Brandon Valley School District

District Learning Plan

May 4-8, 2020

Grade 6 Math

Brandon Valley School District Distance Learning Plan

LESSON/UNIT: Statistics   **SUBJECT/GRADE:** 6th Grade Math   **DATES:** May 4th-8th, 2020

What do students need to do? **PART ONE link to BV instructional video for May 4-8, 2020** **PART TWO link to BV instructional video for May 4-8, 2020**	Monday (5/04): ● Students will complete the **statistical questions worksheet.** Tuesday (5/05): ● Students will use pages 830-832 in the math textbook to learn how to find the measures of variation. After going through the notes provided and watching the PART ONE instructional video, complete **math textbook page 833 problem #1, #2 and #3.** Students may use calculators. Wednesday (5/06): ● Students will use pages 830-832 in the math textbook to review how to find the measures of variation. After going through the notes provided again and rewatching the PART ONE instructional video, complete **math textbook page 833 problem #4 and #5.** Students may use calculators. Thursday (5/07): ● Students will use pages 880-882 in the math text to learn how to create a box plot. After going through the notes provided and watching the PART TWO instructional video, complete **math textbook page 883 problem #1 and #2.** Students may use calculators. Friday (5/08): ● Students will use pages 880-882 in the math text to review how to create a box plot. After going through the notes provided again and rewatching the PART TWO instructional video, complete **math textbook page 883 problem #3 and #4.** Students may use calculators.
What do students need to bring back to school?	1. Statistical questions worksheet 2. p 833 (math textbook) 3. p 883 (math textbook)
What standards do the lessons cover?	6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. 6.SP.4Display numerical data in plots on a number line, including dot plots, histograms, and box plots. 6.SP.5 Summarize numerical data sets in relation to their context, such as by: c Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

What materials do students need? What extra resources can students use?	Need: ● math textbook (online book is available at https://my.mheducation.com/) ● worksheets (see PDF documents below) Extra: ● Multiplication Table ○ https://www.mathsisfun.com/tables.html

What can students do if they finish early?	ALEKS topics- https://my.mheducation.com/
	    *Continue working your topics
	    *QuickTables (math fact practice)
	    *assignments (if your teacher has assigned them)
	    Khan Academy- https://www.khanacademy.org/math

Who can we contact if we have questions?	**Brandon Valley Intermediate School** **Principal**- Mr. Skibsted- Nick.Skibsted@k12.sd.us **Assistant Principal**- Mr. Pearson- Rick.Pearson@k12.sd.us **Math Teachers:** Ms. VanRoekel: Rebecca.VanRoekel@k12.sd.us (blue team) Ms. Lewis: Layne.Lewis@k12.sd.us (white team) Ms. Wiese: Stacey.Wiese@k12.sd.us (red team) Mr. Kocer: Cassius.Kocer@k12.sd.us (silver team)

Notes: Worksheets do not have to be printed off. Problems can be answered on blank or lined paper. The math textbook can also be accessed online at **https://my.mheducation.com/login.**

Instructional materials are posted below (if applicable)

Brandon Valley School District

Statistical Questions   **Name** _____

A **statistical question** is a question that anticipates and accounts for a **variety** of answers.

Below are a few examples of **statistical questions**.

1. How many toppings do you like on your pizza?

2. How many siblings do you have?

3. How many states have you travelled to?

4. What is the height of each tree in the Big Sioux State Park?

Here are a few examples of questions that are **non-statistical questions**.

1. What was the highest temperature in Brandon, SD yesterday?

2. What did Mrs. Wiese eat for breakfast this morning?

3. How many letters are in the word math?

State whether each question is statistical. If it is not statistical, change the question to make it statistical.

1. Who was the fourth president of the United States?

_____

2. What do you prefer to eat for lunch?

_____

3. What is the height of the tallest ride at Disney World?

_____

4. How much time did you spend on the internet yesterday?

_____

5. How many students in your math class play the drums?

_____

Measures of Variation

Measures of variation are used to describe the distribution, or spread, of the data. The **range** is the difference between the greatest and least data values. **Quartiles** are values that divide the data set into four equal parts. The median of the lower half of a set of data is the **first quartile** and the median of the upper half of a set of data is the **third quartile**. The difference between the third quartile and the first quartile is called the **interquartile range**.

The measures of variation are range, median, first quartile, third quartile, and interquartile range.

Example

Find the measures of variation for the number of votes received for student government president: 13, 20, 18, 12, 21, 2, 18, 17, 15, 10, and 14.

<u>Range-</u> the difference between the lowest number and the greatest number

The greatest number in the data set is 21. The least number is 2.

$21 - 2 = 19$

The range is 19 votes.

<u>Median-</u> middle number of the data set

1. First list the data from least to greatest.
2. Find the number that is in the middle
 ***if there are two numbers in the middle, add the two numbers together and divide the sum by 2.**

$$2 \ 10 \ 12 \ 13 \ 14 \quad \textcircled{15} \quad 17 \ 18 \ 18 \ 20 \ 21$$

The median is 15.

<u>First Quartile (Q$_1$)-</u> middle of the lower half of the data

1. Do not include the median when finding Q$_1$.
2. Find the number that is in the middle of the values to the left of the median.
***if there are two numbers in the middle, add the two numbers together and divide the sum by 2.**

<u>Third Quartile (Q$_3$)-</u> middle of the upper half of the data

1. Do not include the median when finding Q$_3$.
2. Find the number that is in the middle of the values to the right of the median.
***if there are two numbers in the middle, add the two numbers together and divide the sum by 2.**
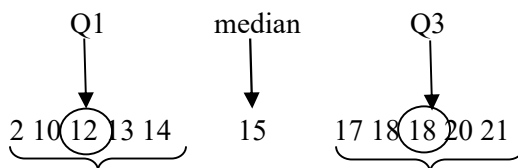
The first quartile (Q$_1$) is 12. The third quartile (Q$_3$) is 18.

Interquartile Range (IQR)- the difference of the first and third quartile

$Q_1 = 12$ $Q_3 = 18$

$18 - 12 = 6$

The interquartile range (IQR) is 6.

An **outlier** is a data value that is either much greater or much less than the rest of the data. Outliers **are** included in the data when finding measures of variation.

Example

The temperatures for Brandon, SD for 6 consecutive days are listed below.

14, 18, 25, 10, 75, 12

Outliers- values in the data set that are either much greater or much less than the rest of the data.
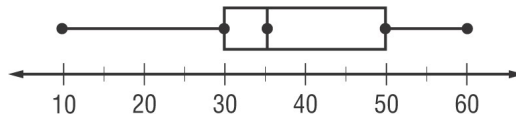
1. Place the data in order from least to greatest.
2. Compare the values to determine if there is an outlier

10   12   14   18   25   (75)

75 is an outlier because it is much greater than the rest of the data.

Box lots

A **box plot** is a diagram that is constructed using the median, quartiles, and extreme values. A box is drawn around the quartile values, and the whiskers extend from each quartile to the extreme values.

Example 1
The list below shows the number of model airplanes owned by the members of the aviation club. Draw a box plot of the data.

6, 8, 10, 10, 10, 11, 12, 14, 16, 18, 27

Step 1 Order the numbers from least to greatest. Then draw a number line that covers the range of the data.

Step 2 Find the median, the extremes, and the first and third quartiles. Mark these points above the number line.
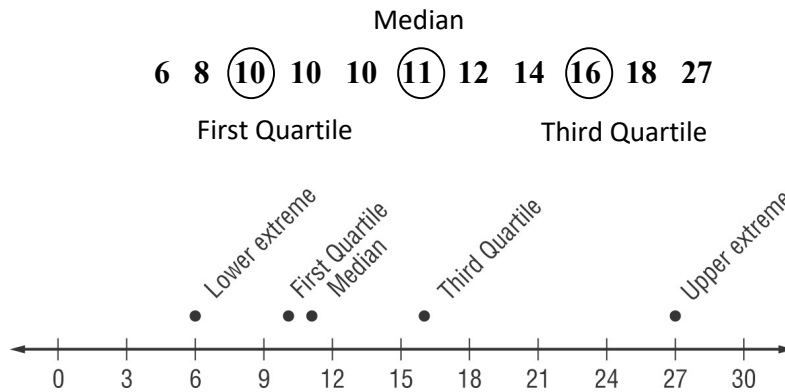
Median- middle value of the data set
  pper Extreme-highest value that is not an outlier
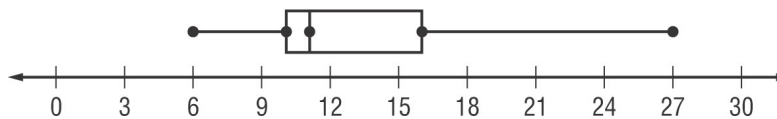 **ower Extreme**- lowest value that is not an outlier
First Quartile- middle of the lower half of the data set
Third Quartile- middle of the upper half of the data set

Step 3 Draw the box so that it connects the first and third quartile values. Draw a vertical line through the median value. Extend the whiskers from each quartile to the upper and lower extreme data points.

umbers of Model irplanes Owned

Example 2

Draw a box plot of the data below.

<p align="center">**2, 24, 6, 13, 8, 6, 11, 4**</p>

Step 1 Order the numbers from least to greatest. Then draw a number line that covers the range of the data.

<p align="center">**2   4 6 6 8 11 13 24**</p>

Step 2 Find the median, the extremes, and the first and third quartiles. Mark these points above the number line.
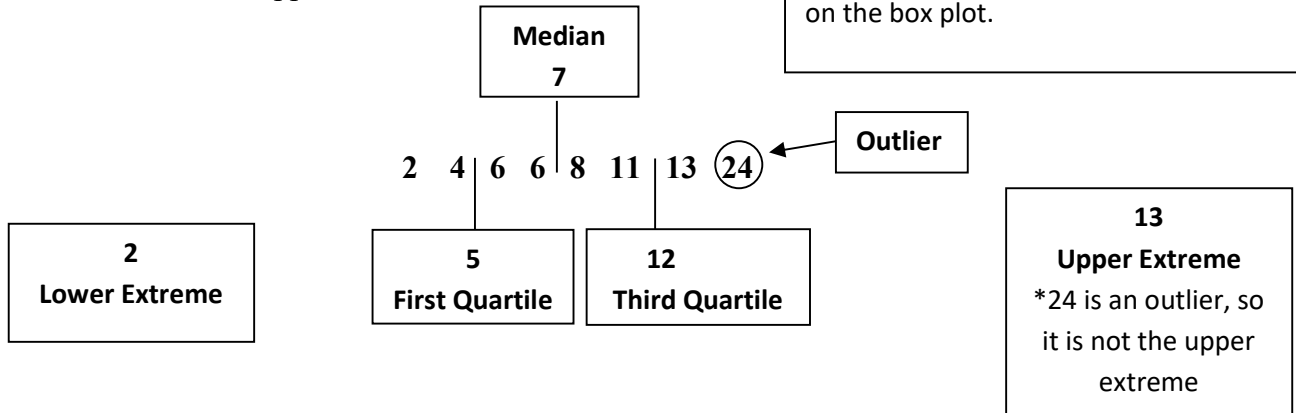
Median- middle value of the data set
  pper Extreme-highest value that is **not** an outlier
 **ower Extreme**- lowest value that is **not** an outlier
First Quartile- middle of the lower half of the data set
Third Quartile- middle of the upper half of the data set

> **Outliers**- If the data set includes outliers, then the whiskers will not extend to the outliers, just to the previous data point. Outliers are represented with an asterisk (*) on the box plot.
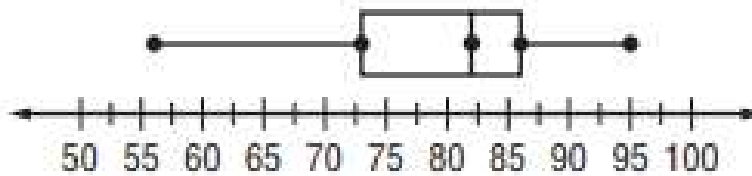
> **Median**
> **7**

<p align="center">**2   4 | 6 6 | 8 11 | 13 (24)**</p>

> **Outlier**

> **2**
> **Lower Extreme**

> **5**
> **First Quartile**

> **12**
> **Third Quartile**

> **13**
> **Upper Extreme**
> *24 is an outlier, so it is not the upper extreme

Step 3 Draw the box so that it connects the first and third quartile values. Draw a vertical line through the median value. Extend the whiskers from each quartile to the upper and lower extreme data points. Represent the outlier with an asterisk.
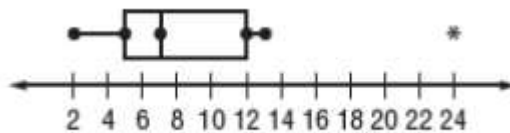
Example 3

A **box plot** separates data into four parts. Even though the parts may differ in length, each part contains 25% of the data. The box shows the middle 50% of the data.

The bas etball scores are displayed. Find the median and measures of variability. Then describe the data.

The median is 82. The first quartile is 73 and the third quartile is 86. The range is 3   and the interquartile range is 13. There are no outliers. The right half of the data is less spread out than the left half. The median is closer to the third quartile. Twenty-five percent of the scores were above 86 points and 50   of the scores were below 82 points.