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?