

Interface between Mathematics and Science  
Teacher Professional Development Workshop  
July 9, 2008

Discussion 2: Roulette

In class we've discussed the chance of losing \$10 or more on 20 bets of \$1 on a single number. Here, each table should carry out the analogous calculation for one of the remaining bets. The bets, which will be assigned in class, are

1. Split: covers two adjacent numbers (chip placed on line between numbers), pays 17 to 1.
2. Three numbers: covers three numbers across, pays 11 to 1.
3. Four numbers: covers four joining numbes, pays 8 to 1.
4. Six numbers: covers six numbers across (in joining rows), pays 5 to 1.
5. Column bet: covers a column of numbers, pays 2 to 1.
6. 1-11 or 19-36, pays even money.
7. Section bet, covers 12 numbers, pays 2 to 1.
8. Red or black, pays even money.
9. Odd or even, pays even money.

For your bet:

- a. Determine a box model that will represent this bet. How many tickets are in the box and what numbers are on the tickets?
- b. Determine the expected value for 20 bets.
- c. Determine the SD of the box model.
- d. What is the SE of the model for 20 bets?
- e. What is the z-value for losing \$10?
- f. What is the area from the z-table for this z-value?
- g. What are the chances of losing more than \$10 in 20 plays?