Lab for Sections 14.4

Use good notation and show appropriate work. Name _____
State your solutions to problems in complete sentences.

1. Assume you roll a die and note the number of dots that show. Suppose you win $2 if an even number shows and you lose $1 if you roll a one or a three and you lose $5 if you roll a five. Determine your expected value. Is the game "fair"? Explain.

2. Assume you pay $1 to play the following game. You toss 4 coins. If all coins show the same (all heads or all tails), you win $6; otherwise you lose your $1. Calculate your expected value for this game.

3. A friend invites you to play a game in which you are to draw a card from a standard deck of 52 cards. If you draw a club you win $5, if you draw a spade you win $10, and otherwise you lose $8. Should you play the game?

4. A company believes it has a 40% chance of being successful in bidding on a contract which yields a profit of $30,000. If it cost $5,000 in consultant fees to prepare the bid, what is the expected gain or loss for the company if it decides to bid on the contract?

5. Suppose you were given one of thirty free tickets at the beginning of this class session. Suppose at the end of this period (just dreaming) three tickets are drawn without replacement. The three winning people will receive $100, $50, and $30.

   (a) Determine your expected winnings.

   (b) If your neighbor offered to buy your ticket before the drawing, what would be a "fair" price?

   (c) Repeat part (a) if the tickets were drawn with replacement.

6. Roulette in most casinos in the United States has 38 numbered positions: 0, 00, 1, 2, 3, …, 36.
   For a ***Red/Black or Odd/Even or 1-18/19-36:*** The player covers eighteen numbers. The casino pays 1 to 1. Compute:

   (a) the probability of a win

   (b) the probability of a loss

   (c) the odds of winning.

   (d) the odds of losing.

   (e) the expected value of a $1 bet.

   (f) You go to a casino and play 200 times with $5 bet each time. ***On average***, how much would you expect to win/lose?