

6) Company officials are concerned about the length of time a particular drug retains its potency. A random sample (sample 1) of 10 bottles of the product is drawn from current production and analyzed for potency. A second sample (sample 2) is obtained, stored for one year, and then analyzed. The data is in file "potency."

a) Identify the hypothesis to test if the potency has been retained.

b) Calculate the test statistic to test the hypothesis; once assuming equal variances and once not assuming equal variances.

c) Are the test statistics in (b) the same? Why or why not?

d) What conclusion do you reach about the change in potency over one year?

[REDACTED]

6

7) When one company buys another company, it is not uncommon that some workers are terminated. The severance benefits offered to the laid-off workers are often the subject of dispute. Suppose that the Laurier Company recently bought the Western Company and subsequently terminated 20 of Western's employees. As part of the buyout agreement, it was promised that the severance packages offered to the former Western employees would be equivalent to those offered to Laurier employees who had been terminated in the past year. Thirty-six year-old Bill Smith, a Western employee for the past 10 years, earning \$32,000 per year, was one of those let go. His severance package included an offer of 5 weeks' severance pay. Bill complained that this offer was less than that offered to Laurier's employees when they were laid off, in contravention of the buyout agreement. You are called in to settle the dispute. You are told that severance is determined by three factors: age, length of service with the company, and pay. To determine how generous the severance package had been, a random sample of Laurier ex-employees was taken. For each, the following variables were recorded. The data are stored in the file "Laurier." [REDACTED]

- Number of weeks of severance pay
  - Age of employee
  - Number of years with the company
  - Annual pay (in thousands of dollars)
- a) Determine the regression equation. Interpret the coefficients.
- b) Comment on how well the model fits the data
- c) Do all the independent variables belong in the equation? Explain.
- d) Perform an analysis to determine whether Bill is correct in his assessment of the severance package.
- e) Identify observations that should be checked for accuracy.