

name: Solution

1 (12 points). A roulette wheel has 38 slots, numbered 0,00, and then 1 through 36. The slots 0 and 00 are colored green, 18 of the other slots are red and 18 are black. The dealer spins the wheel and, at the same time, rolls a small ball along along the wheel in the opposite direction. The wheel is carefully balanced so that the ball is equally likely to land in any slot when the wheel slows. gamblers can bet on various combinations of numbers and colors.

- (a) What is the probability that the ball will land in any one slot?
- (b) If you bet on "red" you win if the ball lands in a red slot. What is the probability of winning with this bet?
- (c) The slot numbers are laid out on a board on which gamblers place their bets. One column of numbers on the board contains all multiples of 3, that is 3,6,9,...,36. You place a "column bet" that wins if any of these numbers comes up. What is your probability of winning?

a) 38 equally likely slots, so $1/38$

b) 18 of the 38 slots are red, so $18/38$

c) There are $\frac{36}{3} = 12$ multiples of 3 so $12/38$