In Exercises 15 and 16, use the data set from Appendix B.

15. Nicotine in Cigarettes Refer to Data Set 10 in Appendix B and use the amounts of nicotine (mg per cigarette) in the king-size cigarettes, the 100-mm menthol cigarettes, and the 100-mm nonmenthol cigarettes. The king-size cigarettes are nonfiltered, nonmenthol, and nonlight. The 100-mm menthol cigarettes are filtered and nonlight. The 100-mm nonmenthol cigarettes are filtered and nonlight. Use a 0.05 significance level to test the claim that the three categories of cigarettes yield the same mean amount of nicotine. Given that only the king-size cigarettes are not filtered, do the filters appear to make a difference?

16. Secondhand Smoke Refer to Data Set 9 in Appendix B and use the measured serum cotinine levels (in mg/mL) from the three groups of subjects (smokers, nonsmokers exposed to tobacco smoke, and nonsmokers not exposed to tobacco smoke). When nicotine is absorbed by the body, cotinine is produced. Use a 0.05 significance level to test the claim that the three samples are from populations with the same mean. What do the results suggest about the effects of secondhand smoke?

12-2 Beyond the Basics

17. Tukey Test This section included a display of the Bonferroni test results from Table 12-1 included with the Chapter Problem. Shown here is the SPSS-generated display of results from the Tukey test using the same data. Compare the Tukey test results to those from the Bonferroni test.

SPSS

(I) Level	(J) Level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	8.56876	3.80486	.067	-.4626	17.6002
	3.00	8.51465	3.87487	.076	-.6830	17.7123
2.00	1.00	-8.56876	3.80486	.067	-17.6002	.4626
	3.00	-.05411	4.80851	1.000	-11.4678	11.3596
3.00	1.00	-8.51465	3.87487	.076	-17.7123	.6830
	2.00	.05411	4.80851	1.000	-11.3596	11.4678

18. Bonferroni Test Shown below are partial results from using the Bonferroni test with the sample data from Exercise 13. Assume that a 0.05 significance level is being used.

a. What do the displayed results tell us?

b. Use the Bonferroni test procedure to test for a significant difference between the mean amount of the irrigation treatment group and the group treated with both fertilizer and irrigation. Identify the test statistic and either the *P*-value or critical values. What do the results indicate?

SPSS

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-.02200	.26955	1.000	-.8329	.7889
	3.00	.23600	.26955	1.000	-.5749	1.0469
	4.00	-.84400*	.26955	.039	-1.6549	-.0331

12-3 Two-Way ANOVA

Key Concept This section describes the method of *two-way analysis of variance,* which is used with data partitioned into categories according to *two* factors. The method of this section requires that we begin by testing for an *interaction* between the