DAY 7 – Experimental Probability

1. For each of the following situations, describe an experiment that could be used to make predictions. DON'T solve just DESCRIBE the experiment!
    a. What is the probability that the first-four people you ask will have a birthday in the Fall or Winter?

    b. You have five pairs of jeans in your closet. Your favourite pair are the Tommy Jeans which you tend to wear twice as often as the others. What is the probability that you will wear your Tommy Jeans the next time you were to wear jeans?

    c. A couple is expecting a child. The mother has blue eyes and the father has brown eyes. The gene for brown eyes is dominant (more likely 3/4), while the gene for blue eyes is recessive (less likely 1/4). What is the probability that the child's eyes are brown?

    d. The Go Train arrives at the station every 30 minutes. The train will stay there for 5 minutes for passengers to board before departing. Tonight you plan to take the Go Train into Toronto to see a concert. What is the probability that a train will be waiting when you arrive in the parking lot of the station?

2. Your final examination contains 20 True/False questions. Since you did not study for the test, you decide to guess on every question.
    a. What assumption do you make on about the probability of guessing the correct answer?

    b. Simulate your guessing by flipping a coin 50 times. Let Heads represent a correct answer and Tails represent an incorrect answer. Record your results in a table.

	TALLY	FREQUENCY
Heads		
Tails		

    c. Why flip the coin 50 times when there are only 20 questions on the exam?

    d. Estimate the probability that you will receive a score of 60% (12 correct) on this part of the Exam.

3. A newly married couple is planning to have a family consisting of 3 children. The couple wish to predict the number of boys and girls they will have.
    a. What assumption must you make about the probability of the babies gender?

    b. Roll a die 30 times to simulate the possible sex of the children. Let the even numbers be male and the odd numbers be female. Record your results.

	TALLY	FREQUENCY
Male		
Female		

    c. Use your results to predict the gender of the 3 children.

    d. What is the probability of the couples first-born child being male?

    e. What are the chances that the couple will be blessed with 3 little girls?

    f. What is the probability of the couple having <u>at least</u> two sons.