## Dr. K. Karuppasamy

www.drkk.in

## Yahoo answers 2-10-2013

**Problem**: A street vendor is asking people to play a simple game. You roll a pair of dice. If the sum on the dice is 10 or higher, you win \$10. If you roll a pair of 1's, you win \$50. Otherwise you lose \$5. If the random variable X equals your win or loss for each play, find M=E(x). Figure out how much we expect to win or lose for each play on average. Is it wise to play this game? WHY?

Solution: When throwing two dice, the favourable cases for getting the sum as 10 or more are

{(4,6),(5,5),(6,4),(5,6),(6,5),(6,6)}. Hence its probability is 6/36.

The probability of getting (1,1) is 1/36.

Hence the probability for none of the above case is 1 - 6/36 - 1/36 = 29/36.

The probability distribution is

| X=x  | 10   | 50   | -5    |
|------|------|------|-------|
| P(x) | 6/36 | 1/36 | 29/36 |

 $E(X) = \sum x P(x) = 10(6/36) + 50(1/36) + (-5)(29/36) = -35/36.$ 

On an average we have to loss \$35/36. It is not wise to play the game.