Name _____ **Period** _____ **Date** _____

Five Number Summaries and Box Plots
(*Box and Whiskers*)

1. Find the five-number summary for each data set.

a. $\{5, 5, 8, 10, 14, 16, 22, 23, 32, 32, 37, 37, 44, 45, 50\}$

Minimum _____
Maximum _____
Median _____
First Quartile _____
Third Quartile _____

b. $\{10, 15, 20, 22, 25, 30, 30, 33, 34, 36, 37, 41, 47, 50\}$

Minimum _____
Maximum _____
Median _____
First Quartile _____
Third Quartile _____

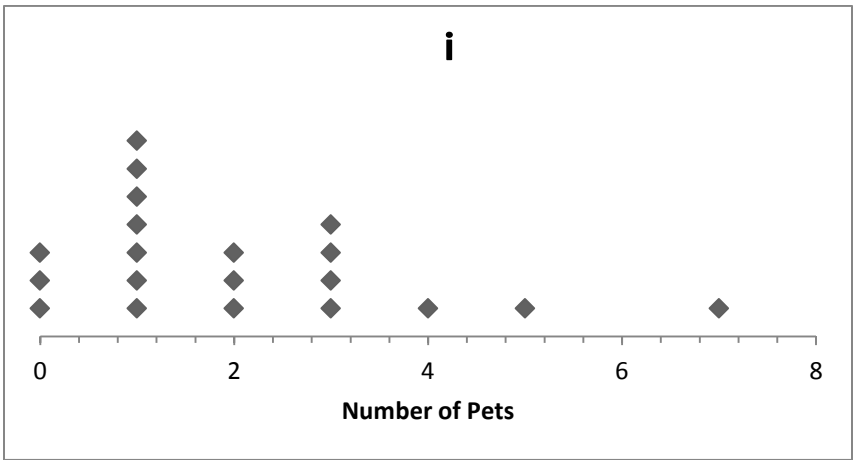
c. $\{44, 16, 42, 20, 25, 26, 14, 37, 26, 33, 40, 26, 47\}$

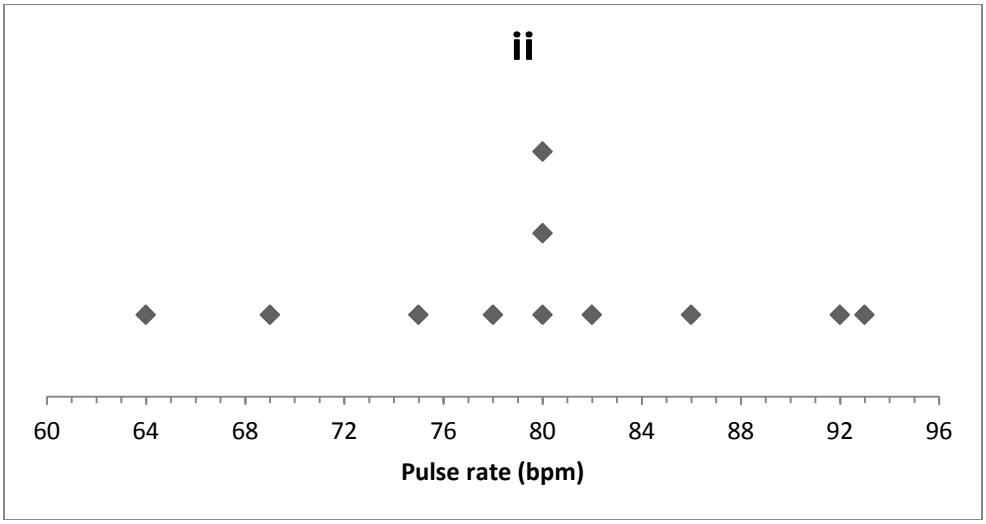
Minimum _____
Maximum _____
Median _____
First Quartile _____
Third Quartile _____

d. $\{47, 43, 35, 34, 32, 21, 17, 16, 11, 9, 5, 5\}$

Minimum _____
Maximum _____
Median _____
First Quartile _____
Third Quartile _____

2. Examine each graph and answer the following questions below.





a. Circle the points that represent the five-number summary values. If two data points are needed to calculate the median, first quartile, or third quartile, draw a circle round both points.

b. List the five-number summary values for each data set.

i.

Minimum _____

Maximum _____

Median _____

First Quartile _____

Third Quartile _____

ii.

Minimum _____

Maximum _____

Median _____

First Quartile _____

Third Quartile _____

3. Give the five-number summary and create a box plot for the listed values.

$\{2, 6, 4, 9, 1, 6, 4, 7, 2, 8, 5, 6, 9, 3, 6, 7, 5, 4, 8\}$

Minimum _____

Maximum _____

Median _____

First Quartile _____

Third Quartile _____

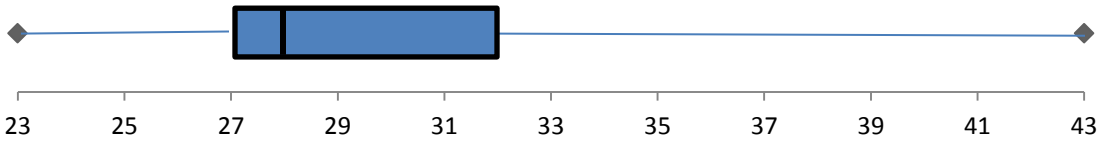
4. Which data set matches this box plot? (More than one answer may be correct.)

a. $\{23, 25, 26, 28, 28, 28, 28, 30, 31, 33, 41, 43\}$

b. $\{23, 23, 24, 25, 26, 27, 29, 30, 31, 33, 41, 43\}$

c. $\{23, 27, 28, 28, 33, 43\}$

d. $\{23, 27, 28, 28, 29, 32, 43\}$



5. Check your vocabulary by answering these questions.

a. How does the term *quartile* relate to how data values are grouped when using a five-number summary?

b. What is the name for the difference between the minimum and maximum values in a five-number summary?

c. What is the name for the difference between the third quartile and first quartile in a five-number summary?

d. How are outliers of a data set related to the whiskers of its box plot?

6. **Median Weekly Earnings, 2000**

Occupation	Men	Women
Managerial and professional specialty	$999	$697
Executive, administration, and managerial	995	684
Professional specialty	1001	708
Technical, sales, and admin. support	653	451
Technicians and related support	754	539
Sales Occupations	683	379
Administrative support including clerical	553	455
Service occupations	405	313
Protective service	636	470
Precision production, craft, repair	622	439
Mechanics and repairers	645	588
Operators, fabricators, and laborers	492	353
Machine operators, assemblers, and inspectors	498	353
Transportation and material moving	555	421
Handlers, equipment cleaners, helpers, and laborers	401	329
Farming, forestry, and fishing	342	288

a. Make two box plots, one for the men's salaries and one for the women's salaries, above the same number line. Use them to compare the two data sets. Use the terms you have learned in this chapter.

b. What does the data tell you about women's and men's wages for the same type of work in 2000?

c. Do the box plots help you identify characteristics of the data better than the table does? Are there any aspects of the data that are better seen in the table?

d. How could you use the box plots to explain the slogan "Equal pay for equal work"?

7. As a general rule, if the distance of a data point from the nearest end of the box is more than 1.5 times the length of the box (or IQR), then it qualifies as an outlier. Are there any outliers in problems 6?

8. Create a data set for a family of five with a mean age of 22 years and a median age of 14.