2. df If we are using the sample data from Exercise 1 in a t test of the claim that the population mean is greater than 90 sec, what does df denote, and what is its value?

3. *t* Test Exercise 2 refers to a t test. What is a t test? Why are the t test methods of Part 1 in this section so much more likely to be used than the z test methods in Part 2?

4. Confidence Interval Assume that we will use the sample data from Exercise 1 with a 0.05 significance level in a test of the claim that the population mean is greater than 90 sec. If we want to construct a confidence interval to be used for testing that claim, what confidence level should be used for the confidence interval? If the confidence interval is found to be 21.1 sec $< \mu <$ 191.4 sec, what should we conclude about the claim?

Finding *P*-values. ***In Exercises 5–8, either use technology to find the P-value or use Table A-3 to find a range of values for the P-value.***

5. Cigarette Nicotine The claim is that for the nicotine amounts in king-size cigarettes, $\mu > 1.10$ mg. The sample size is $n = 25$ and the test statistic is $t = 3.349$.

6. Cigarette Tar The claim is that for the tar amounts in king-size cigarettes, $\mu > 20.0$ mg. The sample size is $n = 25$ and the test statistic is $t = 1.733$.

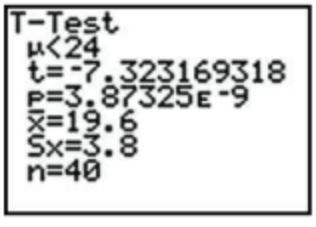
7. Car Crash Tests The claim is that for measurements of standard head injury criteria in car crash tests, $\mu = 475$ HIC. The sample size is $n = 21$ and the test statistic is $t = -2.242$.

8. Pulse Rates The claim is that for pulse rates of women, $\mu = 73$. The sample size is $n = 40$ and the test statistic is $t = 2.463$.

Testing Hypotheses. ***In Exercises 9–24, assume that a simple random sample has been selected and test the given claim. Unless specified by your instructor, use either the P-value method or the critical value method for testing hypotheses. Identify the null and alternative hypotheses, test statistic, P-value (or range of P-values), critical value(s), and state the final conclusion that addresses the original claim.***

9. Chocolate Chip Cookies The Chapter Problem for Chapter 3 includes the sample mean of the numbers of chocolate chips in 40 Chips Ahoy reduced fat cookies. The sample mean is $\bar{x} = 19.6$ chocolate chips and the sample standard deviation is 3.8 chocolate chips. Use a 0.05 significance level to test the claim that Chips Ahoy reduced-fat cookies have less fat because they have a mean number of chocolate chips that is less than the mean of 24 for regular Chips Ahoy cookies. See the accompanying TI-83/84 Plus display that results from this hypothesis test.

TI-83/84 PLUS



10. Earthquake Depths Data Set 16 in Appendix B lists earthquake depths, and the summary statistics are $n = 50$, $\bar{x} = 9.81$ km, and $s = 5.01$ km. Use a 0.01 significance level to test the claim of a seismologist that these earthquakes are from a population with a mean depth equal to 10 km. See the accompanying Minitab display that results from this hypothesis test.

MINITAB

Test of mu = 10 vs not = 10

N	Mean	StDev	SE Mean	95% CI	T	P
50	9.810	5.010	0.709	(8.386, 11.234)	-0.27	0.790