

Unit 6

Statistics

Statistical Questioning
Mean, Median, Mode &
Range
Dot Plots
Frequency Tables
Histograms
Box Plots

Name: _____

Math Teacher: _____

Unit 6 Pacing

Week of 3/14:

Unit 6 Pre-Test Statistical Questions

Week of 3/21:

Mean, Median, Mode, Range and IQR, **QUIZ (Stat ?/MMMR and IQR)**

Week of 3/28:

Dot Plots, Frequency Tables and Histograms, **QUIZ (Dot Plots, Frequency Tables and Histograms)**

Week of 4/4:

No School Spring Break

Week of 2/28:

Box Plots, Review & **TEST**

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**Unit 6: Statistics
Standards, Checklist and Concept Map**

Georgia Standards of Excellence (GSE):

MGSE6.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.

MGSE6.SP.2: Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

MGSE6.SP.3: Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

MGSE6.SP.4: Display numerical data plots on a number line, including dot plots, histograms, and box plots.

MGSE6.SP.5: Summarize numerical data sets in relation to their context, such as by:

- Reporting the number of observations.
- Describing the nature of the attribute under investigation, including how it was measured and its units of measurement
- Giving quantitative measures of center (median/mean) and variability (interquartile range, mean absolute deviation), as well as describing any overall pattern or any striking deviations from the overall pattern with reference to the context in which the data was gathered.
- Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.

.....
What Will I Need to Learn??

- _____ Know that a statistical question will receive many different answers
 - _____ To produce questions that include a variety of answer choices
 - _____ To interpret graph of data by describing its center, spread, and shape
 - _____ Know that mean, median, & mode describe the center of a set of data
 - _____ Know that range describes how much a set of data varies
 - _____ How to display data in a dot plot
 - _____ How to display data in a histogram
 - _____ How to display data in a box plot
 - _____ To describe the topic in question, including methods, units of measure
 - _____ How to calculate mean and median
 - _____ How to find IQR (interquartile range) and MAD (mean absolute deviation)
 - _____ To explain outliers in data
-

Unit 6 IXL Tracking Log

<u>Required Skills</u>	
<u>Skill</u>	<u>Your Score</u>
HH.1 (Identify Statistical Questions)	
HH.8 (Identify an Outlier)	
HH.3 (Interpret Charts and Graphs to Find MMMR)	
HH.2 (Calculate M, M, M & R)	
*HH.4 (MMMR: Find the Missing Number)	
HH.7 (Calculate Quartiles and IQR)	
HH.9 (Identify Outlier & Describe the Effects of Removing it)	
*HH.5 (Changes in MMMR)	
*HH.11 (Identify Representative, Random and Biased Samples)	
HH.10 (Describe Distributions in Line Plots)	
GG.3 (Interpreting Line Plots)	
GG.4 (Creating Line Plots)	
GG.6 (Create Frequency Charts)	
GG.14 (Interpret Histograms)	
GG.15 (Create Histograms)	
GG.23 (Box Plots)	

Unit 6 Circle Map: Below, make a circle map of the standards listed above. Underline the verbs and circle the nouns they modify. Then, place those verbs on the connector lines of your concept map, and the nouns in the bubbles of the concept map.

Unit 6 Vocabulary

Vocabulary Term	Definition
Box-and-Whisker plot (or "box plot")	A graph that uses a number line to show how data is distributed. It shows the maximum and minimum values of the data, along with the upper and lower quartiles and the median.
Dot plot	A graph in which each value is shown as a dot above a number line
Frequency	The number of times a value appears in a set of data
Frequency Table	A table that lists the number of times (frequency) that a piece of data occurs. This table is often used as a method of recording data.
Histogram	A bar graph used to display numerical data grouped in equal intervals.
Interquartile range (IQR)	The range between the upper and lower quartiles on a box plot. This represents the middle 50% of the data.
Maximum value	The largest number in a set of data, and the endpoint of one whisker on a box plot.
Mean	The "average" of a set of data, found by adding all values in a set of data and dividing by the number of values you added.

Unit 6 Vocabulary

Vocabulary Term	Definition
Measures of center	A number that describes the middle of the data.
Measures of spread (or variation)	A number that describes how spread out the data is. (how much the data varies)
Median	The middle number when a set of data is arranged in order.
Minimum value	The smallest number in a set of data, and the endpoint of one whisker on a box plot.
Mode	The number that occurs the most in a set of data.
Outlier	A value that is far away from most other values in a data set.
Range	The difference between the highest and lowest values in a set of data.
Stem-and-leaf plot	A graph that organizes numerical data by splitting each piece of data into a "stem" and a "leaf", which each represent place value.

Understanding Statistical Questions

A **STATISTICAL QUESTION** is a question that can have a variety of answers.

<u>Examples</u>	<u>Non-Examples</u>
How many books did my friends read this summer?	How many pages are in the <u>Hunger Games</u> ?
How tall are my classmates?	How old am I?
Write a few examples here:	Write a few non-examples here:

Statistical example or not? Circle one choice.

What grades did the students in my class score on the test?
EXAMPLE or **NOT**

How many marbles in the jar? **EXAMPLE** or **NOT**

What does this apple cost? **EXAMPLE** or **NOT**

How fast can dogs run 100 yards? **EXAMPLE** or **NOT**

How old are each of the 6th grade teachers at East Cobb Middle School? **EXAMPLE** or **NOT**

YOU TRY:

Write 4 examples of statistical questions below:

- 1) _____

- 2) _____

- 3) _____

- 4) _____

Are the following examples of statistical questions?

5) How many days are in March? **EXAMPLE** or **NOT**

6) How many pets does each of my friends have?

EXAMPLE or **NOT**

7) What did my students score on their Unit 4 test?

EXAMPLE or **NOT**

8) What was the winning score in the last 20 Super Bowls?

EXAMPLE or **NOT**

9) Do you like peaches? **EXAMPLE** or **NOT**

10) What was the temperature at noon today at City Hall?

EXAMPLE or **NOT**

Analyzing Data

CENTER

SPREAD

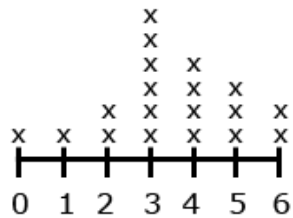


CENTER

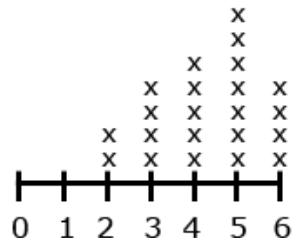
A measure of **center** is a single number that describes how data looks in the **middle**!

Examples include **mean**, **median** and **mode**.

Graph A:
Number of Siblings



Graph B:
Number of Pets



Let's take a look at the two graphs above, and see what you notice about their **CENTER**.

The **CENTER** of Graph A is about 3.

The **CENTER** of Graph B is about _____.

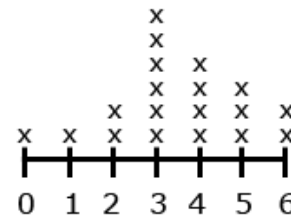
What does this tell you? _____

SPREAD

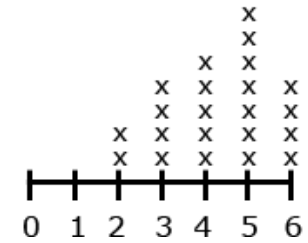
A measure of **spread** (or variation) is a single number that describes how far data is **spread out**.

Examples include **range** and **interquartile range (IQR)**

Graph A:
Number of Siblings



Graph B:
Number of Pets



Now, look at the **SPREAD** in both graphs.

Which graph has data that is CLOSER together? _____

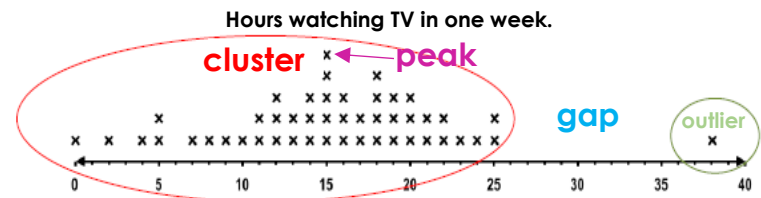
Which graph has data that is FARTHER apart? _____

What does this tell you? _____

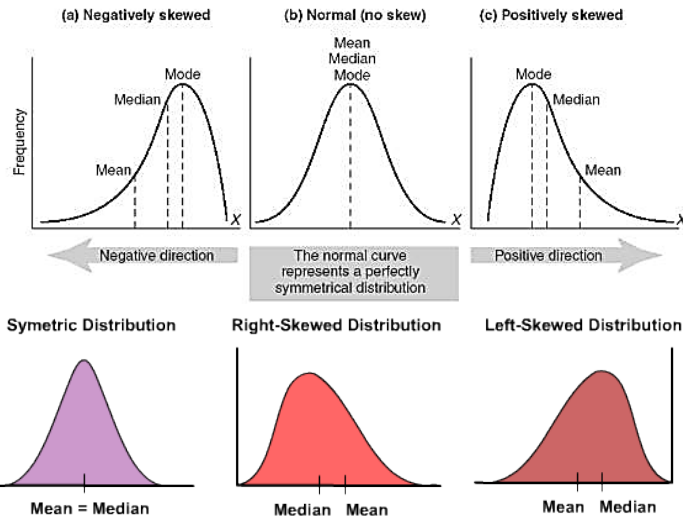


The of a set of data gives a quick snapshot of its characteristics.

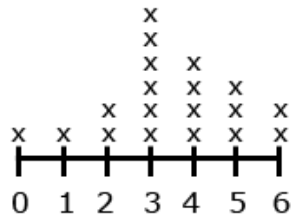
You want to look for things like **clusters** (groups of data close together), **gaps** ("holes" where no data is present), **outliers** (pieces of data that is far from the rest and **peaks** (the highest points on the graph – the mode)



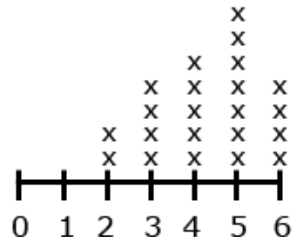
Data can also be skewed based on the relationship between the Mean, Median and Mode. The way we describe the skew is based on the direction of the “tail”.



Graph A:
Number of Siblings



Graph B:
Number of Pets



Now, look at the **SHAPE** of both graphs.

Which graph is skewed left? _____

Do either of the graphs have an outlier? _____

What is the peak of Graph B? _____

Does Graph A have any gaps? _____

Measures of Center: Mean, Median & Mode

Mean (a.k.a. “average”)

You find the mean by: adding up all the numbers in your data set and dividing by the number of numbers in the set.

Example: Find the mean of 6, 4, 10, 11 and 4.

Solution: $6 + 4 + 10 + 11 + 4 = 35$

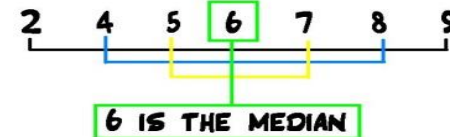
$35 \div 5 = 7$; The mean of this data is 7.

You Try: Find the mean of 8, 33, 20, 11, 6 and 12.

Median (a.k.a. “the middle”)

The median is the **middle** number when all data values are in **order**. If there are two middle numbers, find the **mean (average)** of the two numbers.

Example: Find the median of 2, 8, 9, 5, 6, 7, and 4.



You Try: Find the median of 8, 33, 20, 11, 6, and 12.

Mode (a.k.a. “the most”)

The mode is the number that occurs the **most** in a set of data. You will have **no mode** if all of the numbers in your data have the same frequency. You will have **more** than one mode if more than one number occurs most in a data set.

Example: Find the mode of 6, **4**, 10, 11, and **4**. Mode = **4**

You Try:

- a. Find the mode of 8, 33, 20, 11, 6, and 12. _____
- b. Find the mode of 1, 3, 4, 1, 5, 6, and 3. _____
- c. Find the mode of 15, 62, 76, and 62. _____

More Practice: Find the mean, median and mode for the following data:

3, 5, 13, 6, 1, 2, 3, 2, 1

Mean: _____

Median: _____

Mode: _____

100, 111, 122, 133, 144, 155, 166

Mean: _____

Median: _____

Mode: _____

84, 140, 105, 119, 105, 84, 105

Mean: _____

Median: _____

Mode: _____

Mean, Median & Mode Extra Practice

- 1) What is the **median** of the following set of numbers? _____
{1, 2, 4, 6, 4}
- 2) What is the **mean** of the following set of numbers? _____
{4, 3, 1, 9, 3, 7, 3, 5, 10}
- 3) What is the **median** of the following set of numbers? _____
{4, 9, 6, 3, 4, 2}
- 4) What is the **mode** of the following set of numbers? _____
{1, 2, 4, 6, 4}
- 5) What is the **mean** of the following set of numbers? _____
{8, 10, 10, 10, 4, 6, 8}
- 6) What is the **median** of the following set of numbers? _____
{8, 10, 8, 5, 4, 7, 5, 10, 8}
- 7) What is the **mode** of the following set of numbers? _____
{8, 10, 8, 5, 4, 7, 5, 10, 8, 10}
- 8) What is the **median** of the following set of numbers? _____
{18, 17, 9, 9, 14, 20, 18}
- 9) What is the **mode** of the following set of numbers? _____
{16, 18, 10, 12, 11, 5, 9}
- 10) What is the **mean** of the following set of numbers? _____
{15, 17, 16, 10, 17, 7, 11, 19}

Measures of S P R E A D (variation): Range & Interquartile Range (IQR)

Measures of Spread tell you how spread out your data is, or how much it varies.

Range: the difference between the **highest** and **lowest** values in a data set (simply subtract the highest and lowest numbers!)

Maximum Value Minimum Value

Example: 20, 13, 22, 17, 28, 10, 25 **Range** → $28 - 10 = 18$

You Try: Find the range for the following data.

1) 34, 15, 9, 33, 27, 12, 27, 25, 30 _____

2) 8, 90, 5, 80, 27, 50 _____

3) 5, 4, 3, 5, 4, 2, 2, 6 _____

4) 35, 41, 68, 35, 83 _____

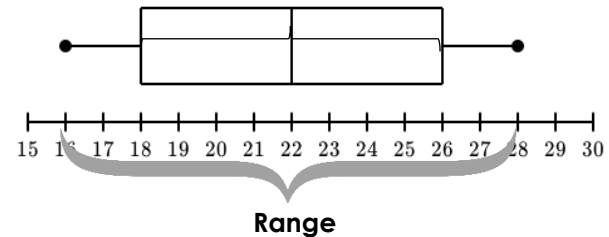
5) 5, 7, 5, 9, 6, 5, 5, 8, 4 _____

What does a LARGE range tell you about the data? _____

What does a SMALL range tell you about the data? _____

Interquartile Range (IQR): The range between the upper and lower quartiles on a box plot. This represents the middle 50% of the data. Simply subtract the upper and lower quartiles $Q_3 - Q_1$.

Interquartile Range (IQR)

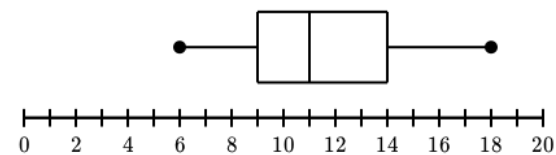


How to find the IQR:

- 1) Put the data in order from least to greatest.
- 2) Find the Median.
- 3) Separate the numbers below and above the median.
- 4) Find the medians of the lower (Q_1) and the higher (Q_3) group.
- 5) Subtract those two medians to get the IQR.


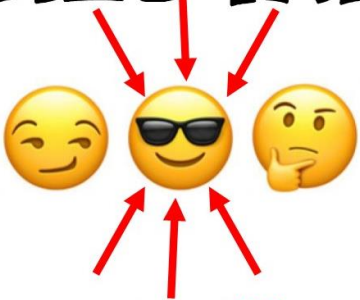


You Try: Based on the Box Plot above, answer the following questions.

- 1) What is the median? _____
- 2) What is Q_1 ? _____
- 3) What is Q_3 ? _____
- 4) What is the IQR? _____



- 1) What is the median? _____
- 2) What is Q_1 ? _____
- 3) What is Q_3 ? _____
- 4) What is the IQR? _____

Measures of Center and Spread Summary

<h2>Mean</h2>  <p>The MEAN is the average of a set of numbers. You find it by finding the sum of a set of numbers and dividing by the number of numbers in the set.</p>	<h2>MEDIAN</h2>  <p>The MEDIAN is the middle of a set of numbers. You find it by putting your data in order and finding the one in the middle. <small>If there are two, you average the two middle numbers.</small></p>
<p>The MODE is the number that occurs most in a set of numbers. You only have a mode if one or more numbers are repeated in a data set.</p>  <h2>MODE</h2>	<p>The RANGE is the difference between the biggest (maximum value) and the smallest (minimum value) of numbers in a data set.</p>  <h2>RANGE</h2>

Extra Practice

- 1) Write an example of a statistical question.
- 2) Write a non-example of a statistical question.

Matching: Match the following measures of center with the key word to remember what they find.

- | | |
|-----------|------------|
| 3) Mean | a) middle |
| 4) Median | b) average |
| 5) Mode | c) most |

Find the mean, median, mode, range and IQR for the following data.

- 6) 5, 12, 8, 16, 12, 19

Mean: _____

Median: _____

Mode: _____

Range: _____

IQR: _____

- 7) 5, 7, 5, 9, 6, 5, 5, 8, 4

Mean: _____

Median: _____

Mode: _____

Range: _____

IQR: _____

- 8) 38, 42, 36, 17, 38, 21, 24, 38

Mean: _____

Median: _____

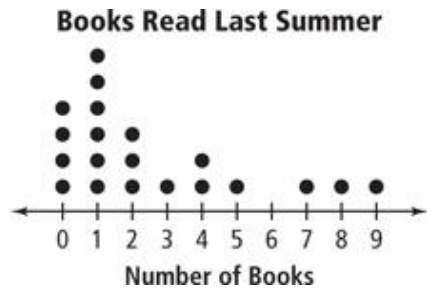
Mode: _____

Range: _____

IQR: _____

Dot Plots (Line Plots)

A dot plot (also called a line plot) is used to easily organize large sets of data. It is a graph in which each value is shown as a **dot** (or and x) above a number line. Each dot (or x) represents a **single** response.



- 1) How many people read 4 books last summer? _____
- 2) How many people read 1 book last summer? _____
- 3) How many people were surveyed? _____
- 4) Only 2 people read _____ books last summer.

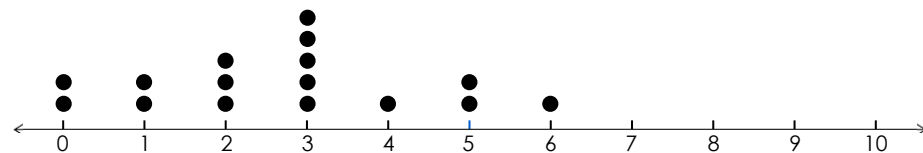
How to make a dot plot?

- 1) Draw a number line.
- 2) Mark off the minimum and maximum values and ALL numbers in between.
- 3) Make a dot (or x) for EACH data value above its number on the number line. Take care to make it neat and easy to read.
- 4) Title your dot plot.

Example:

Number of Jolly Ranchers eaten per day:

1, 2, 4, 3, 5, 2, 3, 6, 1, 0, 0, 5, 2, 3, 3, 3

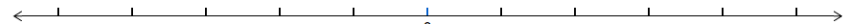


You Try:

Use the sets of data below to create dot plots and then use the data to find the mean, median, mode and range.

- 1) Number of siblings:

3, 2, 0, 4, 1, 1, 1, 2, 1, 3, 5, 3, 4, 0, 2, 1, 0, 8



Mean: _____ Median: _____
 Mode: _____ Range: _____
 Outliers: _____ Min: _____ Max: _____

- 2) Number of downloaded apps on teens' cell phones:

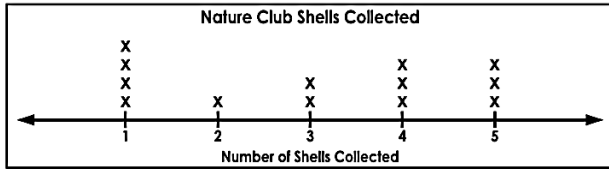
8, 12, 10, 15, 11, 20, 12, 12, 9, 10, 11, 13, 12, 9, 10, 13, 11, 13, 9, 12, 14, 9, 12, 15, 10, 11



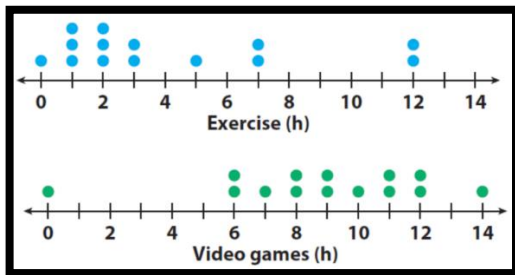
Mean: _____ Median: _____
 Mode: _____ Range: _____
 Outliers: _____ Min: _____ Max: _____

Interpreting Dot Plots (Line Plots)

Use the data in the dot plot to answer questions 1-4.



- 1) What is the mean number of shells collected? _____
- 2) What is the median number of shells collected? _____
- 3) What is the mode? _____
- 4) What is the range? _____



Fourteen students were surveyed about the time they spend exercising and playing video games each week. Compare the data by answering the questions 5-8.

- 5) What is the **range** for the hours of exercise? _____
For playing video games? _____
- 6) What is the **mode** for exercise? _____
Playing video games? _____
- 7) What is the **median** hours spent exercising? _____
Playing video games? _____
- 8) What is the **mean** number of hours spent exercising? _____
Playing video games? _____

Frequency Tables

A **frequency table (chart)** displays data that has been collected.

Season Soccer Scores

Score	Tally	Frequency
1	/	1
2	/	1
3	///	3
4	/	1
5	////	4

Intervals & Frequency Tables

Number of Cups of Coffee

Intervals	Tally	Frequency
0 - 3	//	2
4 - 7	///	3
8 - 11	////	8
12 - 15	///	3
16 - 19	//	2

Intervals must be:

- 1) **equal in values**
- 2) **inclusive of all the data**
- 3) **non-overlapping**

You Try: If your data ranges from 2 to 38, are the intervals below good (👍) or bad (👎)?

- 1) 1-10, 11-20, 21-30, 31-40
- 2) 1-10, 10-20, 20-30, 30-40
- 3) 1-10, 11-15, 16-35, 36-40
- 4) 1-8, 9-16, 17-24, 25-32, 33-40
- 5) 1-10, 11-20, 21-30

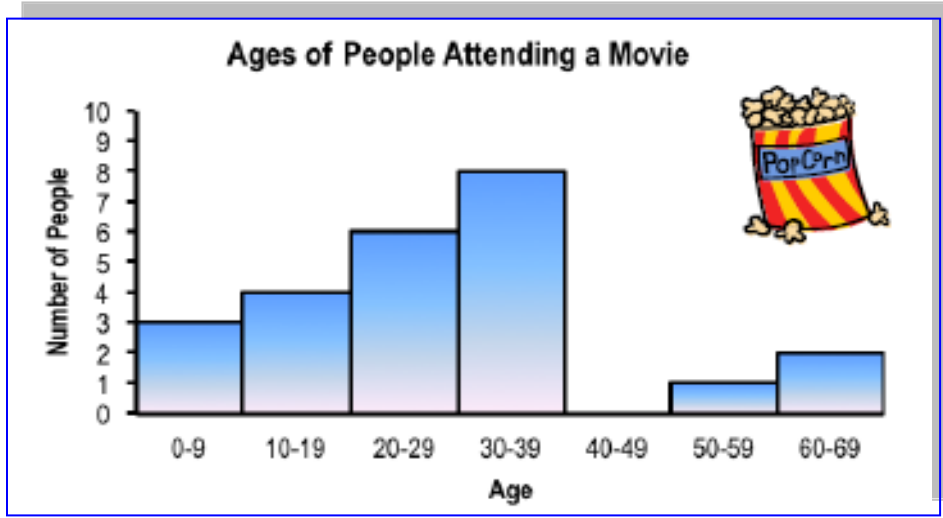


Histograms

A **histogram** is a bar graph used to display numerical data grouped in equal intervals.

Example:

The students of Monster High took a survey of the ages of everyone attending the "Ghoul's Rule" Movie. The results are displayed in the histogram below.



- How many people from ages 10-19 attended the movie? _____
- How many people aged 50 or over attended the movie? _____
- How many kids younger than 20 attended the movie? _____
- How many total people attended the movie? _____
- What does the gap at the interval 40-49 mean? _____

- Can you tell whether a 25-year-old attended the movie? _____
Why or why not? _____
- Why must the bars on a histogram always be touching (unless there is a gap in data)? _____

Making a Histogram

Determining Intervals

Look at your data. What is the best way to break that data up?

Examples:

Data Range	Scale	Intervals
3 to 46	0 – 50	0-10, 11-20, 21-30, 31-40, 41-50
1 to 248	0 – 300	0-50, 51-100, 101-150, 151-200, 201-250
4.1 to 5.4	4 – 5.5	4-4.2, 4.3-4.5, 4.6-4.8, 4.9-5.1, 5.2-5.4
52 to 964		

Organize the data in a _____ using the intervals.

Example:

Pages Read per Student Last Weekend				
78	15	40	19	188
50	122	96	37	102

The data ranges from _____ to _____. The scale will go from _____ to _____. We can use the interval of _____.

Make a frequency table:

Pages Read per Student Last Weekend				
NUMBER:	1-50	51-100	101-150	151-200
TALLY:	 	 	 	
FREQUENCY:	5	2	2	1

Use the information in the frequency table on the previous page to create a histogram for the data.

Pages Read per Student Last Weekend				
NUMBER:	1-50	51-100	101-150	151-200
TALLY:				
FREQUENCY:	5	2	2	1

Title: _____



Remember: Bars must _____. Label both _____.

Make a histogram for the following data:

How many songs are on your phone?

50, 33, 100, 202, 114, 44, 45, 203, 123, 176, 225, 15, 23, 111, 132, 156, 210, 43, 65, 66, 83, 90, 15, 140, 199, 134, 56, 14, 2

Number					
Tally					
Frequency					

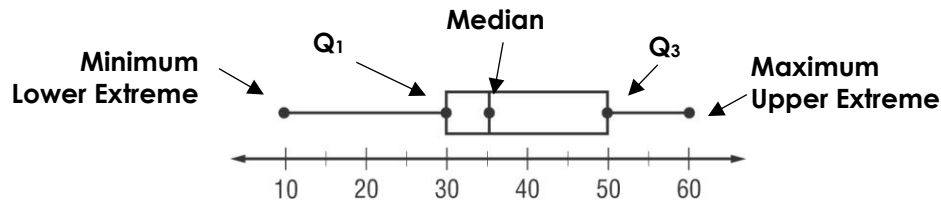
Title: _____



Remember: Bars must _____. Label both _____.

Box Plot (Box & Whiskers Plot)

A box plot (a.k.a. "box and whisker plot") uses a **number** line to show how data is distributed. It shows the **minimum**, and the **maximum** values, which are also called the **upper extreme** and **lower extreme**, the **median** and the **upper** and **lower quartiles**.

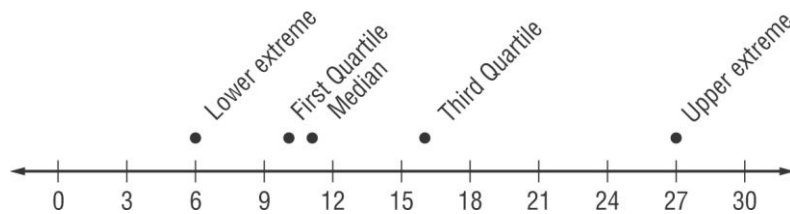


Example:

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

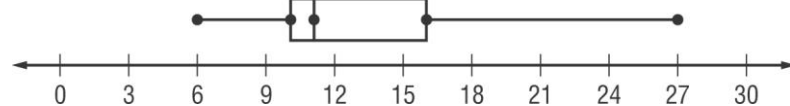
6, 8, 10, 10, 10, 11, 12, 14, 16, 18, 27

- 1) Order the numbers from least to greatest. Then draw a number line that covers the range of the data.
- 2) Find the median, the extremes, and the first and third quartiles. Mark these points above the number line.



- 3) Draw the box so that it includes the quartile values. Draw a vertical line through the median value. Extend the whiskers from each quartile to the extreme data points.
- 4) Title your box plot!

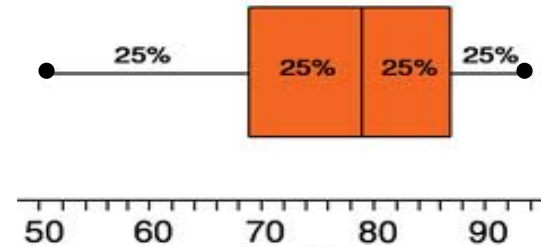
Numbers of Model Airplanes Owned



Tip:

One key understanding about box plots is that each section represents 25% of the data. If one section is large, that tells you that the numbers in that section are more spread out. If the section is small, that tells you the data is closer together.

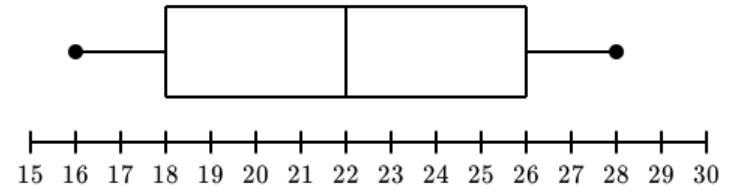
In the box plot below, you can see that the whisker for the upper quartile is much smaller than the whisker for the lower quartile. However, they both have the same number of data values. What does this tell you?



You Try:

- 1) Use the box and whiskers plot to answer the following questions:

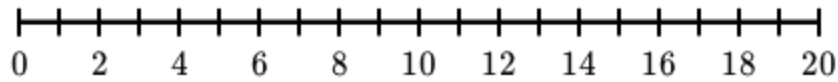
Student Cell Phones per 6th Grade Class



- a) What is the lowest number of students with cell phones in the data? _____
- b) What is the highest number of students with cell phones in the data? _____
- c) What is the median number of students with cell phones? _____
- d) What is the range of students with cell phones? _____

2) Use the box and whiskers plot to answer the following questions:

Total Points Scored by Basketball Players in 2018



- a) Median = _____
- b) Lower Quartile (Q1) = _____
- c) Maximum = _____
- d) Minimum = _____
- e) Range = _____
- f) Upper Quartile (Q3) = _____

Use the data given for each problem to find the requested information and make a box plot.

1) The number of pencils students have at school:

{4, 7, 5, 3, 12, 6, 5}

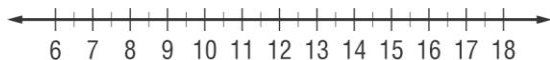
- Median: _____
- Q₁: _____
- Q₃: _____
- Lower Extreme (Minimum): _____
- Upper Extreme (Maximum): _____



2) Number of books read by the 6th grade teachers:

{13, 8, 17, 10, 6, 11, 18}

- Median: _____
- Q₁: _____
- Q₃: _____
- Lower Extreme (Minimum): _____
- Upper Extreme (Maximum): _____



3) The heights of students on the soccer team, in inches, are: 56, 69, 60, 64, 63, 68, 68 and 66. Make a box plot for this data.

- Median: _____
- Q₁: _____
- Q₃: _____
- Lower Extreme (Minimum): _____
- Upper Extreme (Maximum): _____

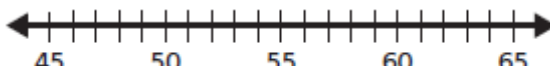
4) The Young Fashionistas Club tallied up the total pairs of shoes that each member owns. Make a box plot of this data:

5, 6, 7, 7, 7, 8, 9, 9, 11, 11, 12, 12, 12, 12, 12, 13, 13, 14, 14, 14, 14, 18, 19, 20, 20

- Median: _____
- Q₁: _____
- Q₃: _____
- Lower Extreme (Minimum): _____
- Upper Extreme (Maximum): _____

Extra Practice

- 1) Make a line plot for each set of data. Find the mean, median, mode, range, and any outliers of the data shown in the line plot.

52	48	52	51	<p>Student Height in Inches</p> 
52	65	58	48	
60	45	50	52	
56	48	53	58	
62	49	51	49	

Mean: _____ Median: _____ Mode: _____

Range: _____ Outliers: _____

- 2) The table shows the daily soda sales for a restaurant. Choose intervals, make a frequency table, and construct a histogram to represent the data.

Number of Sodas Sold Daily					
56	86	74	63	51	94
86	72	53	77	74	88
81	90	72	76	84	92
78	89	85	75	91	87

- 3) Use the data to create a box and whiskers plot. Find the Median, Q1, Q3, Minimum and Maximum {2, 3, 5, 4, 3, 3, 2, 5, 6}.



Median: _____

Q1: _____

Q3: _____

Lower Extreme (Minimum): _____

Upper Extreme (Maximum): _____

- 4) Describe how you know a question is a statistical question.

- 5) Find the mean, median, mode, range, IQR and Outliers for the following data.

1, 5, 9, 1, 2, 4, 8, 2

Mean: _____

Median: _____

Mode: _____

Range: _____

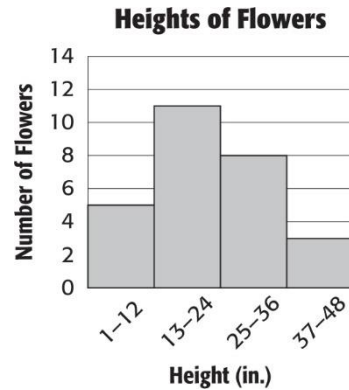
IQR: _____

Min: _____

Max: _____

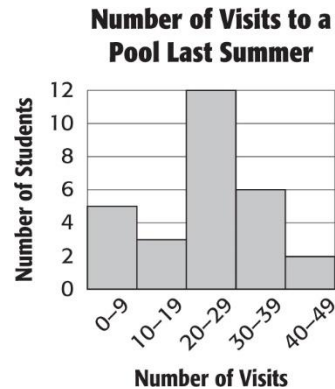
For Exercises 6 – 9, use the histogram at the right.

- 6) Which interval represents the least number of flowers?
- 7) Which interval has 5 flowers?
- 8) How many flowers are 24 inches tall or shorter?
- 9) How many flowers are at least 37 inches tall?



For Exercises 10 – 13, use the histogram shown at the right.

- 10) Which interval represents the most number of students?
- 11) Which interval has three students?
- 12) How many students went to a pool at least ten times last summer?
- 13) How many students went to a pool less than ten times last summer?



Unit 6 Study Guide

- 1) What are the measures of center? _____

- 2) How do you calculate the mean? _____

- 3) How do you calculate the median? _____

- 4) What are the measures of spread? _____

- 5) How do you calculate the range? _____

- 6) How do you calculate the interquartile range (IQR)? _____

- 7) What do you look for in the shape of data? _____

- 8) Big Bob scored the following points at eight basketball games: {21, 24, 9, 11, 16, 7, 24} Calculate the following:
 - a. Mean: _____
 - b. Median: _____
 - c. Mode: _____
 - d. Range: _____
- 9) What is a statistical question? _____

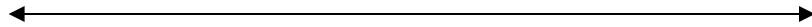
Give an example: _____

Give a non-example: _____

10) Use the following data to create a box plot:

Ages of Students Who Downloaded "Divergent"								
10	18	17	12	13	15	15	14	14

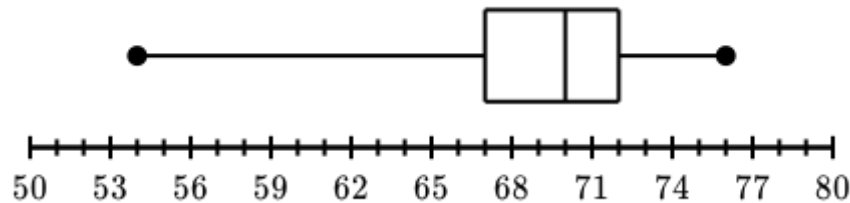
Median: _____
 Q₁: _____
 Q₃: _____
 Lower Extreme (Minimum): _____
 Upper Extreme (Maximum): _____



11) Which measure is MOST affected by an outlier? _____

- a) Mean b) Median c) Mode d) Range

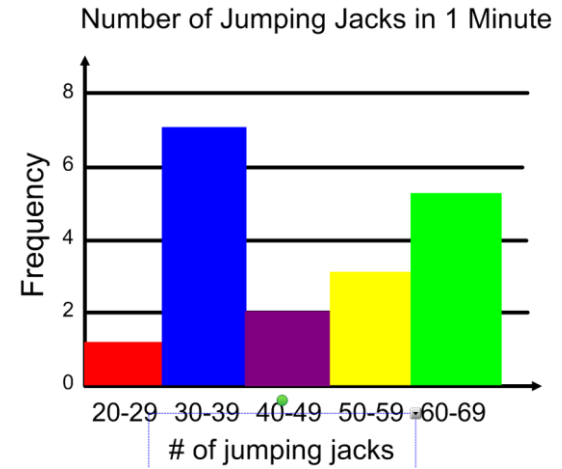
12) Identify the IQR from the box plot below: _____



13) Use the box plot above to answer the following questions:

- a) Minimum: _____ b) Lower Quartile (Q₁): _____
 c) Median: _____ d) Upper Quartile (Q₃): _____
 e) Maximum: _____ f) Range: _____
 g) What percent of the data is 15 or greater? _____
 h) What percent of the data is between 15 and 25? _____
 i) The data is (Circle One): symmetrical skewed right skewed left

Use the Histogram below to answer questions 14-18.



- 14) According to the histogram, how many students can do more than 49 jumping jacks in 1 minute? _____
 15) How many students participated in the survey? _____
 16) Which interval represents the mode of the histogram? _____
 17) How many people did **EXACTLY** 45 jumping jacks? _____
 18) Circle the set of intervals that CAN be used for the data in the histogram. Explain why the others cannot be used:
 a) 0-3, 4-7, 8-11, 12-15, 16-19 _____
 b) 0-1, 2-5, 6-7, 8-18 _____
 c) 1-2, 3-4, 5-6, 7-8, 9-10 _____
 d) 0-5, 5-10, 10-15, 15-20 _____

Sit-Ups Completed by Students During a Fitness Test

13	13	10	14	15	12
17	12	18	14	15	12

