

Section 9/28

1 Question 5.4

In roulette, the bet on a "split" pays 17 to 1 and there are 2 chances in 38 to win. "Pays 17 to 1" means that if a gambler bets one dollar on a split and wins the bet, then her net gain will be 17 dollars. If she loses the bet, then she loses her dollar; that is, her net gain is -1 dollars.

a) Suppose 200 gamblers bet on a split. Find the expectation of their total net gain.

b) Does your answer to Part a depend on whether the 200 bets were on the same or different spins of the roulette wheel?

2 Question 5.8

A sports team consists of n players. Each player has a backpack that from the outside looks the same as all the others'. Suppose each player picks up a backpack at random without replacement.

a) Fix an integer k in the range 1 through n . What is the chance that Player k picks up her own backpack?

b) Let B be the number of players who pick up their own backpacks. Find $E(B)$.

c) For large n , approximately what is the distribution of B ? Why? (Hint: Recall the Law of Small Numbers)

d) Are your answers to Parts b and c consistent?