

Department of Mathematics and Statistics
Semester 122

STAT319

Quiz5

Monday May 6, 2013

Name: _____ ID #: _____

1. Temperatures are of interest in machining because cutting tools often fail by thermal softening or temperature-activated wear. An experiment to investigate the peak temperature in °C between WC material as the tool holder and steel as the tool holder, produced the following peak temperature data:

WC: 810 650 717 771

Steel: 834 717 899 782

- a. At the 10% significance level test the hypothesis that there is no difference between mean peak temperatures of the two materials.
- b. What assumptions did you make to perform the test in a.?

2. Airplanes approaching the runway for landing are required to stay within the localizer (a certain distance left and right of the runway). When an airplane deviates from the localizer, it is referred to as an exceedence. Consider two airlines at a large airport. During a three-week period airline A had 14 exceedences out of 156 flights and airline B had 11 exceedences out of 198 flights. Is there reason to believe that airline A had a worse exceedence record than airline B?

3. A manufacturing company produces water filter for home refrigerators. They have some quality problems with leaks. Out of 300 filters, 15 leaked. A project used a designed experiment to improve their quality. After the project, a sample of 300 filters yielded 7 leaks. Construct a 90% confidence interval for the true difference between the proportion of filter leaks before and after the quality project.