7. Accuracy of Weather Forecasts Repeat the preceding exercise using the Wilcoxon signed-ranks test.

8. Archeology Listed below are skull breadths obtained from skulls of Egyptian males from three different epochs (based on data from *Ancient Races of the Thebaid,* by Thomson and Randall-Maciver). Use a 0.05 significance level to test the claim that the samples are from populations with the same median. Changes in head shape over time suggest that interbreeding occurred with immigrant populations. Is interbreeding of cultures suggested by the data?

4000 B.C.	125	129	131	132	132	134	135	138	138
1850 B.C.	129	129	134	134	136	137	137	138	136
150 A.D.	128	136	137	137	138	139	141	142	145

9. Archeology Refer to the preceding exercise and use only the skull breadths from 4000 B.C. and 150 A.D. Use the Wilcoxon rank-sum test with a 0.05 significance level to test the claim that the two samples are from populations with the same median.

10. Garbage The table below lists weights (lb) of plastic and food disposed in one week (from Data Set 23 in Appendix B). Use rank correlation with a 0.05 significance level to test for a correlation between weights of plastic and weights of food.

Plastic	0.27	1.41	2.19	2.83	2.19	1.81	0.85	3.05	3.42	2.10	2.93	2.44
Food	1.04	3.68	4.43	2.98	6.30	1.46	8.82	9.62	4.41	2.73	9.31	3.59

Cumulative Review Exercises

Please be aware that some of the following problems may require knowledge of concepts presented in previous chapters.
In Exercises 1–5, use the data listed below. The values are the numbers of credit hours taken in the current semester by full-time students of the author.

15 15 13 16 12 15 18 16 15 14 16 15 17 12 15 15 14 14 12 12

1. Descriptive Statistics Find the mean, median, standard deviation, variance, and range of the sample data. Given that the data are in hours, include the appropriate units in the results.

2. Sampling and Data Type

a. Which of the following best describes the sample: simple random sample, voluntary response sample, convenience sample?

b. Is it likely that the sample is representative of the population of all full-time college students?

c. Are the data discrete or continuous?

d. What is the level of measurement of the data (nominal, ordinal, interval, ratio)?

3. Credit Hours: Hypothesis Test Use the given data to test the claim that the sample is from a population with a mean greater than 14 hours.

4. Credit Hours: Sign Test Use the given data to test the claim that the sample is from a population with a median greater than 14 hours. Use the sign test with a 0.05 significance level.

5. Credit Hours: Confidence Interval Use the data to construct a 95% confidence interval estimate of the number of credit hours taken by the population of full-time students. Write a brief statement that interprets the result.