Cumulative Review Exercises

Please be aware that some of the following problems may require knowledge of concepts presented in previous chapters.

1. Weekly Instruction Time The Organization for Economic Cooperation and Development provided the following mean weekly instruction times (hours) for elementary and high school students in various countries: 22.2 (United States); 24.8 (France); 24.2 (Mexico); 26.9 (China); 23.8 (Japan). Use the five given times for the following.

a. Find the mean.

b. Find the median.

c. Find the range.

d. Find the standard deviation.

e. Find the variance.

f. Use the range rule of thumb to identify the range of usual values.

g. Based on the result from part (f), are any of the times unusual? Why or why not?

h. What is the level of measurement of the data: nominal, ordinal, interval, or ratio?

i. Are the data discrete or continuous?

j. There is something fundamentally wrong with using the given times to find statistics such as the mean. What is wrong?

2. Ohio Pick 4 In Ohio's Pick 4 game, you pay $1 to select a sequence of four digits, such as 7709. If you buy only one ticket and win, your prize is $5000 and your net gain is $4999.

a. If you buy one ticket, what is the probability of winning?

b. Construct a table describing the probability distribution corresponding to the purchase of one Pick 4 ticket.

c. If you play this game once every day, find the mean number of wins in years with exactly 365 days.

d. If you play this game once every day, find the probability of winning exactly once in 365 days.

e. Find the expected value for the purchase of one ticket.

3. Tennis Challenge In the last U.S. Open tennis tournament, there were 611 challenges made by singles players, and 172 of them resulted in referee calls that were overturned. The accompanying table lists the results by gender.

	Challenge Upheld with Overturned Call	Challenge Rejected with No Change
Challenges by Men	121	279
Challenges by Women	51	160

a. If one of the 611 challenges is randomly selected, what is the probability that it resulted in an overturned call?

b. If one of the challenges made by the men is randomly selected, what is the probability that it resulted in an overturned call?

c. If one of the challenges made by the women is randomly selected, what is the probability that it resulted in an overturned call?

d. If one of the overturned calls is randomly selected, what is the probability that the challenge was made by a woman?