

1. We throw a dice. If the number rolled is even, we pay \$4. If the number rolled is odd, we receive as many dollars as the number on the dice shows. For example, if we roll the number 5, we receive \$5. Find the expected value of this game.
2. We throw a dice. If the number rolled is odd, we pay \$2. If the number rolled is even, we receive as many dollars as the number on the dice shows. For example, if we roll the number 4, we receive \$4. Find the expected value of this game.
3. Triangles ABC and $A'B'C'$ are similar. $AB = 3$ cm, $AC = 4$ cm, and $BC = 5$ cm. Find $A'B'$ if we know that $A'C' = 42$ cm.
4. We borrow \$1000 for two years, with a simple annual interest rate of 8%. After 5 months, we make a partial payment of \$400. After an additional 9 months, we make another partial payment of \$400. How much money do we have to pay at the end of the two years?
5. Find the present value of five annual payments of \$1000, starting with the first payment right now. Assume an annual compound interest rate of 4%, compounded continuously.
6. Find the present value of five annual payments of \$1000, starting with the first payment a year from now. Assume an annual compound interest rate of 4%, compounded continuously.
7. Translate a 7.5% discount rate to interest rate.
8. We wish to buy a used car for \$4500. Our bank informs us that they have a finance plan of \$500 down payment and 24 monthly payments with an APR of 7%. Find the monthly payment under this plan.
9. We wish to buy a used car for \$6000. Our bank informs us that they have a finance plan of no down payment and 24 monthly payments of \$267.28. Find the APR that the bank charges.
10. We toss a coin five times in a row. What is the probability that the number of tails is even?
11. We toss a coin five times in a row. What is the probability that the number of tails is below 2?
12. Two students missed the final exam in a chemistry class. Together they went to the professor and told them that they had a flat tire and that's why they couldn't make it to the final exam. The professor gave them a make up exam. He seated the students in separate rooms and gave them the same final exam. The exam had two questions. The first one, for 5 points, was an easy chemistry question. The second question, for 95 points said: "Which tire was flat?" If the students answer the second question randomly, what is the probability that they name the same tire?
13. We pull three cards from a deck of 52, without replacement. Find the probability of each of the following events.
 - (a) We pull three red cards.
 - (b) We pull one red and two black cards.
 - (c) We pull three diamonds.
 - (d) We pull three aces.
14. There are 18 marbles in a bag: 10 blue, 5 green, and 3 yellow. We pull two marbles, without replacement. Find the probability of each of the following events.

- (a) We pull two marbles of the same color.
- (b) We pull two marbles of different colors.
- (c) We pull no green marbles.
- (d) We pull at least one green marble.