Homework #5 - Chapters 7 and 8 (Montgomery & Runger, 5ed)

**Parameter Estimation**

**Reading Assignment**
Read pages 223 - 225

**Problems**

1. Forty-nine one-pound cartons of margarine were analyzed to determine the polyunsaturated fat content. The sample average was 11.65 ounces, with standard deviation of 0.39 ounces. Estimate the population mean (95% and 99% confidence level).

   Answers: 95%  \( u = 11.65 \pm 0.11 \)  equivalently 11.54 < \( u < 11.76 \)

   99%  \( u = 11.65 \pm 0.14 \)  equivalently 11.51 < \( u < 11.79 \)

2. An independent test agency tested 100 light bulbs and found the average operating time to be 1570 hours with a standard deviation of 120 hours. Estimate the population mean (95% and 99% confidence level).

   Answers: 95%  \( u = 1570 \pm 23.5 \)  equivalently 1546 < \( u < 1594 \)

   99%  \( u = 1570 \pm 31.0 \)  equivalently 1539 < \( u < 1601 \)

3. A random sample of 25 reportedly healthy adult body temperatures were found to average 98.2 with a standard deviation 0.69 degrees Fahrenheit. Estimate the population mean at the 95% confidence level.

   Note: Use \( t \) Distribution

   Answers: 95%  \( u = 98.2 \pm 0.28 \)  equivalently 97.9 < \( u < 98.5 \)

**Confidence Intervals**

**Reading Assignment**
Pages 225 - 230 and Pages 251 - 276

**Problems**

- Pages 228 - 230  Examples 7-1, 7-2, 7-3
- Page 230  #7-3; 7-5; 7-7; 7-9
- Page 261  #8-13; 8-15
- Page 266  #8-37 b,c; 8-39 b,c
- Pages 271 - 273  Examples 8-7, 8-8
- Page 273  #8-53; 8-59