Single Mean (including matched pair) HT Exercises

Pages	Suggested Reading
431 – 435	Section 10.5 (this is only for matched pair HT)

Pages	Problems
396 – 401	(***Section 9.16*** – the "non – matched pair" ones) 5, 7, 8, 9, 15, 22
442 – 451	(***Section 10.9*** – the "matched pair" ones) 21 (this one has a solution in the text, but here's a video to help you answer, "What's a potential danger of running this test on this data?"), 22, 25, 42, 43, 50

Single Mean (including matched pair) HT Quizzes

Quiz 1.

1. A Secchi disk (shown at right) is a tool used to determine water clarity. The weighted disk is lowered into the water and the depth at which it is no longer visible is recorded (for example, at Crater Lake, the record clarity is 41 meters; right after the Mount Saint Helens eruption, Spirit Lake in Washington had a 1 centimeter reading). An environmental biologist takes several readings at the same location on 8 dates during the course of a year. She then repeats these measurements on the same date 5 years later. Her results, in inches, are in the table below (larger numbers mean a deeper reading , which indicate better clarity). Does it appear that the water is getting clearer?

Date	Initial Depth	Depth 5 Years Later
5.11	38	52
6.7	58	60
6.24	65	72
7.8	74	72
7.27	56	54
8.31	36	48
9.30	56	58
10.12	52	60

Quiz 2.

Many soft drinks are sold in 12 ounce cans. Due to normal variation in the filling machines, however, it's possible that some cans, when being filled to 12 ounces, might actually contain less. To alleviate the concern that a 12 – ounce can will have too little soda in it, many times the filling machines are calibrated to fill to 12**.1** ounces (that way, even if they under fill a little, the cans are more likely to contain, on average, 12 ounces). The quality control engineer at a certain bottling plant randomly selects 35 cans of soda and finds them to contain the following volumes:

12.0	**12.3**	**12.0**	**12.0**	**12.5**	**12.0**	**12.0**
12.4	**11.9**	**12.0**	**12.1**	**12.4**	**12.0**	**12.3**
12.1	**12.0**	**12.0**	**12.3**	**12.1**	**12.5**	**12.2**
12.3	**12.4**	**12.0**	**12.0**	**12.0**	**12.5**	**12.0**
12.0	**12.0**	**12.0**	**12.2**	**12.0**	**12.7**	**12.0**

The quality control engineer wants to know if the machine needs to be recalibrated (this will have to be done if the observations above are significantly ***below*** an average of 12.1 ounces). Recalibration is a horribly expensive process...do the above observations imply that the machine needs to be recalibrated?

Quiz 3.

A teacher proposes a course designed to increase reading speed and comprehension. To evaluate the effectiveness of the course, he tests students before and after the course, using a scale where higher numbers indicate improvement. He gathers the data at right in his experiment.

Test, at the 5% level, the teacher's claim that the new course increases reading speed and comprehension.

Student	Before	After
Mel	110	112
Sam	106	110
Angel	102	103
Miranda	106	104
Hannah	112	110
Bonnie	98	105