

1. You are offered to play in a card game. The rules are simple; to play you must pay him \$2. If you pick a spade from a shuffled pack, you win \$9. Find the expected value for each round of the game.

2. A dice game involves rolling 2 dice. If you roll a 2, 3, 4, 10, 11, or a 12 you win \$5. If you roll a 5, 6, 7, 8, or 9 you lose \$5. Find the expected value if you play the game once.

3. A raffle is held by the athletic boosts to draw for a \$1000 television. Two thousand tickets are sold at \$1.00 each. Find the expected value of one ticket.

4. A game consists of flipping two coins. If both coins turn up heads, you win \$1.00. What is a "fair" price to pay to play? (What is the expected value of one play?)

5. A game consists of rolling a colored die with three green sides, two red sides, and one blue side. A roll of a red loses. A roll of blue pays \$6.00. A roll of green pays \$2.00.
 - a. What is a "fair" price to pay to play? (What is the expected value of one play?)

 - b. The charge to play the game is \$2.00. Would you play the game? Why or why not?

6. Suppose you were given one of thirty free tickets at the beginning of this class period. Suppose at the end of this period (just dreaming) three tickets are drawn without replacement. The holder of the first ticket drawn wins \$100, the second ticket \$50, and the third ticket \$30. (a) Determine your expected winnings. (b) If your neighbor offered to buy your ticket before drawing, what would be a "fair price"?
7. A company believes it has a 40% chance of being successful on bidding a contract that yields a profit of \$30,000. Assume it costs \$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?
8. A department store wants to sell eight purses that cost the store \$40 each and 32 purses that cost the store \$10 each. If all purses are wrapped in forty identical boxes and if each customer picks a box randomly, find the following:
- Each customer's expected value if a customer pays \$15 for a box.
 - The department store's total expected profit (or loss) during this sale.
9. You plan to invest in a certain project. There is a 30% chance that you will lose \$30,000, a 50% chance that you will break even, and a 20% chance that you will make \$55,000. What is the expected value in this problem? Should you invest in this project?