STATISTICS 402 - Assignment 2
Due February 1, 2012

1. Chapter 1: Review Exercises (pgs. 34-37) # 3, 4, 5, and 8.
2. For each of the following descriptions, answer the following questions using complete sentences. Also comment if the experiment is fine as described or flawed. If flawed, explain how to fix the experiment.
   - What is the response?
   - What are the conditions of the study (i.e. treatments)?
   - What is the experimental material?
   - What are the outside variables that are controlled? Is there a control group?
   - Are treatments randomly assigned to the experimental material? Is experimental material randomly selected from a larger population?
   - Is there replication within the experiment? Is the experiment repeated?
   - Is the experiment fine as described or is it flawed. If flawed, how can it be fixed?

a) A study was done with 644 cancer patients receiving chemotherapy at one of several cancer treatment centers across the United States. All the patients had suffered nausea in a previous round of chemotherapy. Patients were given one of three doses of ginger (the equivalent of ½ gram, 1 gram or 1 ½ grams of ginger per day) or dummy capsules that contained no ginger. The amount of ginger each patient received was determined at random so that 161 patients got each amount of ginger. All patients were given standard anti-sickness medicines in addition to the ginger. Patients took the medicines and ginger for six consecutive days, beginning three days before chemotherapy. The amount of nausea was reported on a scale from 0 (no nausea) to 10 (extreme nausea).

b) A chemist wants to compare a new, and simpler, method for determining the concentration of a solution with a standard method. She prepares twenty different solutions. Each solution has a different concentration of a specific chemical. Each solution is divided in half. The standard method is assigned to one half of a solution and the new method is assigned to the other half of a solution. The assignment is done by flipping a coin; heads = new method, tails = standard method, for each solution. All the analyses, standard and new, are done by the same technician. The technician finishes analyzing the 20 solutions using the new method first thing in the morning. He takes a coffee break and does the remaining 20 solutions using the standard method after his break.

c) One theory regarding memory states that verbal material is remembered as a function of the degree to which it was processed when it was initially presented. To test this theory an experiment is run with 100 college students selected at random from all those students enrolled in psychology courses at a large university. Students are assigned at random to one of five groups with 20 students in each group. Students in the Counting group read through a list of words and count the number of letters in each word. Students in the Rhyming group read a list of words and think of words that rhyme with each word on the list. Students in the Adjective group read a list of words and think of adjectives that modify the words, one adjective for each word. Students in the Imagery group read a list of words and form vivid images for each word. All of these four groups are not told that they will later have to recall the words. Students in a fifth group, the Intentional group, are told that they will later have to recall the words but are not given a strategy to use. After the students read through a list of words three times, employing the method given to their group, they are asked to write down all the words they can remember. The number of words correctly recalled is noted for each subject.