Stat 296 Fall 2007
Assignment #4

This assignment is due at the beginning of class on Thursday, November 8, 2007. Your assignment must be stapled and problem numbers clearly labelled. You must integrate your computer printouts into the body of your text in an organized and meaningful way. Do not crowd your work and do not write in multiple columns!

1. A special diet including hormones is fed to adult hogs to see whether they will gain weight. The before and after weights (in kilograms) are given below. Determine whether or not there is a significant difference in these weights at the $\alpha = 0.05$ level.

Before	145	196	207	162	168	179	164	163	145
After	151	195	208	164	173	179	166	161	143

(a) Which two-sample test is most appropriate in this situation? Why?

(b) Conduct the test you selected in **(a)**.

2. Shown below are record high temperatures in degrees Celsius for Dawson Creek, BC, and for Whitehorse, YT, for 9 months. Determine whether or not there is a significant difference in these record high temperatures at the $\alpha = 0.05$ level.

Dawson Creek	11	16	14	22	30	32	34	34	31
Whitehorse	8	10	11	21	30	32	33	30	27

(a) Which two-sample test is most appropriate in this situation? Why?

(b) Conduct the test you selected in **(a)**.

3. A researcher believes that the median number of wet days per month in Yosemite National Park is 5. A sample of the number of wet days per month for the last year is shown below:

8 6 7 6 4 2 1 1 1 2 6 7.

Determine whether or not there is significant evidence to support the researcher's claim at the $\alpha = 0.05$ level.

(a) Which test is most appropriate in this situation? Why?

(b) Conduct the test you selected in **(a)**.

4. Three different groups of monkeys were fed three different medications for one month to see if the medication has any effect on reaction time. Each monkey was then taught to repeat a series of steps to receive a reward. The number of trials it took each to receive the reward is shown below.

Monkey 1	8	7	11	14	8	6	5
Monkey 2	3	4	6	7	9	3	4
Monkey 3	8	14	13	7	5	9	12

(continued)

(a) Which test is most appropriate in this situation? Why?

(b) Conduct the test you selected in **(a)**.

5. Shown below are the type and number of medals each country won in the 2006 Winter Olympics in Turin, Italy. The purpose of this exercise is to investigate possible ranking systems.

(i) One way to rank countries is by total medals won irrespective of type. By this ranking Canada places third overall.

(ii) Another way to rank the countries is using a preferential system. In this system, countries are ranked first by gold medals, then by silver medals, and finally by bronze medals. By this ranking Canada places fifth overall.

Country	Gold	Silver	Bronze
Australia	1	0	1
Austria	9	7	7
Belarus	0	1	0
Bulgaria	0	1	0
Canada	7	10	7
China	2	4	5
Croatia	1	2	0
Czech Republic	1	2	1
Estonia	3	0	0
Finland	0	6	3
France	3	2	4
Germany	11	12	6
Great Britain	0	1	0
Italy	5	0	6
Japan	1	0	0
Latvia	0	0	1
Netherlands	3	2	4
Norway	2	8	9
Poland	0	1	1
Russia	8	6	8
Slovakia	0	1	0
South Korea	6	3	2
Sweden	7	2	5
Switzerland	5	4	5
Ukraine	0	0	2
United States	9	9	7

(a) Determine the top ten countries for each of systems **(i)** and **(ii)**.

(b) Which system, **(i)** or **(ii)**, is used by the International Olympic Committee (IOC), and which system is used by the Canadian Broadcasting Corporation (CBC)?

(c) In your opinion, which system (of these two) more fairly represents the true ranking of countries? Why?