

12.3.1: Expected Value (Exercises)

SECTION 12.3 PROBLEM SET: EXPECTED VALUE

Do the following problems using the expected value concepts learned in this section,

1. You are about to make an investment which gives you a 30% chance of making \$60,000 and 70% chance of losing \$ 30,000. Should you invest? Explain.	2. In a town, 40% of the men and 30% of the women are overweight. If the town has 46% men and 54% women, what percent of the people are overweight?
3. A game involves rolling a Korean die (4 faces). If a one, two, or three shows, the player receives the face value of the die in dollars, but if a four shows, the player is obligated to pay \$4. What is the expected value of the game?	4. A game involves rolling a single die. One receives the face value of the die in dollars. How much should one be willing to pay to roll the die to make the game fair?
5. In a European country, 20% of the families have three children, 40% have two children, 30% have one child, and 10% have no children. On average, how many children are there to a family?	6. A game involves drawing a single card from a standard deck. One receives 60 cents for an ace, 30 cents for a king, and 5 cents for a red card that is neither an ace nor a king. If the cost of each draw is 10 cents, should one play? Explain.
7. Hillview Church plans to raise money by raffling a television worth \$500. A total of 3000 tickets are sold at \$1 each. Find the expected value of the winnings for a person who buys a ticket in the raffle.	8. During her four years at college, Niki received A's in 30% of her courses, B's in 60% of her courses, and C's in the remaining 10%. If $A = 4$, $B = 3$, and $C = 2$, find her grade point average.
9. Attendance at a Stanford football game depends upon which team Stanford is playing against. If the game is against U. C. Berkeley, attendance will be 70,000; if it is against another California team, it will be 40,000; and if it is against an out of state team, it will be 30,000. If the probability of playing against U. C. Berkeley is 10%, against a California team 50% and against an out of state team 40%, how many fans are expected to attend a game?	10. A Texas oil drilling company has determined that it costs \$25,000 to sink a test well. If oil is hit, the revenue for the company will be \$500,000. If natural gas is found, the revenue will be \$150,000. If the probability of hitting oil is 3% and of hitting gas is 6%, find the expected value of sinking a test well.
11. A \$1 lottery ticket offers a grand prize of \$10,000; 10 runner-up prizes each pay \$1000; 100 third-place prizes each pay \$100; and 1,000 fourth-place prizes each pay \$10. Find the expected value of entering this contest if 1 million tickets are sold.	12. Assume that for the next heavyweight fight the odds of current champion winning are 15 to 2. A gambler bets \$10 that the current champion will lose. If current champion loses, how much can the gambler hope to receive?
13. In a housing development, 35% of households have no school age children, 20% of households have 1 school age child, 25% of households have 2 school age children, 15% have 3, and 5% have 4 school age children. a. Find the average number of children per household b. If there are 300 homes in this housing development, what is the total number of children expected to attend school?	14. At a large community college, 30% of students take one course, 15% take two courses, 25% take three courses and 20% take four courses. The rest of the students take five courses. a. What percent of students take 5 courses? b. Find the average number of courses that students take.

This page titled [12.3.1: Expected Value \(Exercises\)](#) is shared under a [CC BY 4.0](#) license and was authored, remixed, and/or curated by [Rupinder Sekhon and Roberta Bloom](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.

- **9.3.1: Expected Value (Exercises)** by [Rupinder Sekhon and Roberta Bloom](#) is licensed [CC BY 4.0](#). Original source: <https://www.deanza.edu/faculty/bloomroberta/math11/afm3files.html.html>.