

Name _____

AP Stats

Two Sample tests

- i) A sales representative believes that his company's computer has more average downtime per week than a similar computer sold by a competitor. Before taking this concern to his director, the sales representative gathers data and runs a hypothesis test. He determines that in a simple random sample of 40 week-long periods at different firms using his company's product, the average downtime was 125 minutes with a standard deviation of 37 minutes. However, 35 week-long periods involving the competitor's computer yield an average downtime of only 115 minutes with a standard deviation of 43 minutes. What conclusion should the sales representative draw assuming a 10% significance level?

- 2) A store manager wishes to determine whether there is a significant difference between two trucking firms with regard to the handling of egg cartons. In a simple random sample of 200 cartons on one firm's truck there was an average of 0.7 broken eggs per carton with a standard deviation of 0.31, while a sample of 300 cartons on the second firm's truck showed an average of 0.775 broken eggs per carton with a standard deviation of 0.42. Is the difference between the averages significant at a significance level of 5%? At a significance level of 1%?

Answer: We are given independent SRSs and large enough sample sizes to relax the normality assumptions, so we continue:

- 3) A city council member claims that male and female officers wait equal times for promotion in the police department. A women's spokesperson, however, believes women must wait longer than men. If five men waited 8, 7, 10, 5, and 7 years, respectively, for promotion while four women waited 9, 5, 12, and 8 years, respectively, what conclusion should be drawn?

Answer: We must assume that we have two independent SRSs, each from an approximately normally distributed population (the samples are too small for histograms to show anything, but at least a quick calculation indicates no outliers and normal probability plots are fairly linear).