1. The following data summarize lung function of 16 workers subjected to chronic asbestos exposure: 167.9, 180.8, 184.8, 189.8, 194.8, 200.2, 201.9, 206.9, 207.2, 208.4, 226.3, 227.7, 228.5, 232.4, 239.8, 258.6. We hypothesize that chronic asbestos exposure degrades lung function. If healthy lung function corresponds to a response of 220 or greater, test our hypothesis.

2. We suspect that the number of markets in which a product is sold affects its profitability. We have the following data from low and high profit products: for 36 low profit products, we have an average of 5.12 markets with a 0.57 standard deviation; for 47 high profit products we have an average of 8.26 markets with a 1.20 standard deviation. Test whether high profit products have a true average number of markets greater than that of low profit products.

3. A clinical trial tests a sleep-aid versus a placebo on 10 patients and records their number of hours slept:

patient	1	2	3	4	5	6	7	8	9	10
drug	1.97	4.2	7.47	4.1	5.87	3.2	7.5	5	4.9	6.3
placebo	0.6	1.1	2.5	2.8	2.9	3	3.2	4.7	5.5	6.2

   Test whether or not the drug increases the number of hours slept.

4. The Chicago Cubs won 73 and lost 71 games in 1995. People considered this an improvement over the 1194 record of 49-64. Based on a binomial model of wins and losses with success probability q_1 in 1994 and q_2 in 1995 test whether the difference in records was purely due to chance.

Also, does the binomial model make sense for baseball games?

5. In order to provide effective treatment for Cushing's disease, it is important to detect the disorder as early as possible. Below are samples of the age at onset of symptoms minus the age at diagnosis for 15 children (in months): -24, -12, -55, -15, -30, -60, -14, -21, -48, -12, -25, -53, -61, -69, -80. Provide a confidence interval for the population mean difference.

6. Ionizing radiation is touted as being effective in increasing the shelf-life of fruits and vegetables. 153 of 180 irradiated garlic bulbs were marketable 240 days after treatments whereas 119 of 180 untreated bulbs were marketable after the same length of time. Do you conclude that ionizing radiation is effective?