

The Phoenix Mercury of the Women's National Basketball League had 14 players on the roster for the 2008 season. The players and their average points per game (PPG) are shown below.

Player	Diana Taurasi	Cappie Poindexter	Tangela Smith	Le'coe Willingham	Kelly Miller	Kelly Mazzante	LaToya Pringle
PPG	24.1	21.2	11.1	10.1	8.3	5.8	4.4

Player	Brooke Smith	Barbara Farris	Olympia Scott	Yuko Oga	Allie Quigley	Willnett Crockett	Jennifer Derevjanik
PPG	4.1	3.5	2.7	2.4	2.1	1.8	0.8

(Source: www.wnba.com/mercury/stats)

1. The smallest value listed in a data set is called the **minimum**. The minimum of this data set is 0.8. Which player has the minimum value? Jennifer Derevjanik

2. The largest value listed in a data set is called the **maximum**. The maximum of this data set is 24.1. Which player has the maximum value? Diana Taurasi

3. The middle value in a data set is called the **median**. The median of this data set is 4.25. Which player has the median value? (Note: This problem requires some work because a middle value does not exist when there is an even number of data points. In this case, you must average together the two middle values.)

$$\frac{4.4 + 4.1}{2} = \frac{8.5}{2} = 4.25$$

since the median is between Latoya Pringle & Brooke Smith

4. Now list the data set horizontally from smallest to largest, and write the median in the list in the appropriate location. Circle the minimum, median, and maximum.

- (0.8), 1.8, 2.1, 2.4, 2.7, 3.5, 4.1, 4.4, 5.8, 8.3, 10.1, 11.1, 21.2, (24.1)
- min ↑ median ↑ Q3 max

5. Cover up the right side of the list in Question 4 so that you can only see the seven values below your median.

Find the median of these seven numbers and circle it; under that number write Q1.

Repeat this process with the other half of the data by covering up the left side so that you can only see the seven highest values. Find the median of these seven numbers and circle it; under that number write Q3.

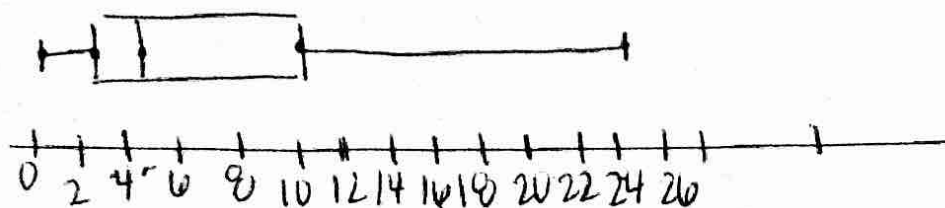
The numbers you have circled are called the **five-number summary**. These numbers separate your data into four **quartiles**, or 25% sections.

- The data between the minimum and Q1 are the first quartile.
- The data between Q1 and the median are the second quartile.
- The data between the median and Q3 are the third quartile.
- The data between Q3 and the maximum are the fourth quartile.

6. The five-number summary allows you to make a graphical display called a **boxplot**, or a **box-and-whisker plot**. The reason for this interesting name becomes obvious as you construct the graph. First you need to decide on a scale. What would be a good scale for these data—to count by 1s, 10s, 100s, or something in between?

1's, 2's, 5's — I think 2's would be easiest since the #'s are between 0.8 and 24.1

7. Construct a box-and-whisker plot. The following steps are provided for your reference.



8. Interpret the box and whisker plot

- The "box" part of your box-and-whisker plot holds 50% of the data, meaning 50% of the Phoenix Mercury players average between 2.4 and 10.1 points per game

9. Measuring Variability (How spread out is your data? Are all the data points close together or are they dispersed?)

spread of entire data set.

a) Range: The **range** is the simplest measure of variation. It is difference between the biggest and smallest random variable.

$$\text{max} - \text{min} = \text{range}$$

Find the range for the data set above.

$$\text{range} = 24.1 - 0.8 = 23.3$$

quite a bit of variability.

b) Interquartile Range: The **interquartile range** is the difference between the upper quartile and the lower quartile. It is a measure of the spread of data.

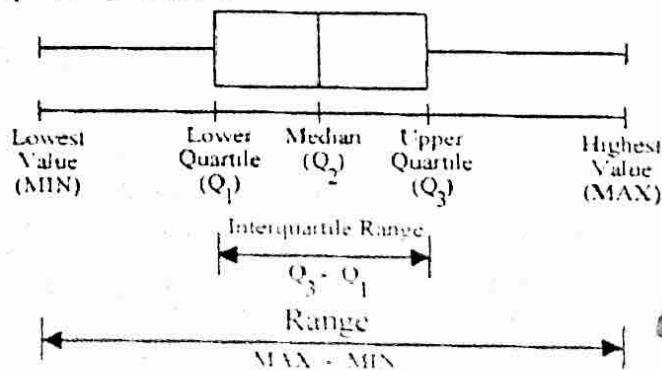
spread of the middle 50% of the data

Find the interquartile range for the data set above.

$\text{IQR} = \text{Upper Quartile} - \text{Lower Quartile}$

$$\text{IQR} = Q_3 - Q_1$$

$$\text{IQR} = 10.1 - 2.4 = 7.7$$



Constructing a Box and Whisker Plot

Ex 1: Construct a box and whisker plot for the following math test scores ~~80, 75, 90, 95, 65, 65, 80, 85, 70, 100~~

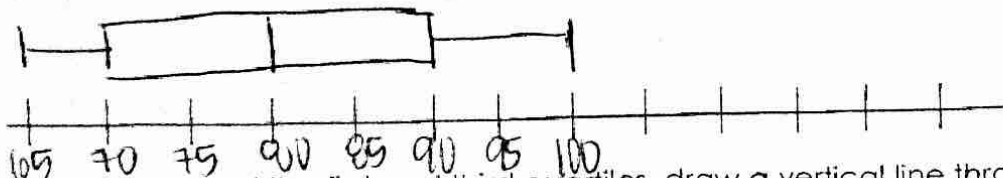
Step 1: Write the data in numerical order.

(65), 65, 70, 75, 80 | 80, 85, 90, 95, (100)

Step 2: Find the five number summary

Min: 65 Q1: 70 Median: 80 Q3: 90 Max: 100

Step 3: Place a circle above each of these values on the number line.



Step 4: Draw a box around the first and third quartiles, draw a vertical line through the box at the median, and draw the whiskers (or lines) from each end of the box to the minimum and maximum value.

Ex 2: Construct a box plot for the following data set ~~85, 100, 97, 84, 73, 89, 73, 65, 50, 83, 79, 97, 78, 10~~

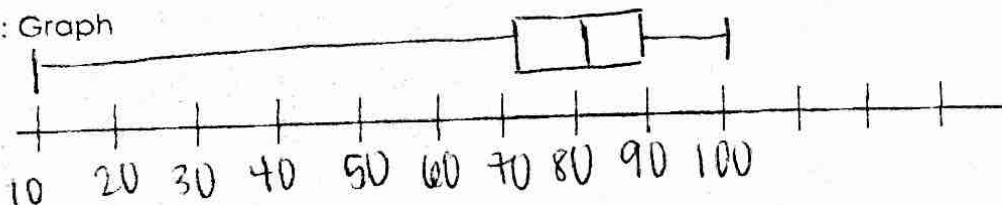
Step 1: Write the data in numerical order.

(10), 50, 65, 73, 73, 79 | 83, 84, 85, 89, 92, 97, (100)

Step 2: Find the five number summary

Min: 10 Q1: 73 Median: 81 Q3: 89 Max: 100

Step 3: Graph



Name: _____
AMDM Unit 3B

Date: _____

Period: _____
Box and Whisker Plot - Homework #1

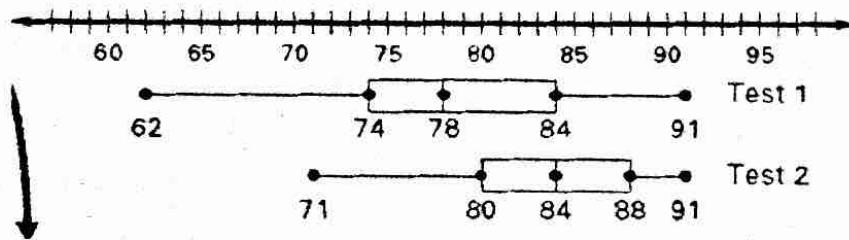
1. Create a box and whisker plot using this data: 14, 6, 13, 17, 1, 12, 9, 18. Show all your work when finding the Five Number Summary.



2. Create a box and whisker plot using this data: 77, 99, 112, 85, 117, 68, 63. Show all your work when finding the Five Number Summary.



3. The box-and-whisker plots below show a class' test scores for two tests. What conclusions can you make?



The _____ are the same for both tests.

The median for the second test is _____ than the median for the first test.

The _____ for the first test is the same as the _____ for the second test.

The scores for the _____ are more spread out than the scores for the _____.

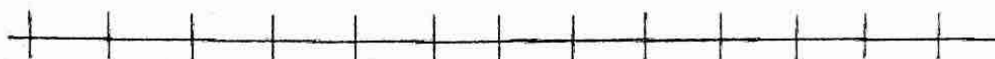
Find the range AND interquartile range for both tests. Which test had a higher range? A higher interquartile range?

4. For the following data, calculate the desired information. Then, create box-and-whisker plot
 19, 27, 19, 24, 21, 20, 23, 29, 25, 26, 33

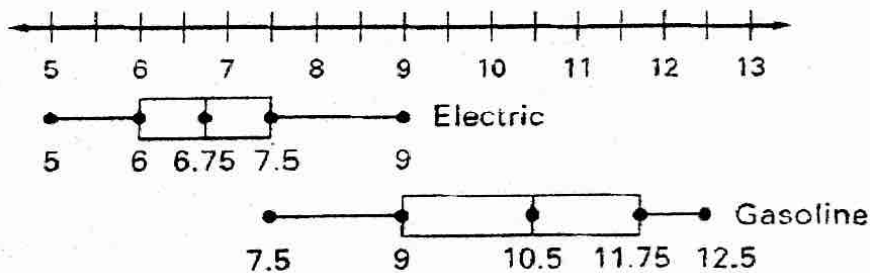
Order the numbers from least to greatest:

Minimum: Lower Quartile: Median: Upper Quartile:

Maximum: Range: Interquartile Range:



The box-and-whisker plots show the weights of electric handheld power blowers and gasoline handheld power blowers.



- Compare the median, range, and interquartile range for the two types of blowers
- About what percent of electric blowers are less than 7.5 pounds?
- About what percent of gasoline blowers are more than 10.5 pounds?
- Which type of blower would you say is the "lighter" blower? Explain.