



**2-1** - *continued*

- (e) Does the distribution of "Weekly Radio Hours" appear to be centered at a different value for males and females? If yes, for which sex does the center of the distribution appear to be greater?
  
  
  
  
  
  
  
  
  
  
- (f) Does the distribution of "Weekly Radio Hours" appear to have a different amount of dispersion for males and females? If yes, for which sex does the dispersion appear to be greater?
  
  
  
  
  
  
  
  
  
  
- (g) Does the distribution of "Weekly Radio Hours" appear to have a different shape for males and females? If yes, how does the shape appear to differ between the two sexes?

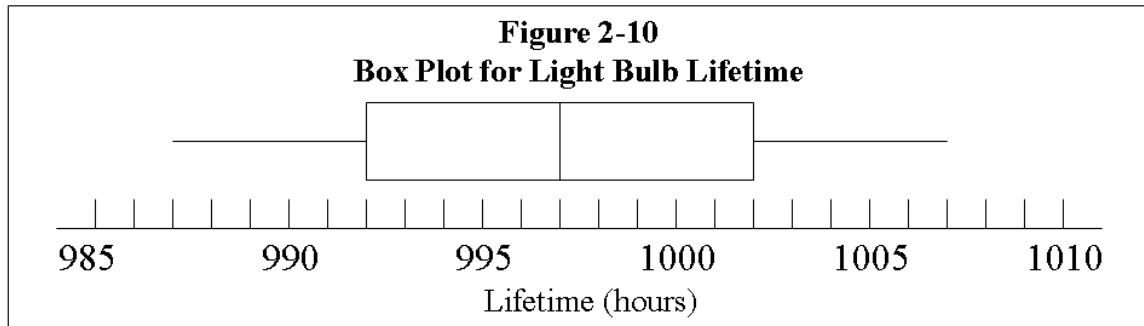
**2-2** The variable "Weekly TV Hours" in the SURVEY DATA, displayed as Data Set 1-1 at the end of Unit 1, consists of the following observations:

15 20 18 12 14 11 10 12 8 21 12 8 11 18 17  
8 9 8 27 9 6 11 14 5 15 8 10 10 13 9

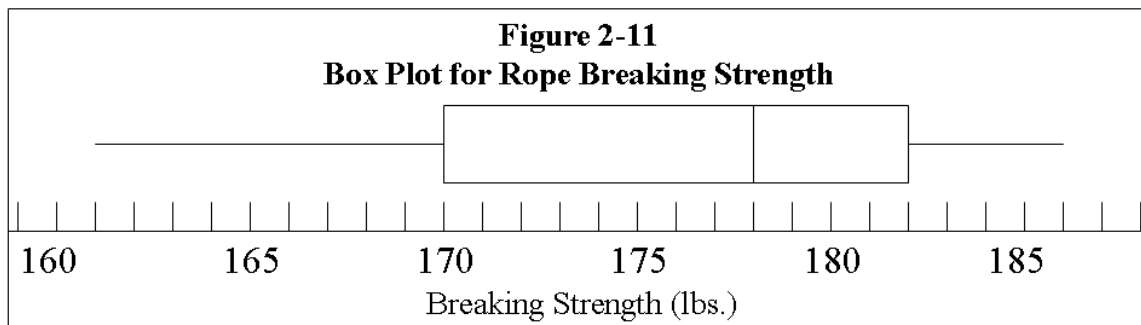
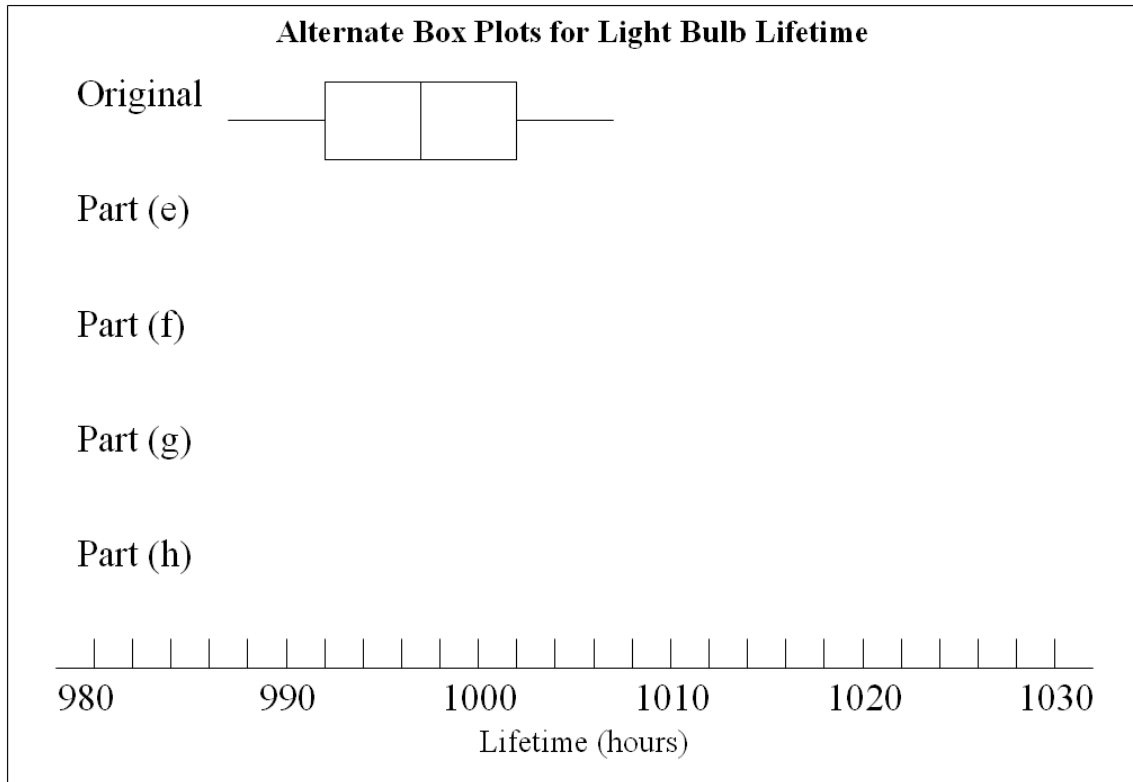
Use this data to do each of the following:

- (a) Construct a stem-and-leaf display for males and a stem-and-leaf display for females.
  
  
  
  
  
  
  
  
  
  
- (b) Obtain an ordered array for males and an ordered array for females.





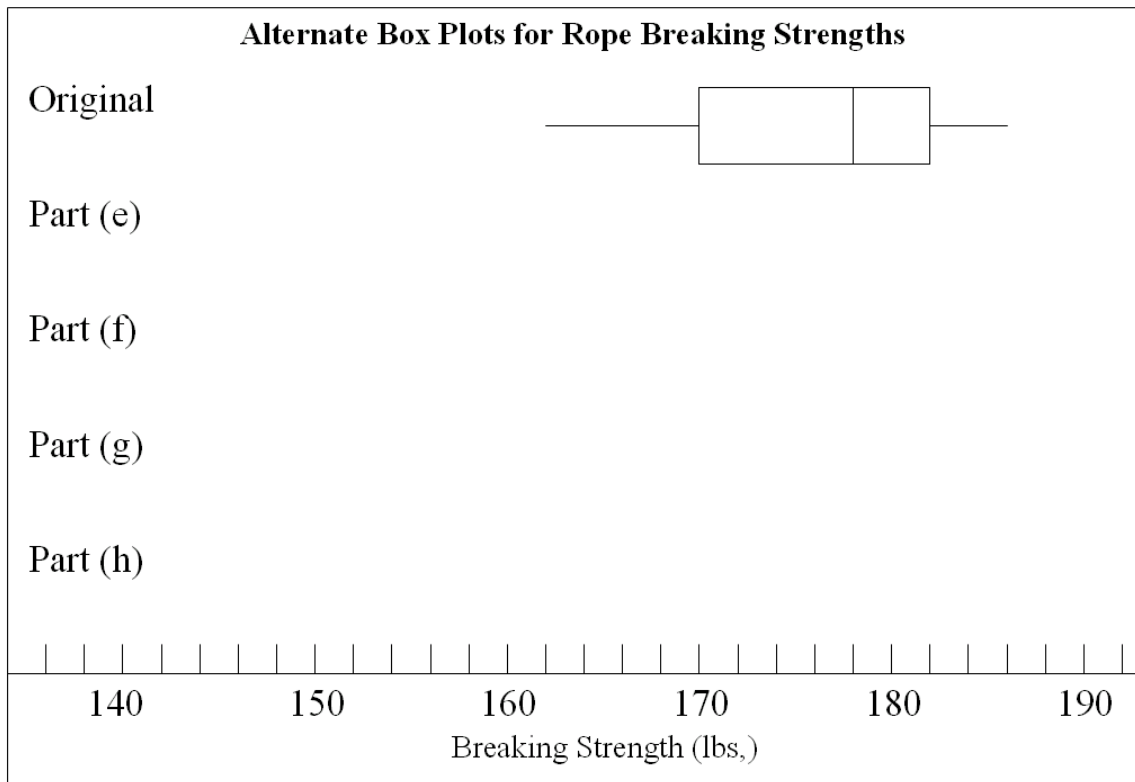
- 2-3** Data is recorded on the lifetime (in hours) of a light bulb manufactured by a certain company. One hundred and twenty observations are made and organized into the box plot displayed as Figure 2-10.
- (a) Does the shape of the distribution of lifetimes appear to be symmetric or skewed, and what type of symmetry or skewness does the distribution appear to have?
  - (b) Approximately what percentage of the observations are between 992 and 997 hours?
  - (c) Is the percentage of observations above 1000 hours more than 25%, less than 25%, or about equal to 25%?
  - (d) Approximately how many of the observations are less than 1002 hours?
  - (e) In the figure titled "Alternate Box Plots for Light Bulb Lifetime", construct a box plot with exactly the same amount of dispersion and exactly the same shape as the original data, but which is centered at a considerably larger value.
  - (f) In the figure titled "Alternate Box Plots for Light Bulb Lifetime", construct a box plot centered at exactly the same value and with exactly the same shape as the original data, but which shows considerably more dispersion.
  - (g) In the figure titled "Alternate Box Plots for Light Bulb Lifetime", construct a box plot which displays exactly the same minimum, first quartile, and second quartile as in the original data, but for which the distribution is positively skewed.
  - (h) In the figure titled "Alternate Box Plots for Light Bulb Lifetime", construct a box plot which displays exactly the same minimum, first quartile, and second quartile as in the original data, but for which the distribution is negatively skewed.



- 2-4** Data is recorded on the force required (in pounds) to break rope manufactured by a certain company. One hundred and fifty observations are made and organized into the box plot displayed as Figure 2-11.
- (a) Does the shape of the distribution of breaking strengths appear to be symmetric or skewed, and what type of symmetry or skewness does the distribution appear to have?
  
  - (b) Approximately what percentage of the observations are between 170 and 182 pounds?

2-4 - *continued*

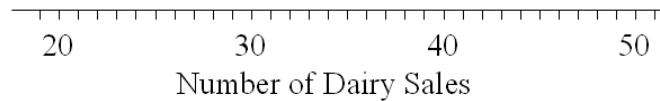
- (c) Is the percentage of observations below 175 pounds more than 50%, less than 50%, or about equal to 50%?
- (d) Approximately how many of the observations are greater than 170 pounds?
- (e) In the figure titled "Alternate Box Plots for Rope Breaking Strength", construct a box plot with exactly the same amount of dispersion and exactly the same shape as the original data, but which is centered at a considerably smaller value.
- (f) In the figure titled "Alternate Box Plots for Rope Breaking Strength", construct a box plot centered at exactly the same value and with exactly the same shape as the original data, but which shows considerably less dispersion.
- (g) In the figure titled "Alternate Box Plots for Rope Breaking Strength", construct a box plot which displays exactly the same second quartile, third quartile, and maximum as in the original data, but for which the distribution is symmetric.
- (h) In the figure titled "Alternate Box Plots for Rope Breaking Strength", construct a box plot which displays exactly the same second quartile, third quartile, and maximum as in the original data, but for which the distribution is positively skewed.



**2-5** On a certain day, the total number of dairy product sales at each store in a chain of convenience stores is recorded. The results are as follows:

27 23 35 44 29 32 23 42 30 25 39 47 34 44 33 41 44 28 29 37 48 20 26 34 31 43 47

(a) Construct a dot plot.



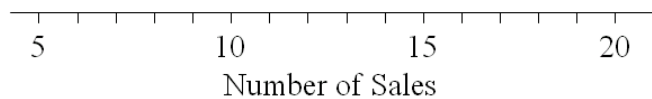
(b) Find the five-number summary.

(c) From looking at the five-number summary, decide whether the distribution is close to symmetric or is skewed.

**2-6** In a certain week, the total number of sales by each salesman in a particular office is recorded. The results are as follows:

9 15 14 7 10 9 11 10 17 8 9 12 15 8 10 13 17 10 15 11 14  
17 15 7 15 10 9 10 11 14 8 11 8 7 12 15 13 11 17 14 11 13

(a) Construct a dot plot.



(b) Find the five-number summary.

(c) From looking at the five-number summary, decide whether the distribution is close to symmetric or is skewed.

- 2-7** Describe a way of measuring "television viewing habits" so that this variable is treated as
- (a) quantitative,
  - (b) qualitative-ordinal,
  - (c) qualitative-nominal,
  - (d) qualitative-dichotomous.
- 2-8** Describe a way of measuring "type of house" so that this variable is treated as
- (a) quantitative,
  - (b) qualitative-ordinal,
  - (c) qualitative-nominal,
  - (d) qualitative-dichotomous.
- 2-9** In a two-story building, there are exactly 150 employees who work on the first floor and exactly 450 employees who work on the second floor. If 30% of the employees on the first floor are women, and half of the employees on the second floor are women, what percentage of employees in both stories of the building are women?
- 2-10** A city contains 40,000 blue-collar wage earners and 10,000 white-collar wage earners. Twenty percent of the blue-collar wage earners are smokers, and 40% of the white-collar wage earners are smokers. Comment on the accuracy of each of the following statements:
- (a) There are two white-collar smokers for each blue-collar smoker.
  - (b) The rate of smoking among white-collar wage earners is twice as high as the rate of smoking among blue-collar wage earners.
  - (c) The number of white-collar wage earners who smoke is twice as high as the number of blue-collar wage earners who smoke.
  - (d) The proportion of white-collar wage earners who smoke is twice as high as the proportion of blue-collar wage earners who smoke.