

4 / 6 / 8 DECK SHOE S17											
Dealer stands on soft 17 · double any 2 · DAS · late surrender											
HAND	2	3	4	5	6	7	8	9	10	A	
HARD (no ace, or ace counted as 1)											
17+	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S
13-14	S	S	S	S	S	S	S	S	S	S	S
12	H	H	S	S	S	S	S	S	S	S	S
11	D	D	D	D	D	D	D	D	D	D	D
10	D	D	D	D	D	D	D	D	D	D	D
9	H	D	D	D	D	H	H	H	H	H	H
5-8	H	H	H	H	H	H	H	H	H	H	H
SOFT (ace counted as 11)											
A,8-9	S	S	S	S	S	S	S	S	S	S	S
A,7	S	Ds	Ds	Ds	Ds	S	S	S	S	S	S
A,6	H	D	D	D	D	D	H	H	H	H	H
A,4-5	H	H	D	D	D	D	H	H	H	H	H
A,2-3	H	H	H	D	D	D	H	H	H	H	H
PAIRS											
A,A	P	P	P	P	P	P	P	P	P	P	P
T,T	S	S	S	S	S	S	S	S	S	S	S
9,9	P	P	P	P	P	P	P	P	P	P	P
8,8	P	P	P	P	P	P	P	P	P	P	P
7,7	P	P	P	P	P	P	P	P	P	P	P
6,6	P	P	P	P	P	P	P	P	P	P	P
5,5	D	D	D	D	D	D	D	D	D	D	D
4,4	H	H	H	P	P	H	H	H	H	H	H
3,3/2,2	P	P	P	P	P	P	H	H	H	H	H
H	hit	S	stand	D	dbl	Ds	dbl/st	P	split	R	surr

House edge with these rules: 0.33% SHOE S17 · FRONT
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4 / 6 / 8 DECK SHOE H17											
Dealer HITS soft 17 · double any 2 · DAS · late surrender											
HAND	2	3	4	5	6	7	8	9	10	A	
HARD (no ace, or ace counted as 1)											
17+	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S
13-14	S	S	S	S	S	S	S	S	S	S	S
12	H	H	S	S	S	S	S	S	S	S	S
11	D	D	D	D	D	D	D	D	D	D	D
10	D	D	D	D	D	D	D	D	D	D	D
9	H	D	D	D	D	H	H	H	H	H	H
5-8	H	H	H	H	H	H	H	H	H	H	H
SOFT (ace counted as 11)											
A,9	S	S	S	S	S	S	S	S	S	S	S
A,8	S	S	S	S	S	S	S	S	S	S	S
A,7	Ds	Ds	Ds	Ds	Ds	S	S	S	S	S	S
A,6	H	D	D	D	D	D	H	H	H	H	H
A,4-5	H	H	D	D	D	D	H	H	H	H	H
A,2-3	H	H	H	D	D	D	H	H	H	H	H
PAIRS											
A,A	P	P	P	P	P	P	P	P	P	P	P
T,T	S	S	S	S	S	S	S	S	S	S	S
9,9	P	P	P	P	P	P	P	P	P	P	P
8,8	P	P	P	P	P	P	P	P	P	P	P
7,7	P	P	P	P	P	P	P	P	P	P	P
6,6	P	P	P	P	P	P	P	P	P	P	P
5,5	D	D	D	D	D	D	D	D	D	D	D
4,4	H	H	H	P	P	H	H	H	H	H	H
3,3/2,2	P	P	P	P	P	P	H	H	H	H	H
H	hit	S	stand	D	dbl	Ds	dbl/st	P	split	R	surr

House edge with these rules: 0.53% SHOE H17 · FRONT
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DOUBLE DECK S17											
Dealer stands on soft 17 · double any 2 · DAS · late surrender											
HAND	2	3	4	5	6	7	8	9	10	A	
HARD (no ace, or ace counted as 1)											
17+	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	S	S
13-14	S	S	S	S	S	S	S	S	S	S	S
12	H	H	S	S	S	S	S	S	S	S	S
11	D	D	D	D	D	D	D	D	D	D	D
10	D	D	D	D	D	D	D	D	D	D	D
9	H	D	D	D	D	H	H	H	H	H	H
5-8	H	H	H	H	H	H	H	H	H	H	H
SOFT (ace counted as 11)											
A,8-9	S	S	S	S	S	S	S	S	S	S	S
A,7	S	Ds	Ds	Ds	Ds	S	S	S	S	S	S
A,6	H	D	D	D	D	D	H	H	H	H	H
A,4-5	H	H	D	D	D	D	H	H	H	H	H
A,2-3	H	H	H	D	D	D	H	H	H	H	H
PAIRS											
A,A	P	P	P	P	P	P	P	P	P	P	P
T,T	S	S	S	S	S	S	S	S	S	S	S
9,9	P	P	P	P	P	P	P	P	P	P	P
8,8	P	P	P	P	P	P	P	P	P	P	P
7,7	P	P	P	P	P	P	P	P	P	P	P
6,6	P	P	P	P	P	P	P	P	P	P	P
5,5	D	D	D	D	D	D	D	D	D	D	D
4,4	H	H	H	P	P	H	H	H	H	H	H
3,3/2,2	P	P	P	P	P	P	H	H	H	H	H
H	hit	S	stand	D	dbl	Ds	dbl/st	P	split	R	surr

House edge with these rules: 0.13% 2 DECK S17 · FRONT
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DOUBLE DECK H17											
Dealer HITS soft 17 · double any 2 · DAS · late surrender											
HAND	2	3	4	5	6	7	8	9	10	A	
HARD (no ace, or ace counted as 1)											
17+	S	S	S	S	S	S	S	S	S	S	S
16	S	S	S	S	S	S	S	S	S	S	S
15-16	S	S	S	S	S	S	S	S	S	S	S
13-14	S	S	S	S	S	S	S	S	S	S	S
12	H	H	S	S	S	S	S	S	S	S	S
11	D	D	D	D	D	D	D	D	D	D	D
10	D	D	D	D	D	D	D	D	D	D	D
9	H	D	D	D	D	H	H	H	H	H	H
5-8	H	H	H	H	H	H	H	H	H	H	H
SOFT (ace counted as 11)											
A,9	S	S	S	S	S	S	S	S	S	S	S
A,8	S	S	S	S	S	S	S	S	S	S	S
A,7	S	Ds	Ds	Ds	Ds	S	S	S	S	S	S
A,6	H	D	D	D	D	D	H	H	H	H	H
A,3-5	H	H	D	D	D	D	H	H	H	H	H
A,2	H	H	H	D	D	D	H	H	H	H	H
PAIRS											
A,A	P	P	P	P	P	P	P	P	P	P	P
T,T	S	S	S	S	S	S	S	S	S	S	S
9,9	P	P	P	P	P	P	P	P	P	P	P
8,8	P	P	P	P	P	P	P	P	P	P	P
7,7	P	P	P	P	P	P	P	P	P	P	P
6,6	P	P	P	P	P	P	P	P	P	P	P
5,5	D	D	D	D	D	D	D	D	D	D	D
4,4	H	H	H	P	P	H	H	H	H	H	H
3,3/2,2	P	P	P	P	P	P	H	H	H	H	H
H	hit	S	stand	D	dbl	Ds	dbl/st	P	split	R	surr

NO SURRENDER: 15 v 10/A hit; 16 v 10/A hit; 17 v A stand. NO DAS: 2,2 v 2/3 hit; 3,3 v 2/3 hit; 4,4 v 5/6 hit. Blackjack must pay 3:2.

House edge with these rules: 0.32% 2 DECK H17 · FRONT
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SINGLE DECK											S17
Dealer stands on soft 17 · double any 2 · DAS · late surrender											
HAND	2	3	4	5	6	7	8	9	10	A	
HARD (no ace, or ace counted as 1)											
17+	S	S	S	S	S	S	S	S	S	S	
16	S	S	S	S	S	S	H	H	Rh	Rh	
13-15	S	S	S	S	S	S	H	H	H	H	
12	H	H	S	S	S	S	H	H	H	H	
11	D	D	D	D	D	D	D	D	D	D	
10	D	D	D	D	D	D	D	D	H	H	
9	D	D	D	D	D	H	H	H	H	H	
8	H	H	H	D	D	H	H	H	H	H	
5-7	H	H	H	H	H	H	H	H	H	H	
SOFT (ace counted as 11)											
A,8-9	S	S	S	S	S	S	S	S	S	S	
A,7	S	Ds	Ds	Ds	Ds	S	S	S	H	S	
A,6	D	D	D	D	D	D	H	H	H	H	
A,2-5	H	H	D	D	D	D	H	H	H	H	
PAIRS											
A,A	P	P	P	P	P	P	P	P	P	P	
T,T	S	S	S	S	S	S	S	S	S	S	
9,9	P	P	P	P	P	P	P	P	S	S	
8,8	P	P	P	P	P	P	P	P	P	P	
7,7	P	P	P	P	P	P	P	P	H	Rs	
6,6	P	P	P	P	P	P	H	H	H	H	
5,5	D	D	D	D	D	D	D	D	H	H	
4,4	H	H	P	P	P	H	H	H	H	H	
3,3	P	P	P	P	P	P	P	H	H	H	
2,2	P	P	P	P	P	P	H	H	H	H	
H	hit	S	stand	D	dbl	Ds	dblst	P	split	R	surr
NO SURRENDER: 16 v 10A hit, 7,7 v 10 stand, NO DAS: A,2 v 4 hit; 2,2 v 2/3 hit; 3,3 v 2/3 hit, 4,4 v 4 hit, 4,4 v 5S double; 6,6 v 7 hit; 7,7 v 8 hit, Blackjack must pay 3/2.											

COUNT DEVIATIONS

S17

Hi-Lo · true count = running count / decks remaining

INSURANCE

take at TC +2.4 or higher

ILLUSTRIOUS 18 — act at TC ≥ index

16 v 10	0	Stand	10 v A	+4	Dbl
15 v 10	+4	Stand	9 v 7	+3	Dbl
T, T v 5	+5	Split	16 v 9	+5	Stand
T, T v 6	+4	Split	13 v 2	-1	Stand
10 v 10	+4	Dbl	12 v 4	0	Stand
12 v 3	+2	Stand	12 v 5	-2	Stand
12 v 2	+3	Stand	12 v 6	-1	Stand
11 v A	+1	Dbl	13 v 3	-2	Stand
9 v 2	+1 †	Dbl			

FAB 4 SURRENDER — otherwise play the hand

15 v 10	0	Surr	15 v 9	+2	Surr
15 v A	+1	Surr	14 v 10	+3	Surr

SECONDARY INDICES — this game, this deck count

8 v 5	0	Dbl	A, 8 v 6	0	Dbl
8 v 6	-0.5	Dbl	A, 6 v 2	-1.5	Dbl
A, 7 v 2	+1.5	Dbl	9, 9 v 7	+3	Split

AT THE TABLE

- Deviate on the count you hold BEFORE the cards come out.
 - Insurance is a bet on the deck. Take it on any hand at index.
 - Where surrender is offered, 16 v 9/10/A and 15 v 10 stay surrenders at every count. The stand indices above are for no-surrender tables, or hands of three or more cards.
 - One index wrong is cheaper than one bet wrong. Bet first.
- † already basic strategy here - nothing to change on the high side.
Two deck: one deck left, TC = RC. Half a deck left, TC = 2 × RC.

Hi-Lo, full-deck true count

2 DECK S17 · BACK

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COUNT DEVIATIONS

H17

Hi-Lo · true count = running count / decks remaining

INSURANCE

take at TC +3.0 or higher

ILLUSTRIOUS 18 — act at TC ≥ index

16 v 10	0	Stand	10 v A	+4	Dbl
15 v 10	+4	Stand	9 v 7	+3	Dbl
T, T v 5	+5	Split	16 v 9	+5	Stand
T, T v 6	+4	Split	13 v 2	-1	Stand
10 v 10	+4	Dbl	12 v 4	0	Stand
12 v 3	+2	Stand	12 v 5	-2	Stand
12 v 2	+3	Stand	12 v 6	-1	Stand
11 v A	+1 †	Dbl	13 v 3	-2	Stand
9 v 2	+1	Dbl			

FAB 4 SURRENDER — otherwise play the hand

15 v 10	0	Surr	15 v 9	+2	Surr
15 v A	always	Surr	14 v 10	+3	Surr

SECONDARY INDICES — this game, this deck count

8 v 5	+2.5	Dbl	A, 8 v 6	-0.5 †	Dbl
8 v 6	+1	Dbl	A, 6 v 2	+1	Dbl
A, 7 v 2	0 †	Dbl	9, 9 v 7	+3	Split

AT THE TABLE

- Deviate on the count you hold BEFORE the cards come out.
 - Insurance is a bet on the deck. Take it on any hand at index.
 - Where surrender is offered, 16 v 9/10/A and 15 v 10 stay surrenders at every count. The stand indices above are for no-surrender tables, or hands of three or more cards.
 - One index wrong is cheaper than one bet wrong. Bet first.
- † already basic strategy here - nothing to change on the high side.
Shoe: read the discard tray to the nearest half deck. 1 deck = 0.6 index.

Hi-Lo, full-deck true count

SHOE H17 · BACK

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COUNT DEVIATIONS

S17

Hi-Lo · true count = running count / decks remaining

INSURANCE

take at TC +3.0 or higher

ILLUSTRIOUS 18 — act at TC ≥ index

16 v 10	0	Stand	10 v A	+4	Dbl
15 v 10	+4	Stand	9 v 7	+3	Dbl
T, T v 5	+5	Split	16 v 9	+5	Stand
T, T v 6	+4	Split	13 v 2	-1	Stand
10 v 10	+4	Dbl	12 v 4	0	Stand
12 v 3	+2	Stand	12 v 5	-2	Stand
12 v 2	+3	Stand	12 v 6	-1	Stand
11 v A	+1	Dbl	13 v 3	-2	Stand
9 v 2	+1	Dbl			

FAB 4 SURRENDER — otherwise play the hand

15 v 10	0	Surr	15 v 9	+2	Surr
15 v A	+1	Surr	14 v 10	+3	Surr

SECONDARY INDICES — this game, this deck count

8 v 5	+2.5	Dbl	A, 8 v 6	+0.5	Dbl
8 v 6	+1	Dbl	A, 6 v 2	+1	Dbl
A, 7 v 2	+0.5	Dbl	9, 9 v 7	+3	Split

AT THE TABLE

- Deviate on the count you hold BEFORE the cards come out.
 - Insurance is a bet on the deck. Take it on any hand at index.
 - Where surrender is offered, 16 v 9/10/A and 15 v 10 stay surrenders at every count. The stand indices above are for no-surrender tables, or hands of three or more cards.
 - One index wrong is cheaper than one bet wrong. Bet first.
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Shoe: read the discard tray to the nearest half deck. 1 deck = 0.6 index.

Hi-Lo, full-deck true count

SHOE S17 · BACK

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COUNT DEVIATIONS

H17

Hi-Lo · true count = running count / decks remaining

INSURANCE

take at TC +1.4 or higher

ILLUSTRIOUS 18 — act at TC ≥ index

16 v 10	0	Stand	10 v A	+4	Dbl
15 v 10	+4	Stand	9 v 7	+3	Dbl
T, T v 5	+5	Split	16 v 9	+5	Stand
T, T v 6	+4	Split	13 v 2	-1	Stand
10 v 10	+4	Dbl	12 v 4	0	Stand
12 v 3	+2	Stand	12 v 5	-2	Stand
12 v 2	+3	Stand	12 v 6	-1	Stand
11 v A	+1 †	Dbl	13 v 3	-2	Stand
9 v 2	+1 †	Dbl			

FAB 4 SURRENDER — otherwise play the hand

15 v 10	0	Surr	15 v 9	+2	Surr
15 v A	always	Surr	14 v 10	+3	Surr

SECONDARY INDICES — this game, this deck count

8 v 5	-4 †	Dbl	A, 8 v 6	-1.5 †	Dbl
8 v 6	-2.5 †	Dbl	A, 6 v 2	-5 †	Dbl
A, 7 v 2	+2	Dbl	9, 9 v 7	+3.5	Split

AT THE TABLE

- Deviate on the count you hold BEFORE the cards come out.
 - Insurance is a bet on the deck. Take it on any hand at index.
 - Where surrender is offered, 16 v 9/10/A and 15 v 10 stay surrenders at every count. The stand indices above are for no-surrender tables, or hands of three or more cards.
 - One index wrong is cheaper than one bet wrong. Bet first.
- † already basic strategy here - nothing to change on the high side.
Single deck: quarter deck left, TC = 4 × RC. Count down fast.

Hi-Lo, full-deck true count

1 DECK H17 · BACK

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COUNT DEVIATIONS

S17

Hi-Lo · true count = running count / decks remaining

INSURANCE

take at TC +1.4 or higher

ILLUSTRIOUS 18 — act at TC ≥ index

16 v 10	0	Stand	10 v A	+4	Dbl
15 v 10	+4	Stand	9 v 7	+3	Dbl
T, T v 5	+5	Split	16 v 9	+5	Stand
T, T v 6	+4	Split	13 v 2	-1	Stand
10 v 10	+4	Dbl	12 v 4	0	Stand
12 v 3	+2	Stand	12 v 5	-2	Stand
12 v 2	+3	Stand	12 v 6	-1	Stand
11 v A	+1 †	Dbl	13 v 3	-2	Stand
9 v 2	+1 †	Dbl			

FAB 4 SURRENDER — otherwise play the hand

15 v 10	0	Surr	15 v 9	+2	Surr
15 v A	+1	Surr	14 v 10	+3	Surr

SECONDARY INDICES — this game, this deck count

8 v 5	-4 †	Dbl	A, 8 v 6	-0.5	Dbl
8 v 6	-2.5 †	Dbl	A, 6 v 2	-4.5 †	Dbl
A, 7 v 2	+2	Dbl	9, 9 v 7	+3.5	Split

AT THE TABLE

- Deviate on the count you hold BEFORE the cards come out.
 - Insurance is a bet on the deck. Take it on any hand at index.
 - Where surrender is offered, 16 v 9/10/A and 15 v 10 stay surrenders at every count. The stand indices above are for no-surrender tables, or hands of three or more cards.
 - One index wrong is cheaper than one bet wrong. Bet first.
- † already basic strategy here - nothing to change on the high side.
Single deck: quarter deck left, TC = 4 × RC. Count down fast.

Hi-Lo, full-deck true count

1 DECK S17 · BACK

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COUNT DEVIATIONS

H17

Hi-Lo · true count = running count / decks remaining

INSURANCE

take at TC +2.4 or higher

ILLUSTRIOUS 18 — act at TC ≥ index

16 v 10	0	Stand	10 v A	+4	Dbl
15 v 10	+4	Stand	9 v 7	+3	Dbl
T, T v 5	+5	Split	16 v 9	+5	Stand
T, T v 6	+4	Split	13 v 2	-1	Stand
10 v 10	+4	Dbl	12 v 4	0	Stand
12 v 3	+2	Stand	12 v 5	-2	Stand
12 v 2	+3	Stand	12 v 6	-1	Stand
11 v A	+1 †	Dbl	13 v 3	-2	Stand
9 v 2	+1 †	Dbl			

FAB 4 SURRENDER — otherwise play the hand

15 v 10	0	Surr	15 v 9	+2	Surr
15 v A	always	Surr	14 v 10	+3	Surr

SECONDARY INDICES — this game, this deck count

8 v 5	0	Dbl	A, 8 v 6	-1 †	Dbl
8 v 6	-0.5	Dbl	A, 6 v 2	-1.5	Dbl
A, 7 v 2	+0.5	Dbl	9, 9 v 7	+3	Split

AT THE TABLE

- Deviate on the count you hold BEFORE the cards come out.
 - Insurance is a bet on the deck. Take it on any hand at index.
 - Where surrender is offered, 16 v 9/10/A and 15 v 10 stay surrenders at every count. The stand indices above are for no-surrender tables, or hands of three or more cards.
 - One index wrong is cheaper than one bet wrong. Bet first.
- † already basic strategy here - nothing to change on the high side.
Two deck: one deck left, TC = RC. Half a deck left, TC = 2 × RC.

Hi-Lo, full-deck true count

2 DECK H17 · BACK

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LETTER SHEET 1 BACK · mirrored for duplex registration

Lost Cabin Consulting LLC · companion cards to Casino Game Theory & Advantage Play by Robert Adam Clifford

HI-LO OPERATIONS

Counting, converting, betting

OPS

CARD TAGS (balanced - full deck sums to zero)

2 3 4 5 6	7 8 9	10 J Q K A
+1	0	-1

TRUE COUNT

- TC = running count + decks REMAINING, not decks dealt.
- Estimate the discard tray to the nearest half deck.
- Round toward zero: RC +5 with 2.5 decks left is TC +2.

YOUR EDGE BY TRUE COUNT (6 deck, S17, DAS, LS)

-1	0	+1	+2	+3	+4	+5
-0.8	-0.3	+0.2	+0.7	+1.2	+1.7	+2.2

Percent of your bet. Each true count point is worth about +0.5%.

BET RAMP (units - scale to your bankroll)

TC ≤ +1	1 unit	flat bet or sit out
TC +2	2 units	the edge turns here
TC +3	4 units	
TC +4	8 units	
TC +5 or more	12 units	cap it - heat rises fast

INSURANCE

- Index: +3.0 shoe, +2.4 two deck, +1.4 one deck.
- Take it on ANY hand at the index - it is a bet on the deck, not on your cards. Never take even money below the index.

MECHANICS

- Count every card on the table, not just your own.
- Cancel in pairs as they land - a 5 and a 10 is zero.
- Reset to zero on the shuffle, never on a new hand.
- Bet first, then play. The bet is worth more than the index.
- Lose the count and you flat bet until the shuffle. Guessing costs more than sitting out.

Off the top you are behind - the count is the whole edge

OPS - FRONT
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GAME SELECTION

What each rule is actually worth

EV

HOUSE EDGE, PERFECT BASIC STRATEGY (DAS)

Decks	S17 + surr	H17 + surr
8 deck	0.35%	0.55%
6 deck	0.33%	0.53%
4 deck	0.28%	0.48%
2 deck	0.13%	0.32%
1 deck	+0.20%	+0.02%

Negative = house edge. Plus = you are ahead before the count.

RULE VARIATIONS (change to your edge)

Blackjack pays 6:5	-1.39%
Dealer hits soft 17	-0.21%
Double 10-11 only	-0.17%
Double 9-10-11 only	-0.09%
No double after split	-0.14%
Late surrender allowed	+0.07%
Resplit aces allowed	+0.08%
Early surrender allowed	+0.39%
No hole card (European)	-0.11%

WALK AWAY FROM

Any 6:5 payout. A 6:5 single deck is worse than a 3:2 shoe.

- Continuous shufflers - no penetration, nothing to count.
- Penetration under 65%, or a dealer who cuts off two decks.
- "Dealer pushes on 22" games. The free doubles do not cover it.

THE GAMES YOU WILL ACTUALLY SEE

2 deck, S17, DAS, LS, 3:2	0.13%
6 deck, S17, DAS, LS, 3:2	0.33%
6 deck, H17, DAS, LS, 3:2	0.53%
1 deck, S17, 6:5	1.19%

A 6:5 single deck is three times worse than the 6-deck 3:2 game.

Computed by combinatorial analysis, resplit to 4 hands

EV - FRONT
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ULTIMATE TEXAS HOLD'EM

Pre-flop decision · raise 4x or check

4x

Upper right = SUITED · lower left = OFFSUIT · diagonal = PAIR

	A	K	Q	J	T	9	8	7	6	5	4	3	2
A	AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
K	AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
Q	AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
J	AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
T	ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
9	A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
8	A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
7	A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
6	A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
5	A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
4	A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
3	A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
2	A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

☒ RAISE 4x ☐ CHECK - see the flop for free

Raise 4x: any pair 3s or better - any ace - K2s+ / K5o+ - Q6s+ / Q8o+ - J8s+ / JTo. Everything else checks.

- The 4x raise is where the money is. Never make a 3x raise.
- Pocket 2s check pre-flop and do not raise 2x on the flop.

House edge 2.185% of ante · element of risk 0.53%

UTH 1 - FRONT
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UTH - RIVER

You checked twice. All five cards are out.

1x

RAISE 1x WITH EITHER

- A hidden pair or better, or
 - Fewer than 21 dealer outs that beat you.
- Otherwise FOLD - you lose ante and blind.

COUNTING OUTS - CARDS, NOT HANDS

- For every board rank that would beat you if the dealer pairs it, count the cards still unseen (usually 3).
 - Add every unseen card that outkicks you when neither side pairs. Count all 4 unless you hold one.
 - Skip ranks that only tie you - a push is not a loss.
 - Ignore two-card dealer combinations, flushes included.
- 21 or more outs = fold. 20 or fewer = raise 1x.

HAND RANKING - BEST FIVE OF THE SEVEN

1 Royal flush	6 Straight
2 Straight flush	7 Three of a kind
3 Four of a kind	8 Two pair
4 Full house	9 One pair
5 Flush	10 High card

THE WHOLE GAME IN THREE LINES

- Pre-flop: raise 4x on the chart, otherwise check.
- Flop: raise 2x on two pair, a hidden pair, or four to a flush with a hidden 10 or better. Otherwise check.
- River: raise 1x on a hidden pair or under 21 outs. Else fold.

You may play the board. Folding is correct about 19% of the time - fold more than that and you are giving back two units you were owed.

One raise per hand - the river bet is the smallest

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LETTER SHEET 2 FRONT · duplex, flip on LONG edge · 2.5 x 3.5 in cards

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UTH - FLOP

2x

You checked pre-flop. Three cards are out.

RAISE 2x WITH ANY OF THESE

- Two pair or better.
- Any hidden pair - a pair using at least one of your hole cards - except pocket deuces.
- Four to a flush that includes a hidden 10 or better in that suit.

OTHERWISE CHECK AGAIN

- Do not raise on a straight draw, two overcards, or a board pair you do not share. You still get a 1x bet.
- Checking is free. Raising 2x on air is the second most expensive mistake in the game.

REFINEMENTS (advanced, small EV)

- Check your pair when the board is all one suit, you hold no card of that suit, and your kicker is below the board.
- Check a pocket pair of 4s or lower when the board is paired and every board card outranks your pair.

THE FOUR LEAKS THAT COST REAL MONEY

- Checking a hand the 4x chart says to raise. That one decision carries most of the game's value.
- Raising 2x on a draw instead of taking the free cards.
- Folding the river when fewer than 21 outs beat you.
- Buying a Trips pay table paying 8 / 6 or worse.

READS IN ONE LINE

- Board 9-9-4, you hold A-9: trips. Raise 2x.
- Board K-8-3, you hold 8-5: hidden pair. Raise 2x.
- Two hearts on board, you hold Q-5 of hearts: raise 2x.
- Board K-Q-7, you hold J-10: open-ended draw. CHECK.

Ante = blind, always. You will average 4.15x the ante in total action per hand - size the ante accordingly, not the bankroll.

Flop raise is 2x the ante - one raise per hand
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TABLE MATH

Dealer outcomes and what errors cost

EV

DEALER BUST % BY UPCARD (6 deck, after the peek)

UP	2	3	4	5	6	7	8	9	10	A
S17	35	37	40	42	42	26	24	23	23	17
H17	36	38	40	42	44	26	24	23	23	20

WHAT A MISTAKE COSTS (units, per time it happens)

Not doubling 11 v 6	0.34
Splitting 10,10 v 6	0.14
Not doubling 9 v 6	0.13
Not splitting 8,8 v 9	0.12
Not splitting 9,9 v 9	0.10
Hitting 13 v 6	0.08
Not splitting 8,8 v 10	0.06
Taking even money on a blackjack	0.04
Standing 16 v 10 instead of hitting	0.01

The last one is why nobody can agree on it. The first one is why the doubles matter more than the close hit/stand calls.

INSURANCE COST BY DECK · SIDE BET EDGES

1 deck	5.9%	21+3	3.2 - 8.8%
2 deck	6.8%	Perfect Pairs	4.1 - 11%
6 deck	7.4%	Buster BJ	6 - 9%
8 deck	7.5%	Lucky Ladies	17 - 24%

Two-card frequencies, 6 deck: blackjack 4.75%, splittable pair 14.5%, hard 12-16 38.5%. You hold a stiff more than a third of the time.

Dealer bust conditioned on no dealer blackjack
EV · BACK
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BANKROLL & RISK

Sizing, ruin, game conditions

OPS

KELLY SIZING

- Optimal bet = bankroll × edge ÷ variance. Blackjack variance is about 1.32 per round, so bet = bankroll × edge ÷ 1.3.
- At +1.0% edge on a \$10,000 roll that is about \$75 a hand.

RISK OF RUIN = e^{^(-2/f)} AT f OF FULL KELLY

Full Kelly	13.5%	reckless
3/4 Kelly	6.9%	aggressive
1/2 Kelly	1.8%	standard
1/3 Kelly	0.2%	conservative
1/4 Kelly	0.03%	slow and safe

VARIANCE - WHAT THE SWINGS ACTUALLY LOOK LIKE

- Standard deviation is about 1.15 units per round, so over N rounds it runs 1.15 × √N.
 - Over 10,000 rounds: expect roughly +100 units of edge and ±115 units of noise. The noise is bigger than the edge.
- You need 20,000+ rounds before results mean anything.**
- Buy in for a quarter of the roll. Reload from the room, not from the table.

GAME CONDITIONS - IN ORDER OF VALUE

- Penetration first. Under 65% dealt, the spread cannot save the game. 75%+ is worth more than any rule on the felt.
 - Fewer decks, S17, DAS, late surrender, resplit aces.
 - Back-count and enter at TC +2, leave at 0 if they let you.
- Walk from any 6:5 table. It costs 1.4% and nothing fixes it.**

Variance is the price of the edge - fund it or fold it
OPS · BACK
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UTH - PAY & PROOF

REF

Scoring, pay tables, worked example

WORKED EXAMPLE · board K 10 8 6 3

- You hold Q-4: best hand K Q 10 8 6. Outs = K,10,8,6,3 pairing the dealer (15) + any ace (4) = 19. Raise 1x.
- You hold 5-4: best hand K 10 8 6 5. Same 15 pairing outs + A,Q,J,9,7 all outkick you (20) = 35. Fold.

BLIND BET PAYS (play/ante pay 1:1)

Royal flush	500:1	Full house	3:1
Straight flush	50:1	Flush	3:2
Four of a kind	10:1	Straight	1:1
All other hands	push		

TRIPS SIDE BET - KNOW THE TABLE

Pay table	1	2	3	4
Straight	4	5	4	5
Flush	7	6	7	6
Full house	9	8	8	7
Quads	30	30	30	20
House edge	0.9%	1.9%	3.5%	6.2%

Straight flush 40 and royal 50 on all four tables.

WHAT THE STRATEGY IS WORTH

Full optimal play	2.19% of ante
This card's strategy	2.43% of ante
Unstudied player	4% and up

PROGRESSIVE BREAK-EVEN METERS

- \$1 hidden-royal progressive: about \$17,600 alone, less \$100 per other player at the table.
 - Flop-a-royal version: about \$166,000. It is never on.
- Dealer needs a pair to open. If he does not, the ANTE pushes - blind and play still get paid. Blind pays only on a straight or better.

Ante+blind must be equal - trips is optional
UTH 2 · BACK
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LETTER SHEET 2 BACK · mirrored for duplex registration

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