

**Case 2**

**Issued:** Friday, January 19, 2015

**Due:** Friday, January 26, 2015

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Notes: This case contains sixteen (16) questions and are labeled as (1.1) through (3.6). Please answer all questions concisely and show all work. State any assumptions you are making. This case is graded pass/fail where a passing grade is 10/16 points. Partial credit will be awarded for incorrect answers with appropriate work shown. Using approximations is acceptable. These questions rely on PokerTracker's Equity Calculator, or an equivalent range-vs-range equity calculator.

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Scenario: It is Saturday, June 7, 2014 and you are deep in the first round of the World Series of Poker (WSOP) Event #20 \$3000 NLHE Shootout. The structure of this tournament is that each of the 40 ten-player tables plays down to 1 player, then new tables are formed on Day 2 with the 40 winners from Day 1. Your table is down to two players from the starting ten and you are ahead in chips with 78,000, compared to the 12,000 of the other remaining player.

The table is 2-handed as follows. Blinds are 500/1000 with 200 antes.

Seat	Name	Chip Count
1	Hero	78,000
2	BB	12,000
3	[Empty]	N/A
4	[Empty]	N/A
5	[Empty]	N/A
6	[Empty]	N/A
7	[Empty]	N/A
8	[Empty]	N/A
9	[Empty]	N/A

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Question 1:

**With good fortune, you recognize your opponent from a Sit-n-Go tournament you played earlier in the week. You were observing this player, who is a Veteran roulette player, giving advice to the younger crowd.**

**Veteran: “The trick is never put all your chips at risk with less than a pair. You see, I see all of these hot shots losing all their money with no hands. The way I see it is that unless you have a made hand, don’t risk your tournament life.”**

**After watching his play throughout that SnG tournament and throughout the Shootout, you notice that he only goes all-in with pocket pairs, and never with anything other than a pair. You believe that this mentality will hold true while you are playing him heads up.**

What is the range of the Villain? (1.1)

**22+**

As the small blind, if you open bet all-in, what percentage of the time does the Villain call? (1.2)

**5.88%**

What is your optimal pushing range from the SB given his calling frequency? (1.3)

**100%**

What is your chance of winning the hand if called, given your pushing range? (1.4)

**Model:  $50\% + 0.085 \cdot \ln(5.88\%) - 0.085 \cdot \ln(100\%) \approx 26\%$**

**Exact: 33%**

What is your EV before seeing your cards, given your position and both players’ ranges? (1.5)

**Exact:  $1,900 \cdot 94.12\% + 5.88\% \cdot (33\% \cdot 10,800 - 67\% \cdot 11,300) \approx 1,553$**

**Model:  $1,900 \cdot 94.12\% + 5.88\% \cdot (26\% \cdot 10,800 - 74\% \cdot 11,300) \approx 1,462$**

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Question 2:

**The following hand, you are in the BB with 79,200 chips, compared to the Villain's 10,800 chips. He open pushes all-in.**

What is the Villain's pushing range and what percentage of hands does that represent? (2.1)

**22+, 5.88%**

Is calling with the top 30% of hands (Sklansky-Karlson) a +EV call? (2.2)

**No,  $EV = 40\% * 12,000 - 60\% * 9,600 = -960$**

Is there a more optimal range for you to call? (2.3)

**Yes**

If so, what is the range and what percentage of the time should you call? (2.4)

**Any hand that is 44.4% or better vs 22+, so call with 77+, AQs+  
We call 4.22% of the time**

What is the Villain's EV, given that he has pushed all-in, assuming you will call only the optimal range? (2.5)

**$EV = 95.78\% * 1900 + 4.22\% * (39.67\% * 11,500 - 60.33\% * 10,100) \approx 1,755$**

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Question 3

**You advance to the next round and join a 4-handed table. You play down to two players, where you are short-stacked. You are in the SB and identify the Villain as a solid player who will call about 30% of your all-in pushes.**

Using the Sklansky-Karlson model, what hands are in the Villain's calling range? (3.1)

**22+, A2s+, K4s+, Q9s+, JTs, A2o+, K8o+, QJo**

If you have a stack of 4M, what is your optimal pushing range? (3.2)

**Any two cards**

If you have T♦5♦ in the small blind, what is the maximum chip stack that would make this a profitable all-in bet? Assume BB = 2\*SB with no antes. (3.3)

**EV = 0 = 70% \* 1 + 30% \* (35.67% \* (x+1/3) - 64.33% \* (x-1/3)) at x ≈ 9.3M**

If you have 8♥8♦ in the small blind, what is the maximum chip stack that would make this a profitable all-in bet? (3.4)

**88 is a favorite against this range, so any size stack makes this a profitable push**

If you have 5M and the Villain's calling range is top 15%, what is your optimal pushing range? (3.5)

**Any two cards**

If you have 5M and the Villain's calling range is Any Two Cards, what is your optimal pushing range? Assume BB = 2\*SB with no antes. (3.6)

**Maximize EV = P% \* [(.50+0.085\*ln(1)-0.085\*ln(P%))\*5.33 - (1-(.50+0.085\*ln(1)-0.085\*ln(P%)))\*4.67] = .46 at Push% ≈ 54%**

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