

A puzzle about Roulette

Roulette seems like a fool's game. But here's a possible strategy for playing it:

1. Begin by betting a dollar on red.
2. If you win, take your winnings and go home.
3. If you lose, place two one-dollar bets in a row on red.
4. Whatever happens on those two rolls, go home (either with your winnings to date, or cutting your losses)

Question: Is this a winning strategy? Specifically, what is the probability that you will leave the Roulette wheel with more money than you began with, and is this probability more or less than $1/2$? (Recall that in Roulette, the probability of winning on a single roll by betting on red is $18/38$)