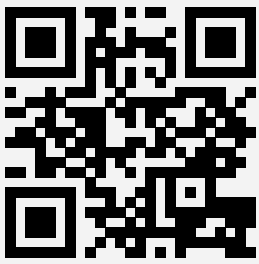
The six-out example uses 2♠ 3♦ against 4♣ 5♣ on a flop of 2♥ 6♦ K♠. Seven known cards leave 45 unknown cards. There are 990 unordered two-card runouts. The project evaluator returns 231 wins, 759 losses, and zero ties: 23.333% equity. This is an exact exposed-hand example, not an estimate against an opponent range.

Betting tables use simple one-opponent arithmetic with no rake or other deductions. The opening chart in the optional solver section shows the stored solver strategy for the specific situation described there.

Game rules checked November 6, 2026. Solver examples use the October 2026 study snapshot.

Your Seat Is Open

You've read enough to make your first mistake.



MUCK POKER

Play for free.

Bad cards welcome.

muckpoker.net

Find a game

Join a game or tournament, or invite friends. Play for free.
muckpoker.net/cash-games · Tournaments

Practice and study

Review your decisions with Muck GTO's tools and trainer.
muckpoker.net/muckgto.php · Trainer

Meet the opposition

Meet the bots or take the 50-hand Larry Challenge.
muckpoker.net/bot-lab/ · Larry Challenge

Keep going

Read strategy and complete missions.
muckpoker.net/articles/ · Missions

GOOD AT BAD

Bad cards.
Better decisions.

Two private cards. A shared board. The lowest five-card hand wins.

Start with Hold'em Low at Muck Poker. Read a board, price a call, and put Bob to a decision. Then try a shorter deck, a side bet, or four hole cards in Lowmaha.

“Worse than bad. Better than good. Bizzaro poker.”

Craig Tapscott
Poker Journalist

RAY ZORFOLD

Play and learn at muckpoker.net