Algebra 2 CP
Statistics Assignments

Day 1

1. Determine whether each question is a statistical question. Explain each of your answers.

   a. How many words are in this sentence?
   b. How many words are there in the sentences of our Math text book?
   c. What time do you eat breakfast on weekdays?
   d. What time did you eat breakfast today?
   e. Who was the youngest president?
   f. What were the ages of the presidents at inauguration?
   g. Do more boys in our class like the color purple than girls?
   h. Do girls in our class own more shoes than boys?
   i. What proportion of M&M's in a bag are blue?

2. For each of the statistical questions in #1, identify the population. If it would be difficult to collect data from all members of the population, suggest a way to obtain a random sample.

3. Identify each study as a survey, observational study, or randomized experiment. Explain your reasoning.

   a. A group of students is interested in knowing if the number of times they can make a basketball free throw is related to the color of the basketball. Each student flips a coin to determine whether he will shoot the free throw with a regulation colored basketball or with a blue basketball. This procedure is repeated for 10 free throws for each student. The number of baskets scored with each type of ball is recorded and a statistical analysis is performed.
   b. A teacher is interested in knowing if there is a correlation between attending an SAT Prep class and scores achieved on the SAT Examination. The teacher examines SAT scores from the records of students who took an SAT Prep class and those that did not take an SAT Prep class. A statistical analysis of the data is performed.
   c. Researchers want to know if bathing in Epsom salts can reduce the pain of arthritis. 100 arthritis sufferers are asked to record their pain levels daily for one month. Fifty of the patients are randomly selected to bathe in Epsom salts every day. The other fifty do not bathe in the salts. A statistical analysis of the self-reported pain levels is performed.

4. In #3b, the teacher finds that the students who took the SAT prep course had higher SAT scores, on average, than the students not enrolled in the course. Can you conclude that the SAT course caused the increase in the scores? Explain your reasoning.

5. A researcher wants to investigate whether using tanning beds at least twice a month affects the likelihood of developing skin cancer. Should she conduct a survey, observational study, or experiment? Explain your reasoning.

6. A congressman is considering a bill that would provide government-sponsored insurance. He receives 1152 letters on the issue from his constituents, of which 823 oppose the legislation. He says, "I'm surprised that most people oppose the bill. I would have thought it would be more popular." Do you agree with the congressman's conclusion that the bill is not popular? Explain your reasoning.