152 Practice test 2 Name: _____

1. Write the first 5 levels of Pascal's triangle.

2. Compute $\binom{12}{3}$ the number of ways you can choose 3 items from a set of 12.

3. There are candy bars in a bag, 6 Hershy bars, 4 Mars bars, and 2 Zero bars. You select 3 at random.

   (a) What is the probability that all three are Hershey bars?

   (b) What is the probability that 2 are Heshey bars and one is a Zero bar?

   (c) What is the probability that there is one of each?

Recall that if p is the probabilty of "success" in a single trial of a binomial experiment, then the probabilty of k successes and $n-k$ failures in n indepent trials is

$$\binom{n}{k} p^k (1-p)^{n-k}$$

4. A die is rolled 5 times.

   (a) What is the probability you get exactly two "threes"?

   (b) What is the probability you get at least one "three"?

   (c) How many threes do you expect to get?

5. One out of every 25 light bulbs produced are defective. If you sample 500 light bulbs, how many do you expect to be defective?

6. A raffle has 1000 tickets, each of which cost \$2. There is one first prize of \$500, two second prizes of \$100 each and 4 third prizes of \$20 each. What it the expected value of your lottery ticket?

7. Fred and Ethel play the following game. Ethel rolls a die and Fred pays her the amount of money equal to what is shown on the die if the die falls 1, 2, 3, 4 or 5, but if the die shows 6 Ethel pays Fred \$10. What is Ethel's expected winnings?

8. The probability that you win a game of solitaire is 0.02. How many games do you expect to have to play before you win one game?

9. Add the following

$$1 + \frac{1}{3} + \left(\frac{1}{3}\right)^2 + \left(\frac{1}{3}\right)^3 + \left(\frac{1}{3}\right)^4 + ...$$