

Problem-01:

An investigation of the effectiveness of an antibacterial soap in reducing operating room contamination resulted in the accompanying table. The new soap was tested in a sample of eight operating rooms in the greater Seattle area during the last year

Operating room	1	2	3	4	5	6	7	8
Before	6.6	6.5	9.0	10.3	11.2	8.1	6.3	11.6
After	6.8	2.4	7.4	8.5	8.1	6.1	3.4	2.0

At the 0.05 significance level, can we conclude the contamination measurements are lower after use of the new soap?

Problem-02:

Gibbs Baby Food Company wishes to compare the weight gain of infants using its brand versus its competitor's. A sample of 40 babies using the Gibbs products revealed a mean weight gain of 7.6 pounds in the first three months after birth. For the Gibbs brand, the population standard deviation of the sample is 2.3 pounds. A sample of 55 babies using the competitor's brand revealed a mean increase in weight of 8.1 pounds. The population standard deviation is 2.9 pounds. At the .05 significance level, can we conclude that babies using the Gibbs brand gained less weight? Compute the p-value and interpret it.

Problem-03:

A recent study compared the time spent together by single- and dual-earner couples. According to the records kept by the wives during the study, the mean amount of time spent together watching television among the single-earner couples was 61 minutes per day, with a standard deviation of 15.5 minutes. For the dual-earner couples, the mean number of minutes spent watching television was 48.4 minutes, with a standard deviation of 18.1 minutes. At the .01 significance level, can we conclude that the single-earner couples on average spend more time watching television together? There were 15 single-earner and 12 dual-earner couples studied.

Problem-04:

The owner of Bun 'N' Run Hamburgers wishes to compare the sales per day at two locations. The mean number sold for 10 randomly selected days at the Northside site was 83.55, and the standard deviation was 10.50. For a random sample of 12 days at the Southside location, the mean number sold was 78.80 and the standard deviation was 14.25. At the .05 significance level, is there a difference in the mean number of hamburgers sold at the two locations? What is the p-value?

Problem-05:

Two boats, the Prada (Italy) and the Oracle (U.S.A.), are competing for a spot in the upcoming America's Cup race. They race over a part of the course several times. Below are the sample times in minutes. At the .05 significance level, can we conclude that there is a difference in their mean times?

Boat	
Prada (Italy)	12.9, 12.5, 11.0, 13.3, 11.2, 11.4, 11.6, 12.3, 14.2, 11.3
Oracle (U.S.A.)	14.1, 14.1, 14.2, 17.4, 15.8, 10.7, 16.1, 13.3, 13.4, 13.6, 10.8, 9.8