

HW 5

7.18, 7.20, 7.26, 7.40, 7.42, 7.46, 7.62, 7.64

Note: Numbers in the solutions might differ slightly from numbers given by Excel.

7.18 a) 2.67. **b)** 1.691. **c)** 1.987.

7.20 a) 29. **b)** 0.15 and 0.10. **c)** between 0.30 and 0.20. **d)** It is not significant at either the 0.10 or 0.05 levels. **e)** 0.2719.

7.26 No, this sample does not give evidence that the mean cost for all Internet users differs from \$20 per month.

7.40 a) Each person involved in the experiment should be randomly assigned either the right-hand thread first or the left-hand thread first. **b)** $H_0: \mu = 0$ $H_a: \mu > 0$ where μ is the mean difference of left-hand thread time minus right-hand thread time. **c)** $t = 2.90$, P-value = .0039 (from Minitab). Conclusion is that right-handed people can turn the right-hand thread knob faster.

7.42 a) $H_0: \mu = 0$ $H_a: \mu > 0$, where μ is the mean of the Post test scores minus the Pretest scores.

b)

Pretest		The pretest and post test scores are slightly skewed to the left
1	5	but the sample size is greater than 15 so the t
2	000	procedures should be trustworthy.
2	56688999	
3	00011144	

Posttest	
1	68
2	
2	5578899
3	0012222234

c) $t = 2.02$, P-value = 0.029. The results of this test are significant at the 0.05 level but not at the 0.01 level. **d)** The 90% confidence interval for the mean increase in listening score is (0.211, 2.689).

7.46 It does not make sense to estimate because this data does not represent a sample. It describes the population of the states.

7.62 Yes, the data give good evidence that healthy firms have a higher ratio of assets to liabilities on the average. ($t = 7.17$, P-value < 0.0005 .) The 99% confidence interval is 0.902 ± 0.346 .

7.64 a) $H_0: \mu_1 - \mu_2 = 0$ $H_a: \mu_1 - \mu_2 > 0$. **b)** $t = 2.025$ with 9 degrees of freedom, $0.025 < \text{P-value} < 0.05$. There is some evidence that there is a difference between one and two-bedroom apartment average rents. The results are significant at the 0.05 level. **c)** No, this is a test of means, not single observations. **d)** The confidence interval is more useful because it shows the range of averages. The 95% confidence interval actually shows that the difference of the averages could be negative.