Statistics Worksheet Gaming 4-25-8

Statistics Worksheet - Gaming

Name _____

Hour _____ Date _____

Answer the following questions. Show how you solved the problem.

1. A company estimates that 0.2% of their products will fail after the original warranty period, but within 2 years of the purchase, with a replacement cost of $250.

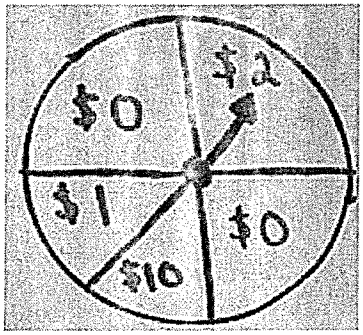
   If they offer a 2-year extended warranty for $28, what is the company's expected value of each warranty?

2. You purchase 1 raffle ticket for a school fundraiser. The raffle ticket cost $5. The school is selling 10,000 tickets. One ticket will be randomly drawn and the winner will receive $10,000. Assuming all of the tickets are sold, compute the expected value.

3. You must pay $0.50 to draw a card randomly from a standard deck of 52 cards. If you drawn an Ace, you win $30. If you draw any other card, you lose $1. What is your expected value?

4. You buy one $10 raffle ticket for a new car valued at $15,000. They are selling 2000 tickets. What is the expected value of your gain?

5. Let's play a game... or not! It only costs $1 to play. You spin a spinner that is divided into 4 equal regions, but the fourth region is divided into 2 equal regions.



   a) What is the expected value of your gain?

   b) How much would you expect to win if you played 100 times?

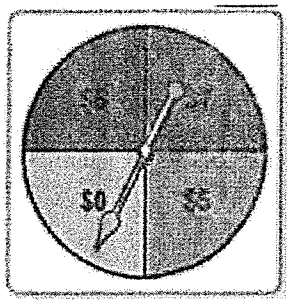
6. You buy one $2 raffle ticket. There is one 1st prize of $2000, one 2nd prize of $1000, two 3rd prizes of $500 each, and five 4th prizes of $100 each. All the other tickets lose. What is the expected value of your gain?

7. A game consists of drawing a card from a standard deck of 52 cards. You win $13 if you draw a King.

   a) Determine the expected value for playing this game.

   b) Determine a reasonable amount to charge per card drawn so that you will, on average, make money.

8. At a fund-raising carnival for a service organization, Laurie is trying to get Ali to play a game she has invented. Laurie would spin the spinner shown below and get a gift certificate worth the amount indicated. The organization charges $5 to play this game.



a. How much would Laurie expect to win if she played 100 games? What is her expected net earnings?

b. Is $5 the fair price to play this game? If not, what would be the fair price?

9. The following table shows a prize and the probability of winning the prize.

Prize	Probability
$1	1/10
$10	1/500
$100	1/10,000
$1000	1/60,000

a) What is the probability of winning one of the four prizes?

b) What is the probability of winning nothing?

c) What is the expected value/fair price?

10. A raffle offers a first prize of $1000, 2 second place prizes of $300 each and 20 third prizes of $10 each. If 1000 tickets are sold at $0.50 each, find the expected winnings for a person buying 1 ticket.

11. You roll a die and you win the amount of money shown on the die.

    a) Find the expected amount to RECEIVE (expected value) [note: this will not take into account how much you pay per ticket].

    b) Suppose you get $1 for an even number, $3 for a 1, $9 for a 3, and $15 for a 5. It costs you $6.50 to play.

    Is this game fair?

    If it is not fair, determine the amount you would charge to make it fair.

    What would be a reasonable amount to charge so you earn a small profit on average?