First name: _____ Last name: _____   Student ID: _____

Probability Homework

Word problems

1. Rachel has five skirts and four shirts. How many different combinations of shirts and skirts can she create using these two sets of clothes?

2. How many 3-letter combinations are possible from the first seven letters of the alphabet?

3. There are 5 yellow, 4 violet, 2 purple, 4 navy, and 4 orange marbles in a hat. You pick 2 marbles from the hat. Marbles are <u>not</u> returned after they have been drawn. Find the probability.
P(the first marble is purple and the second marble is not yellow)

4. You roll a number cube numbered from 1 to 6. You then spin a spinner with 6 sections each with a different color. The spinner has the colors white, green, red, pink, blue, and navy. Find the probability. Assume that the spinner is separated into equal sections.
P(not 5 and green)

5. Last night, Victoria counted the number of instant messages she received. She received three from Jonathan, four from Victoria, ten from Matthew, six from Brandon, and forty from her best friend (and very chatty) Mackenzie. She turned on her computer. What is the probability that the first instant message she receives is from Mackenzie?

6. Andrew lives in Montana. On a bus trip across the state he looks out the window and sees where other vehicles are from. On the trip he sees 125 vehicles with Montana plates and 30 with non-Montana plates. On the trip back the next day, what is the probability that the first car he sees is from Montana?

7. If the odds of winning a particular card game are 1:3, about how many times can you expect to win if you play the game one thousand, four hundred times?

8. Jessica bought a bag containing assorted hard candies from the local corner store. They were on clearance and she got a good deal. All the candies are the same size and shape but they are different colors and flavors. There are ten blue ones, five red ones, two purple ones, ten green ones, and eight orange ones. If the bag is shaken really well to mix the candy in the bag, what is the probability that the first candy she pulls out of the bag will <u>not</u> be green?

9. Each digit of a four-digit PIN can be any number from 0 to 9. What is the percentage of PINs with no digit repeated more than twice?

10. A club has three different committees each of which needs a chairperson. How many ways can the chair people be selected if only 10 people are eligible for these positions, and no one can chair more than two of the committees?

11. Out of 22 students in class, 9 play football and tennis, 10 play football and baseball, and 11 play baseball and tennis. How many students play all 3 sports if it is known that each student plays at least one sport, and each sport is played by a total of 15 students?

12. Mike and Dave play a game in which each independently throws a dart at a target. Mike hits the target with probability 0.6, while Dave hits the target with probability 0.3. Mike wins the game if he hits the target and Dave misses. Dave wins the game if he hits the target and Mike misses. Otherwise the game is a tie. What is the probability that the game is a tie?

13. A drawer contains 64 balls. Each ball is one of 8 colors, and there are 8 balls of each color. If the balls in the drawer are thoroughly mixed and you randomly choose two of them, what is the possibility that these two balls will have the same color?