Extra credit for Homework 8.

1. (15 points) Recall the last problem for Homework 7, where Mr. Smith had $10 and was trying to win an additional $10 (to buy his train ticket) on roulette by either betting $10 (and win or lose at once), or betting $1 at a time. In the first case his probability of winning is clearly 18/38, in the second case it is not so clear. (Note that he doesn't have to win 10 times in a row, he might have to play 40 rounds, out of which he wins 25 and loses 15, and he still wins.)

   Make a simulation spreadsheet to estimate his chance of winning with the second strategy. Use the following model: he doesn't have too much time before his train comes, so he can play at most 50 rounds. Again, he starts with $10, he bets $1 in each round, which he doubles with probability 18/38, and loses with probability 20/38. If after any of the rounds he reaches $0, he is out, and he lost the game. If after any of the rounds he reaches $20, he wins the game. If after 50 rounds he still hasn't won, count that also as a loss. (His train is gone.)

   Compare the result to your answer in Homework 7.

Due on Wednesday, November 28, in class.