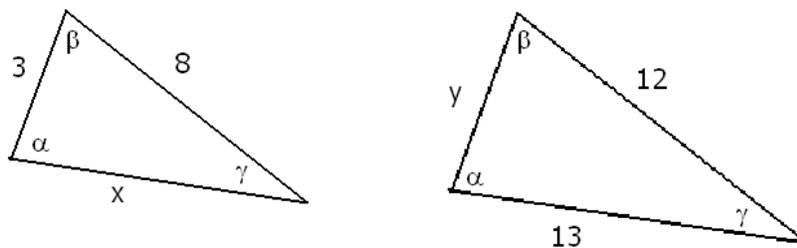


- We have the following data: 12, -4 , 5, 1, -3 , 14, 1, 6. Find each of the following.
 - mean
 - median
 - mode
- We roll two dice. If the numbers rolled are different, we pay \$3. If the numbers rolled are the same, we receive as many dollars as the product of the numbers shown on the dice. For example, if we roll the number 5 and 5, we receive \$25. Find the expected value of this game.
- We have 10 marbles in a bag: 5 red, 3 blue, and 2 yellow. We randomly pull two marbles, without replacement. If we pull two yellow marbles, we receive \$20. If we pull two blue marbles, we receive \$10. If we pull two red marbles, we receive \$5. If we pull two marbles of different colors, we pay \$4. Find the expected value of this game.
- We randomly pull a card from a standard deck of 52. If the card is an ace, we receive \$20. If it is a king, we receive \$10. If it is a queen or a jack, we receive \$5. In every other case, we pay \$3. Find the expected value for this game.
- The triangles shown on the picture below are similar. Find x and y based on the picture below.



- Find the present value of four annual payments of \$800, starting with the first payment right now. Assume an annual compound interest rate of 6%, compounded
 - monthly
 - continuously.
- Find the present value of four annual payments of \$800, starting with the first payment a year from now. Assume an annual compound interest rate of 6%, compounded
 - monthly
 - continuously.
- We wish to buy a used car for \$6500. Our bank informs us that they have a finance plan of \$500 down payment and 36 monthly payments with an APR of 8%. Find the monthly payment under this plan.

9. We wish to buy a used car for \$6500. Our bank informs us that they have a finance plan of no down payment and 60 monthly payments of \$125.67. Find the APR that the bank charges.
10. We roll a die several times, until we roll a number larger than 4. Find the probability that
- (a) we stop after the first roll.
 - (b) we stop after the second roll.
 - (c) we stop after the third roll.
11. We have 10 marbles in a bag: all blue or red. We randomly pull a marble. If it is red, we pay \$2. If it is blue, we receive \$5. How many blue marbles are there in the bag if the expected value of this game is $\frac{1}{10}$?
12. A healthy 40 year old male wishes to buy a health insurance policy for a year. The insurance would pay \$50000 in case of death. The insurance company charges \$1000 for this policy. Statistical data tells us that a healthy 40 year old male has a 0.4 percent chance to die this year. Find the expected value of this policy
- (a) for the customer
 - (b) for the insurance company.
13. Find the shaded area shown on the picture below.

