**Definitions:**

**Expected Value:** pg.

**Examples:**

**Example 1:** pg. The SAT is used and an aid in determining college admissions. This test is a multiple choice test. To discourage random guessing, points are subtracted for wrong answers. Each question has 5 possible answers, and the test taker must pick one answer or choose not to answer the question. One point is awarded for each correct answer, and for each wrong answer 1/4 point is subtracted.

1. What is the expected point value of a random guess?

2. What is the expected point value of a guess if the test taker knows with certainty that one of the answers can be eliminated as a possibility and has nor preference among the other four?

**Example 2:** pg. If you consider the value of a roll of a single die to be the number that is rolled, what is the expected value of the roll of a single die? If it cost you \$1 to play this game, now what is the expected value?

**Example 3:** pg. Suppose a multiple choice exam has three possible answers to each question. You get 5 points for a correct answer,but you lose 3 points for each incorrect answer. No points are gained or lost if you leave the question blank.

1. What is the expected point value of a random guess?
2. What is the expected point value of a guess if the test taker knows with certainty the one of the answers can be eliminated as a possibility and has no preference among the other two?
3. Under what conditions should you answer the question?

**Life Insurance:** pg. An insurance company plans to sell a \$150,00 one-year life insurance policy to a 38-year-old woman. On the basis of mortality rates for women of her age and background, the insurance company determines that the probability of the woman dying in the next year is 0.00104. What show the insurance company charge the woman for the policy if it would like to make an expected profit of \$45?