Math 148 Quiz Six Version B

Name:

Answer the following questions:

1. A fair coin is tossed 50000 times, which of the following statements best describe the situation? **(c)**

(a) The number of heads will be 25000.

(b) The number of heads is very likely to be 25000, but there is also some small chance that it will not be equal to 25000.

(c)The number of one's drawn is likely to be different from 25000, but the difference is likely to be small compared to 50000.

2. One draws 10000 times from 1000 decks of 52 cards **without replacement**, which of the following statements best describe the situation? **(c)**

(a) The number of clubs drawn will be 2500.

(b) The number of ones drawn is very likely to be 2500, but there is also some small chance that it will not be equal to 2500.

(c)The number of one's drawn is likely to be different from 2500, but the difference is likely to be small compared to 10,000.

3. (5 points) In a game like Roulette, a gambler wants to choose a sequence of 5 numbers successively from 1 to 10 $(1, 2, \ldots, 10)$. He or she will win 1 dollars for getting one correct winning number (the order does matter in this game). It costs 2 dollars to play this game. The total gain will be like the sum of __**5**__ draws from the box $\boxed{\boxed{1} \times \mathbf{1} \quad \boxed{0} \times \mathbf{9}}$.

(b) What is the total gain that the gambler expects to receive?

EV=(number of draws)×(average of box)= $5 \times \frac{1}{9} = .56$;
$.56 - 2 = -1.44$.

4. (5 points) A dice will be tossed eleven times. Find the chance that there will be exactly three 1's among the first five tosses and exactly two tosses that are greater than or equal to 3 among the last six tosses.

$\binom{5}{3}(\frac{1}{6})^3(\frac{5}{6})^2 \times \binom{6}{2}(\frac{4}{6})^2(\frac{2}{6})^4$.

Note that $\binom{n}{k}$ is sometimes also written as C_n^k.