

Concept: Understanding Statistics

Name:

- You should have completed Graphing – Section 2 Part A: Understanding Statistics before beginning this handout.

PART B: COMPUTER COMPONENT

Instructions: In  follow the **Content Menu** path:

Graphing > Statistics

NOTE: Use the **Menu** button in order to get to the lesson where you left off.

 Work through all Sub Lessons of the following Lessons in order:

- *Measures of Central Tendency*
- *Box & Whisker Plots*
- *Misleading Statistics*



As you work through **PART B: COMPUTER COMPONENT**, you will be prompted to make notes in your notebook/math journal.

PART B: SUMMARY

Demonstrate your superior knowledge by filling in the blanks below.

1. A Measure of Central Tendency is one number, which describes an entire set of data.

*When we discuss the **average** of a set of data, we could be talking about a variety of things. One type of **average** may be better suited for a particular question than another. Often times, it is up to us to decide which **average** is most appropriate for answering certain questions.*

Different Types of “Average”:

(a) To find the *mean*: **Add all of the numbers in the set of data and divide by the number of data sources.**

(b) To find the *median*: **Find the middle number in the set of data items.**

(c) To find the *mode*: **Find the most frequent number in the data set.**

2. To make a Box & Whisker Plot:

Step 1: Find the second quartile.

Step 2: Find the first or lower quartile.

Step 3: Find the third or upper quartile.

Step 4: Plot the data on a number line, marking each quartile with a straight vertical line.

Step 5: Mark any outliers with a star line.

NOTE: Outliers are values that are far away from the rest of the data.

Step 6: Whiskers (highest and lowest pieces of data, not including outliers) are represented by dots.

Step 7: Connect the quartiles by boxes.

Step 8: Connect the whiskers by lines that extend from the box to the dots that represent whiskers.

PART B: OFF COMPUTER EXERCISES

1. Jennie’s bowling scores in a 5-pin tournament are given below.

156	145	168	170	202	245	170	145
182	198	203	196	157	175	210	

Find the following types of “average”:

- (a) Mean average: $2722 \div 15 = 181.5$ points.
- (b) Median average: **175 points**
- (c) Mode average: **145 and 170 points appear twice in the data set.**

2. Bryan plays on his school’s junior basketball team. The table below shows the number of points Bryan scores in his district’s 10-game regular season.

Game	Points
1	8
2	6
3	8
4	5
5	7
6	34
7	10
8	8
9	6
10	26

Can you explain why the mean average will not be a true representation of Bryan’s usual performance?

The mean of 11.8 is not a true representation of Bryan’s usual performance because he only really scores more than 10 twice in 10 performances.

3. Sarah had scores of 80, 75, 80 and 85 on her first four exams in Algebra.

(a) Find the mean, median and mode for the exam scores.

Mean: $320 \div 4 = 80$

Median: 75, 80, 80, 85 = 80

Mode: 80 is the most common score.

(b) Which “average” would Sarah like her teacher to use in determining her mid-term grade?

Although all averages represent 80, I believe that Sarah would like for her teacher to select the mode to determine her mid-term grade.

(c) What score would Sarah have to achieve on a fifth examination in order to raise her mean score to 84? Is it reasonable to expect Sarah to achieve that score?

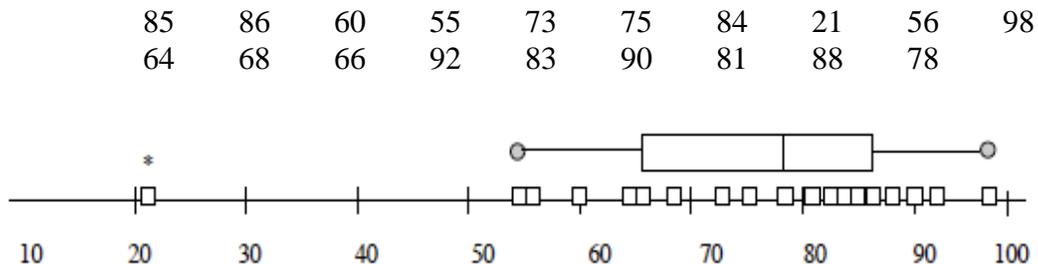
$5 \times 84 = 420 - 320 = 100 \therefore$ Sarah would need to achieve a score of 100 on her 5th examination.

Sarah could potentially receive this score, as she has achieved quite high in the past. However, trends suggest that it is unlikely.

4. The mean of a set of numbers is 5 and the median is 6. There are 8 numbers in all.

What might these numbers be? (**Answers will vary**)

5. Draw a Box & Whisker Plot to present the following driving test scores.



6. Is it possible for the mean of a set of data to fall outside the box for its box-and-whisker plot? Explain your response with an example. (**Answers will vary**)