

Practice 6 (sections 8.3-8.4)

1. According to the recent study Population of U.S. college students has 45% of frequent binge drinkers. If 25 students are randomly selected, find the expected number of binge drinkers in that sample.
2. John takes a 30 question multiple choice test. Each problem has answers A, B, C and D. His answers are absolute guesses. Find the average number of correct answers.
- 3) A dice game is played as follows. If the player rolls a 1, they win \$10, a 3 wins \$30 and a 5 wins \$70. If a 2 is rolled, they lose \$10, if a 4 is rolled, loss is \$100, they gain or lose nothing if 6 is rolled. If the game is played once, find the expected winnings (or loss).
- 4) If a company drills for oil in a certain location, there is a 24% chance that they will find nothing, resulting in a 10 million dollar loss. There's a 30% chance that the company will find a small amount of oil, but will still have a \$500,000 loss, a 40% chance of finding a substantial amount of oil, resulting in a 4 million dollar profit, or, finally, they have a 6% hitting the jackpot and seeing a 50 million dollar profit. If the company drills for oil here, then what is the company's expected gain or loss?
5. A game is played as follows....
 First a die is rolled and the result is noted, then a coin is flipped.
 If the flip results in HEADS, then the you win a double of the points on the die plus 6 (in \$)
 If the flip results in TAILS, then your win/loss is number on the die minus 10 points (in \$)
 a) Find the expected number of points if the game is played once.
 b)What will be the expected number of points if you play that game 100 times?
6. A fair coin is tossed 3 times and X is a random variable whose value is the number of heads -number of tails obtained. Give probability distribution of X and obtain $E(X)$
- 7) Two dice are rolled and X is a sum of both times 2. Obtain probability distribution of X and $E(X)$.

Answers:

1. 11.25 2. 7.5 3. 0 4. 2050000 5a \$3.25 5b \$325

6. X : 1 -1 3 -3 7. X : 4 6 8 10 12 14 16 18 20 22 24

$P(X)$: 3/8 3/8 1/8 1/8
 $E(X)=0$

$P(X)$: 1/36 2/36 3/36 4/36 5/36 6/36 5/36 4/36 3/36 2/36 1/36
 $E(X)=14$