Quiz 2: Counting and Probability

Name: _____ Score: _____

Please show your work to get the full credit

1. Find the value of following expressions.

   a. $\binom{7}{4} =$

   b. $P(8,3) =$

   c. $\binom{35}{34} =$

2. How many two digits odd numbers are there?

3. Anyone in a class of 50 students either owns a fish, a dog, a cat, or does not own a pet. 25 own a dog, 16 own a cat and 12 owns a fish. 5 own a dog and a fish, 8 own a dog and a cat and 6 own a cat and a fish. Only 2 own a dog, a cat and a fish. How many student does not own a pet at all?

4. How many triangles can one make out of vertices of a octogon?

5. How many different permutations of the word "element" are there?

6. How many paths from a lower left corner to upper right corner for a grid in the picture? Each path can only go upper or go right.

7. How many different ways to express the sum $a + b + c = 10$ by allowing a, b, c nonnegative integers?

8. What is the probability of a positive integer less than 100 being nonsquare and odd?

9. What is the probability when flipping 5 coins with at least 2 heads?

10. A drawer contains 7 blue socks and 5 red socks. If randomly draw 4 socks, what is the probability of getting a pair of blue socks and a pair of red socks?

11. what is the probability of a triangle made by 3 vertices of a cube being isoscele?