

6th Grade Math Unit 6-Statistics

Name: _____

Period: _____

Calendar:

Day 1-	Day 2-	Day 3-
<ul style="list-style-type: none">• Focus: What is a statistical question?• IXL Topic: n/a	<ul style="list-style-type: none">• Focus: Mean, Median, Mode, Range• IXL Topic: HH.1, HH.2, HH.3	<ul style="list-style-type: none">• Focus: Mean, Median, Mode, Range• IXL Topic: HH.1, HH.2, HH.3
Day 4-	Day 5-	Day 6-
<ul style="list-style-type: none">• Focus: Data Distribution• IXL Topic: n/a	<ul style="list-style-type: none">• Focus: Reading Data Displays• IXL Topic: GG.3, GG.6, GG.7, GG.11, GG.20	<ul style="list-style-type: none">• Focus: Reading Data Displays• IXL Topic: GG.3, GG.6, GG.7, GG.11, GG.20
Day 7-	Day 8-	Day 9-
<ul style="list-style-type: none">• Focus: Box and Whisker Plot• IXL Topics: GG.19	<ul style="list-style-type: none">• Focus: Box and Whisker Plot• IXL Topics: GG.19	<ul style="list-style-type: none">• Focus: Study Guide• IXL Topic: HH.1, HH.2, HH.3, GG.3, GG.6, GG.7, GG.11, GG.19, GG.20
Day 10-	Day 11-	
<ul style="list-style-type: none">• Focus: Review• IXL Topic: HH.1, HH.2, HH.3, GG.3, GG.6, GG.7, GG.11, GG.19, GG.20	<ul style="list-style-type: none">• Focus: Assessment• IXL Topic: HH.1, HH.2, HH.3, GG.3, GG.6, GG.7, GG.11, GG.19, GG.20	

***If Lost, Please Return to: Ms. Rankin (Room-F106)**

Standards:

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. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.

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 in 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: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range). d. 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.

Essential Questions:

- What is the best way to organize a set of data?
- What kinds of graphs will best represent a given set of data?
- How can I describe the center of a set of data?
- How can I decide which measure of center (i.e., mean or median) best describes the data?
- How can I describe the spread of a set of data?
- How can I use data to compare different groups?
- How do I choose and create appropriate graphs to represent data?
- What conclusions can be drawn from data?
- How can I recognize when a question is statistical and when it is not?
- What is the difference in a measure of center and a measure of variation?

Vocabulary Words:

- **Box and Whisker Plot-** A diagram that summarizes data using the median, the upper and lower quartiles, and the extreme values (minimum and maximum). Box and whisker plots are also known as box plots. It is constructed from the five-number summary of the data: Minimum, Q1 (lower quartile), Q2 (median), Q3 (upper quartile), Maximum.
- **Distribution –** The arrangement of values that show the spread of the data.
- **Dot Plot –** A statistical chart consisting of data points on a number line, typically using circles.
- **Frequency-** the number of times an item, number, or event occurs in a set of data
- **Grouped Frequency Table-** The organization of raw data in table form with classes and frequencies
- **Histogram-** a way of displaying numeric data using horizontal or vertical bars so that the height or length of the bars indicates frequency
- **Inter-Quartile Range (IQR)-** The difference between the first and third quartiles. (Note that the first quartile and third quartiles are sometimes called upper and lower quartiles.)

- Maximum value- The largest value in a set of data.
- Mean- The "average" or "fair share" value for the data. The mean is also the balance point of the corresponding data distribution. $arithmetic\ mean = \bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$
- Measures of Center- The mean and the median are both ways to measure the center for a set of data.
- Measures of Spread- The range and the interquartile range are both common ways to measure the spread for a set of data.
- Median- The value for which half the numbers are larger and half are smaller. If there are two middle numbers, the median is the arithmetic mean of the two middle numbers. Note: The median is a good choice to represent the center of a distribution when the distribution is skewed or outliers are present.
- Minimum value- The smallest value in a set of data.
- Mode- The number that occurs the most often in a list. There can be more than one mode, or no mode.
- Numerical Data- Consists of numbers only. Numerical data can be any rational numbers.
- Outlier- An outlier is an observation that is numerically distant from the rest of the data.
- Range- A measure of spread for a set of data. To find the range, subtract the smallest value from the largest value in a set of data.
- Skewed Data –When a set of data is not symmetrical it can be skewed, meaning it tends to have a long tail on the left or right side.
- Statistical Questions - A statistical question is one for which you don't expect to get a single answer. Instead, you expect to get a variety of different answers, and you are interested in the distribution and tendency of those answers. For example, "How tall are you?" is not a statistical question, however "How tall are the students in your school?" is a statistical question.
- Variability – Describes how spread out or closely clustered a set of data is. Variability includes range and interquartile range.

Mean, Median Mode, Range	Y5HGTFZ	100
Date Distribution	A4DUFX6	100
Reading Data Displays	RWVHCBX	100
Box and Whisker Plots	SEZSEWS	100

Average Score

Statistics Check Point Assessment:

Throughout Unit 6, you will be asked to complete various check points on Illuminate to track your mastery progress. At the end of the unit, these scores will be averaged to create an overall grade that will be counted as a quiz grade.

Please take these checkpoints carefully! I will NOT reopen any check points this unit You can access each check point at www.bit.ly/epms1819 or Illuminate.Online

Topic:	Illuminate Access Code:	Score:
Statistical Question	NYPGEFA	/100
Mean, Median, Mode, Range	Y5HGTEZ	/100
Data Distribution	44DUF6	/100
Reading Data Displays	RWVHCBX	/100
Box and Whisker Plots	5EZ5EWS	/100
	Average Score	_____ %

What is a Statistical Question?

Name: _____

Class Period: _____

Standard 1: Recognize a statistical question as one that anticipates variability in the data and accounts for it in the answers.

Vital Vocab

(ex) 1, 2, 2, 2, 3, 4, 4, 5, 6

Term	Meaning	Example
Statistical Question	A question that you don't expect a single answer for- You are interested in the distribution and frequency of those answers	
Variability	Describes how spread out or closely grouped a set of data is	
Quantitative Data	Data that is only made up of numbers	
Qualitative Data	Data that is made up of words	
Distribution	Describes the arrangement of values that shows the spread of data	
Range	The difference between the maximum and minimum value in a set of data	
Frequency	The number of times an answer occurs in a set of data	
Maximum	The largest value in a set of data	
Minimum	The smallest value in a set of data	
Outlier	A data point that is significantly separate from the rest of the data set	

①

LEARNING TASK: WHAT IS A STATISTICAL QUESTION?

Name: _____

Period: _____

1. Which of these questions can be categorized as a STATISTICAL QUESTION?

Put an X beside the questions that ARE NOT statistical, and an S beside those that ARE statistical questions.

- A. What is Shawn's pant size?
- B. What are the shoe sizes of students that ride my bus?
- C. How tall are the students in Coach Dixon's sixth grade science class?
- D. How far does Terrence drive to work?
- E. How old are the students at Ebenezer Middle School?
- F. How old is Michelle's mom?
- G. How old are my friends' parents?
- H. How does the pesticide Roundup harm ladybugs?
- I. How far do the teachers at Sandy Beach Middle School drive to work each day?
- J. How have the CRCT math scores changed for our school?

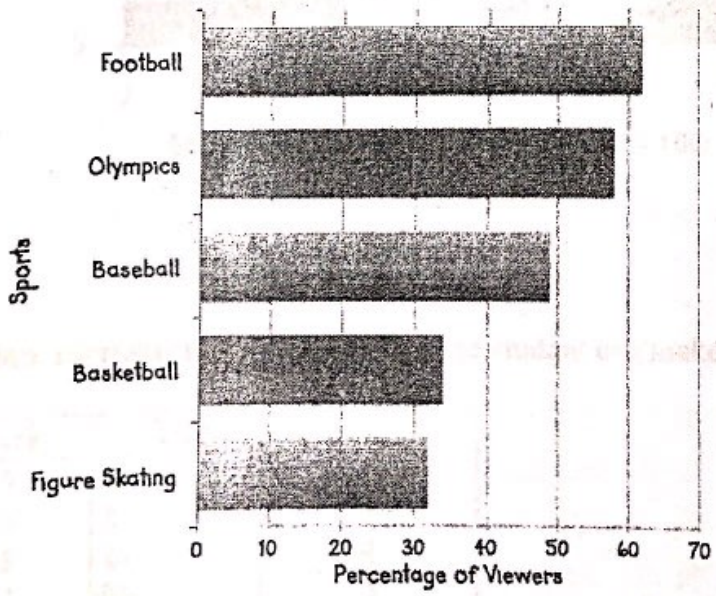
2. What must be true about a question for it to be classified as a statistical question?

3. For each question, decide if it is a statistical question; if it is, put an S beside it. If it is not, EXPLAIN why it is not and REWRITE it as a statistical question.

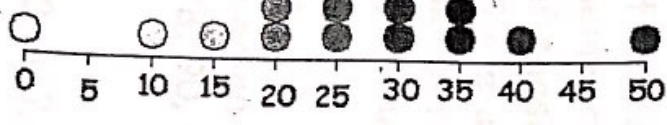
- A. How many words are there in this sentence?
- B. How many TV's are in your house?
- C. How many siblings do the students on Team B have living in their homes?
- D. How many socks are in your drawer?
- F. What is your favorite color?
- G. How far does Savannah have to walk to reach Colin's house each day?

4. Look at each graphical display and write a question that COULD have been asked to collect that specific data.

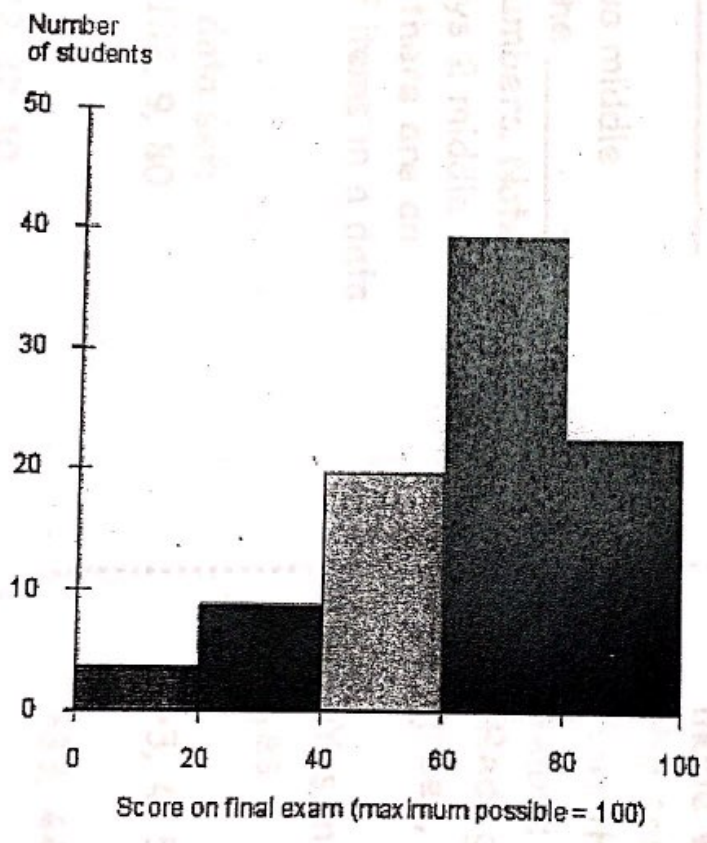
A



B.



C.



D. (Mark represents any category that the student can make up)

Mark	Tally	Frequency
4		2
5		2
6		4
7		5
8		4
9		2
10		1

finding the median

1. If a data set has an extreme high or low value, the _____ is a better measure to use.
2. The median is the _____ number in a set of ordered data.
3. To find the median:
 - a. Order the numbers from _____ to greatest.
 - b. Find the _____ number.
 - c. If there are two middle numbers, find the _____ of these two numbers. **Note:** There are always 2 middle numbers when there are an even number of items in a data set.

Let's Try It!

Find the median of each data set:

- a. 78, 90, 88, 76, 102, 9, 80
- b. 10, 5, 7, 13, 14, 12, 12, 10

Finding the Mode

1. The _____ is the data value that appears most often.
2. The mode is most helpful when the data is not _____.
3. A set of data can have more than one _____.
4. A set of data can have _____ mode when each data item occurs the same number of times.
5. Find the mode of each data set below:
 - Red, green, blue, pink, green, green, red, black
 - Yes, no, no, yes, no, yes, no, yes, yes
 - 3, 4, 5, 5, 6, 2, 3
 - 33, 44, 55, 66, 77, 88

MEAN, MEDIAN, MODE, AND RANGE

Step 1: Add up all the numbers
Step 2: Divide by the number of numbers

Step 1: Put the numbers in order from least to greatest
Step 2:
If there are an odd number of numbers, find the middle number
If there are an even number of numbers, find the mean of the two middle numbers.

Find the number or numbers that occur most often. There may be more than one mode or no mode.

The difference between the least and greatest values in the set.

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Finding the Mean

1. What is one example of how you have heard the word average used?

2. In math, the average is called the

3. Mean: _____

Let's try it!

Find the mean of the data set below:

6, 5, 7, 5, 7, 6

Step 1: Add all the numbers together

Step 2: Divide by the number of items in your data set

Find the mean of the data set below:

23, 25, 19, 20, 21, 23, 23

Step 1: Add all the numbers together

Step 2: Divide by the number of items in your data set

Practice: Median and Mode

Level: 2

★ L to G - Least to greatest

Find the mean, median and mode for each set of data.

1. age of children Danielle babysits:
6, 9, 2, 4, 3, 6, 5

2. hours spent studying:
13, 6, 7, 13, 6

ordered from L to G:

ordered from L to G:

Mean:
Median:
Mode:

Mean:
Median:
Mode:

3. age of grandchildren:
1, 15, 9, 12, 18, 9, 5, 14, 7

4. points scored in video game:
13, 7, 17, 19, 7, 15, 11, 7

ordered from L to G:

ordered from L to G:

Mean:
Median:
Mode:

Mean:
Median:
Mode:

5. amount of weekly allowances:
3, 9, 4, 3, 9, 4, 2, 3, 8

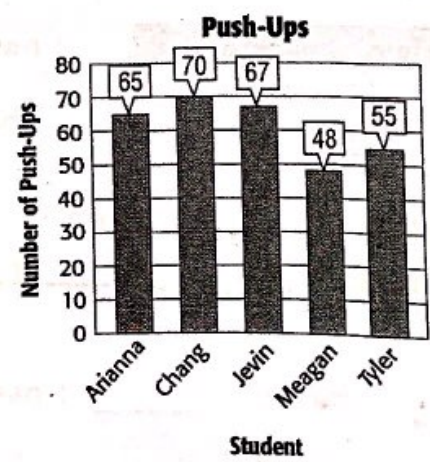
6. height of trees in feet:
25, 18, 14, 27, 25, 14, 18, 25, 23

Find the mean, median, and mode of the data represented.

7.

Annual Rainfall (in.)			
21	23	27	28
32	32	34	43

8.



Name : _____

Score : _____

Mean, Median, Mode & Range

Level 1: S2

Find the mean, median, mode and range for each set of numbers.

1) 6, 86, 54, 72, 6, 33, 49, 22, 61, 14

2) 98, 64, 81, 50, 73, 64

Mean : _____ Median : _____

Mean : _____ Median : _____

Mode : _____ Range : _____

Mode : _____ Range : _____

3) 23, 56, 42, 19, 23, 38, 20

4) 42, 14, 30, 14, 9, 30, 19, 27, 52

Mean : _____ Median : _____

Mean : _____ Median : _____

Mode : _____ Range : _____

Mode : _____ Range : _____

5) 50, 24, 61, 50, 33, 40

6) 18, 8, 26, 4, 18, 37, 10, 13

Mean : _____ Median : _____

Mean : _____ Median : _____

Mode : _____ Range : _____

Mode : _____ Range : _____

7) 84, 65, 77, 48, 51, 60, 77, 92

8) 62, 31, 59, 28, 74, 31, 45

Mean : _____ Median : _____

Mean : _____ Median : _____

Mode : _____ Range : _____

Mode : _____ Range : _____

9) 70, 45, 63, 58, 99, 75, 45, 82, 36

10) 35, 17, 29, 48, 36, 10, 5, 23, 5, 17

Mean : _____ Median : _____

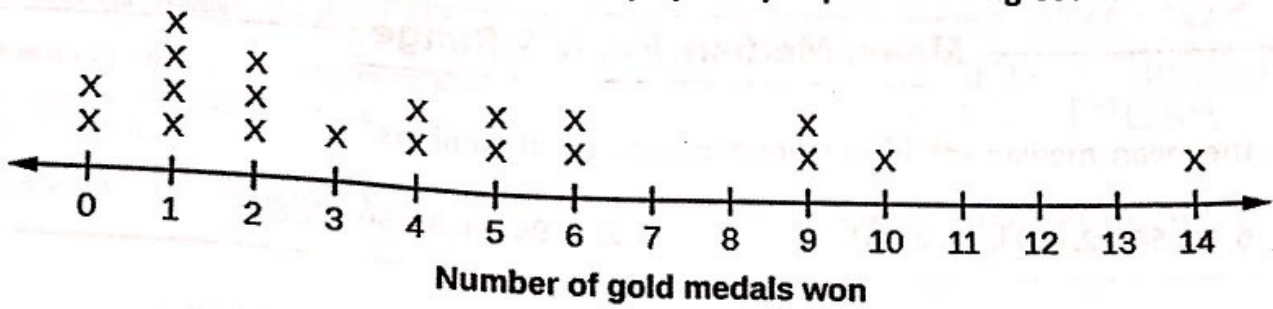
Mean : _____ Median : _____

Mode : _____ Range : _____

Mode : _____ Range : _____

Medals Won at 2016 Summer Olympics by Top Performing Countries

Fig



Each "x" represents 3 countries.

1. Label any peaks, gaps or clusters on the line plot.
2. How many countries are considered "top performing" based on the graph?
3. How many countries received 10 medals?
4. What was the most common amount of gold medals won?
5. In 3-5 sentences, describe the line plot. Use words like peak, cluster, gap, outlier, and range.

37 Data Distributions

1 Introduction

A **data distribution** gives information about a set of numerical data. The **center** gives information about the typical values in that data set. It can also indicate accuracy.

Mrs. Brown collected data from her students' past test scores.

{70, 72, 74, 75, 76, 76, 77, 78, 79, 80, 81}

The values are in order from least to greatest, so Mrs. Brown can find the **median**, or the middle value, which is 76.

The median is the middle value in a data set. The mean is the average of all the values.

The **spread** of a data set describes how numbers in a data set vary. The **range** of a data set is one type of spread. It shows how far the lowest value is from the highest value. A low spread means that the values in the set are close together. A high spread means the values in a data set are far apart.

Which data set has a greater range in terms of the highest and lowest values?

Set A: {1, 2, 4, 5, 7, 8, 10}

Set B: {80, 81, 83, 84, 89, 90, 92}

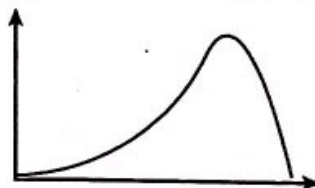
For set A, the highest value is 10 and the lowest value is 1. So the range is $10 - 1 = 9$. For set B, the highest value is 92 while the lowest value is 80. The range is $92 - 80 = 12$. So set B has the greater spread of values.

Another characteristic of a data set is its overall shape. If there are an equal number of small and large values on the graph, then the data set is said to have a **normal distribution** and its shape is described as **symmetric**. Data can also be skewed. Skewed data has a few values that pull the center to the left or right. Data that is **skewed to the right** has a "tail" on the right. Data that is **skewed to the left** has a "tail" on the left.

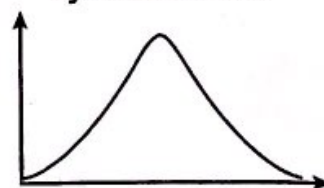
Data Skewed to the Right



Data Skewed to the Left



Symmetric Data



Think About It



If you had a data distribution of the final grade averages of all the students in your school, would it be good for the data distribution to be skewed to the left or skewed to the right?



2 Focused Instruction

Describing the center and spread of a data set can help you make inferences about the data. Work with a partner to answer the questions.

- The heights, in inches, of the players on a girls' basketball team are as follows: {64, 67, 71, 78, 68, 70, 75, 72, 72, 67, 79}. Describe the center and spread of the data set.

What is the data set ordered from smallest to greatest value?

What is the median of the data set? _____

What is the largest value in this set? _____

What is the smallest value in this set? _____

What is the range of the data? _____

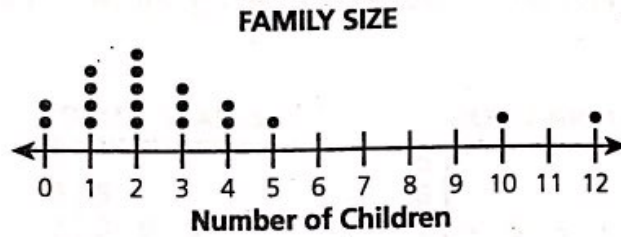
Would you say that the values in the data set are close together or far apart? Explain how you know. _____

Find the middle value after you put the values in order.

Subtract to find the difference between the largest and smallest values.

Data Set	Center	Spread	Overall Shape
A			
B			
C			

► The dot plot below shows the number of children in each family in a certain neighborhood.



A data distribution that is symmetric has a relatively equal number of large and small values.

What are the data values from lowest to highest?

What is the center of the data set? _____

What is the lowest value in the data set? _____

What is the highest value? _____

What is the spread of the data set? _____

Think about the type of data in the graph. What does the spread tell you about this data?

Describe the overall shape of the data set. Explain your answer.

Think about the numbers you would expect to see for this data. Is the data in the graph much higher, much lower, or about the same as you expect?

Use what you know about data distributions to complete the table using the data sets.

Set A: {21, 22, 25, 26, 27, 41, 45}

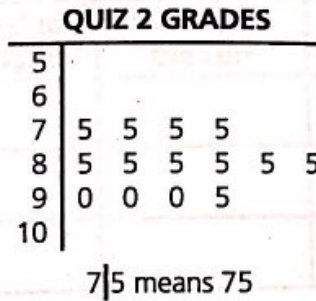
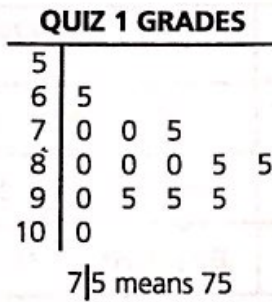
Set B: {4, 8, 9, 21, 28, 30, 32, 34}

Set C: {55, 56, 57, 58, 60, 62, 60, 66, 68}

Data Set	Center	Spread	Overall Shape
A			
B			
C			

Solve the following problems.

- 1 The plots below show the grades students in a math class received on two quizzes.



Use the smallest grade and the largest grade on each quiz to find the spread.

On which quiz, 1 or 2, do the grades have the lower spread?

Answer _____

- 2 The data set below represents the number of receptions (the times a player catches a ball) by seven football players during an entire football season.

{117, 112, 129, 99, 130, 103, 98, 89, 107}

Before finding the center, order the data values from smallest to largest.

Is 99 a good representative of the center of the data for the football players' receptions? If not, what number is best? Explain how you know.

- 3 The times, in minutes, it took 15 students to finish a math test are shown below.

{15, 20, 22, 34, 34, 35, 36, 37, 39, 39, 40, 41, 42, 44, 44}

Part A What is the center of the data set?

Answer _____

Part B What is the spread?

Answer _____

12

Solve the following problems.

- 1 Mark the correct column in the table to describe the overall shape of each data set.

Data Set	Skewed to the Right	Skewed to the Left	Symmetric
A {10, 12, 14, 17, 19, 29, 30, 34}			
B {21, 23, 25, 30, 32, 34, 36}			
C {42, 45, 49, 61, 62, 65, 67, 68}			

- 2 The grades each student in a class received on a history report are listed below in order from least to greatest.

65 70 72 72 79
 80 80 84 88 90
 91 93 95 95 97

Which number best represents the center of the data?

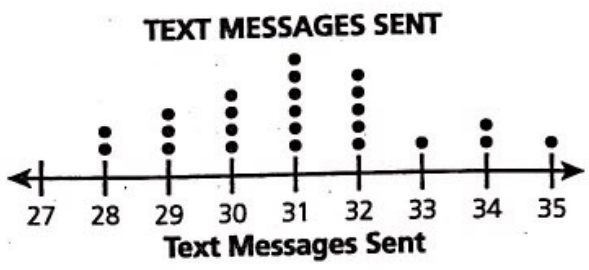
- A 32
- B 65
- C 84
- D 97

- 3 The numbers below represent the bowling scores of nine different bowlers.

127 129 129 130 131 133 140 169 205

Is 133 a reasonable number to represent the measure of center for these bowling scores? Explain how you know.

4 Ross created the dot plot below to show the number of text messages sent by the students in his class in a day.



Part A Select an option from the set to correctly complete this statement.

Based on the graph, the data is [skewed to the left, skewed to the right, symmetrical].

Part B Make an inference based on the data in the graph.

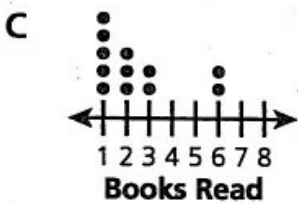
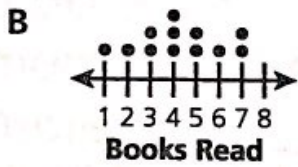
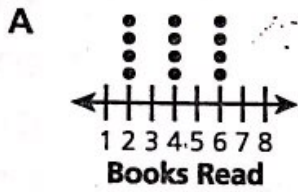
5 What is the overall shape of the data below? Explain how you know.

{12, 15, 17, 32, 32, 35, 36, 36, 38, 39, 40}

Which data set has the following properties? Explain.

- The data is skewed to the left.
- The center is greater than the spread.

6 Which plot shows data that is skewed to the right?



7 Look at these data sets.

Set A {12, 15, 22, 24, 26, 28, 30}

Set B {26, 28, 30, 32, 36, 38, 59}

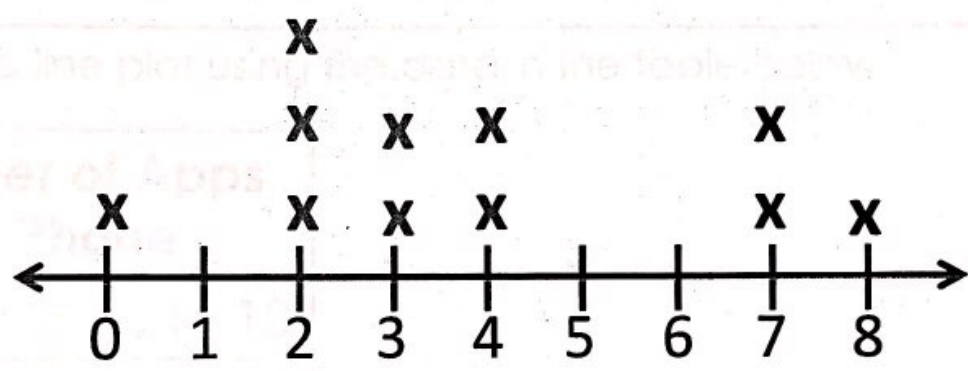
Set C {20, 24, 28, 32, 36, 40, 44}

Which data set has the following properties? Explain.

- The data is skewed to the left.
- The center is greater than the spread.

Line Plots

1. One tool to help display data is a _____ plot.
2. A line plot can also be called a _____ plot.
3. A line plot uses a _____ to show the number of times each _____ in a data set occurs.
4. Line plots show the _____ and the _____ of a data set.
5. Remember, when making a number line, you have to use a consistent _____.
6. Look at the dot plot below. Identify a cluster, peak and gap.



7. To make a line plot:

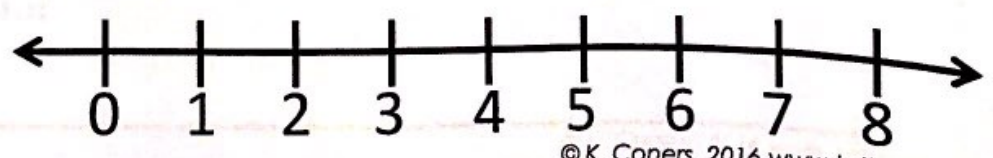
Step 1: Draw a _____.

Step 2: _____ the number line

Step 3: Place a _____ or an _____ to represent each value over the corresponding number

8. Create a line plot using the table below.

Number of Siblings		
0	1	2
2	3	2
1	4	0
3	3	6



Name: _____

Date: _____

Practice: Line Plots

#1 Create a line plot using the data in the table below:

Number of Pets				
0	1	2	2	0
4	3	1	0	0
9	4	2	1	1
0	6	2	3	3

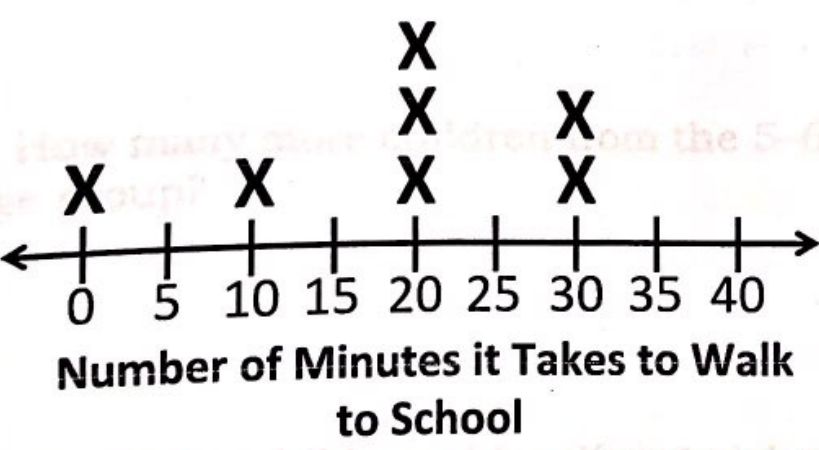


#2 Create a line plot using the data in the table below:

Number of Apps on Phone				
16	19	20	21	10
24	23	20	19	20
19	24	24	21	22
20	16	21	23	23



#3 Use the line plot to answer the following questions.



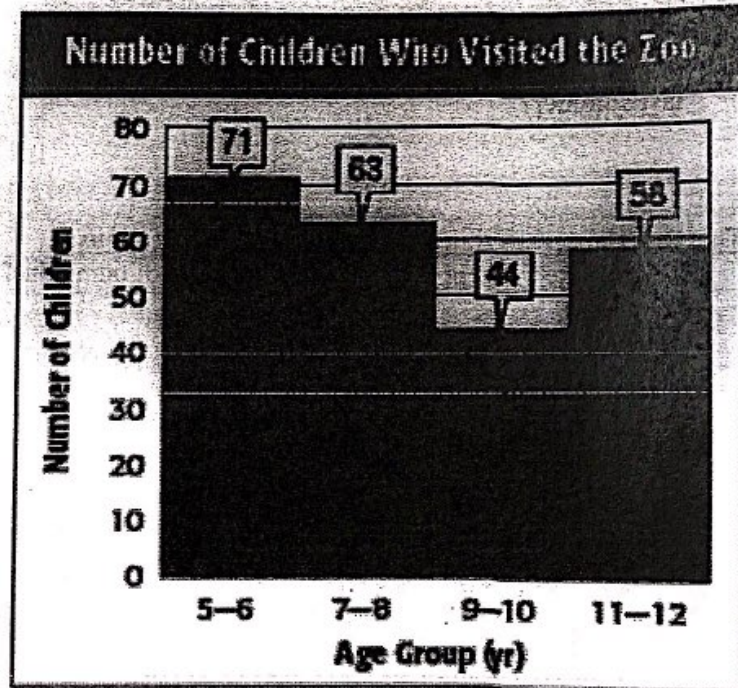
- a) How many students spend 20 or more minutes walking to school?
- b) How many students were surveyed?
- c) What is the range of the data set?

Histograms:

A Histogram is a graphical display of data using bars of different heights

It is similar to a bar graph, but it uses intervals/ranges to organize the data.

1. Describe the histogram.



2. Which age group had the most children visit the zoo?

3. How many children between 7 and 10 years old visited the zoo?

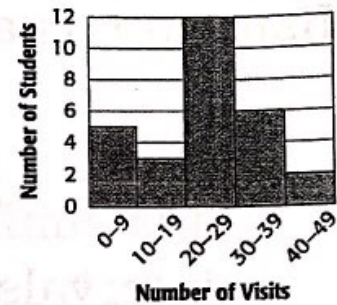
4. How many more children from the 5-6 age group visited than the 9-10 age group?

5. How many children older than 8 visited the zoo?

Histograms

For Exercises 1–4, use the histogram shown at the right.

Number of Visits to a Pool Last Summer



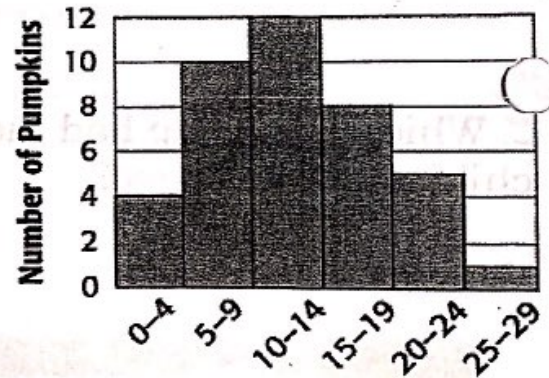
- Which interval represents the most number of students?
- Which interval has three students?
- How many students went to a pool at least ten times last summer?

- How many students went to a pool less than ten times last summer?

Use the histogram to answer the following questions:

- Which interval represents the most number of pumpkins?

Weights of Pumpkins



- Which interval has five pumpkins?

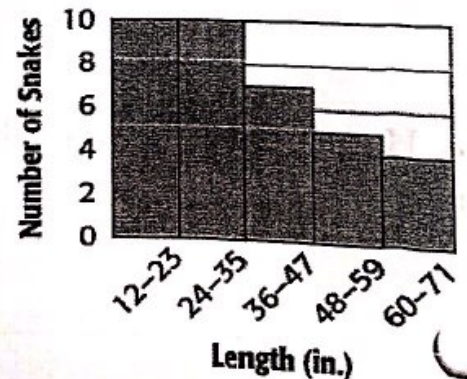
- How many pumpkins are at least 5 pounds?

- How many pumpkins are less than 10 pounds?

Use the histogram to answer the following question:

- Which interval represents the least number of snakes

Lengths of Snakes



- Which interval(s) has/have ten snakes?

- How many snakes are greater than or equal to 36 in?

- How many snakes are at most 35 in?

Choosing the Best Measure of Center

Name: _____

Date: _____

The recycling club had a Green Drive where they collected aluminum cans, plastic bottles, newspapers, and batteries. The weights collected on the first day are shown below:



12.2 lb



11 lb



19.5 lb



13 lb

1. Find the mean weight collected:

2. If the newspapers were not collected, find the mean weight of the remaining items.

3. How does the weight of the newspapers affect the mean?

4. What is the median for the data set?

Measures of Center	
	-best for evenly distributed data
	-add up all the data, then divide by the number of data
	-best when there is an outlier
	-order the numbers from least to greatest then find the one in the middle -if there are two in the middle, find the mean of them
	-best when data is qualitative (not quantitative) and if the data have many repeated numbers
	-identify which answer occurred most often -there can be none or more than 1

The table shows the number of medals won by the U.S. Which measure of center best represents the data? Then find the measure of center.

Year	1992	1996	2000	2004	2008
Number of Medals	112	101	97	103	110

The table shows the water temperature over several days. Which measure of center best represents the data? Then find the measure of center.

Water Temperature (°F)				
82	85	82	81	
82	82	78		

Below is the lifespan of several animals. Which lifespan represents an outlier in the data set? Explain.

Average Life Span	
Animal	Life Span (years)
African elephant	35
Bottlenose dolphin	30
Chimpanzee	50
Galapagos tortoise	200
Gorilla	30
Gray whale	70
Horse	20

Now complete the table below. Find each measure of center with the outlier included, and then without the outlier.

Measure of Center	Outlier Included	Outlier Excluded
Mean		
Median		
Mode		

Analyzing Collected Data Sets

Name: _____

Period: _____

Directions: Look at the different graphs around the room, then use these to fill out the table. Some of the displays will not give enough information to find the mean or median. If this is the case, write "Not enough info."

Display #1	How many observations?	What was measured/asked about?	What were the units?
	Mean	Median	Mode
Describe the shape, using words such as peak, cluster, and gap.			

Display #2	How many observations?	What was measured/asked about?	What were the units?
	Mean	Median	Mode
Describe the shape, using words such as peak, cluster, and gap.			

Display #3

How many observations?

What was measured/asked about?

What were the units?

Ordered Data

Mean

Median

Mode

Range

Describe the shape, using words such as peak, cluster, and gap.

Display #4

How many observations?

What was measured/asked about?

What were the units?

Ordered Data

Mean

Median

Mode

Range

Describe the shape, using words such as peak, cluster, and gap.

Display #5	How many observations?	What was measured/asked about?	What were the units?
	Ordered Data		
Mean	Median	Mode	Range
Describe the shape, using words such as peak, cluster, and gap.			

Display #6	How many observations?	What was measured/asked about?	What were the units?
	Ordered Data		
Mean	Median	Mode	Range
Describe the shape, using words such as peak, cluster, and gap.			

Part 2: Find the mean, median, mode and range of each data set.

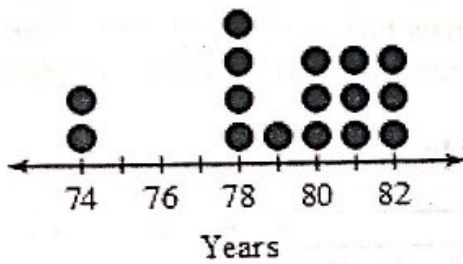
Basketball Tournament

School	Appearances
New Mexico State	19
North Carolina Central	1
Southeast Missouri State	1
Tulane	3
Missouri State	6
Houston Baptist	1

School	Appearances
Liberty	3
Alabama A&M	1
Portland	2
Minnesota	8
Mississippi State	10

School	Appearances
Green Bay	4
Georgia Tech	16
South Dakota State	2
Cal State Northridge	2
Sam Houston State	2

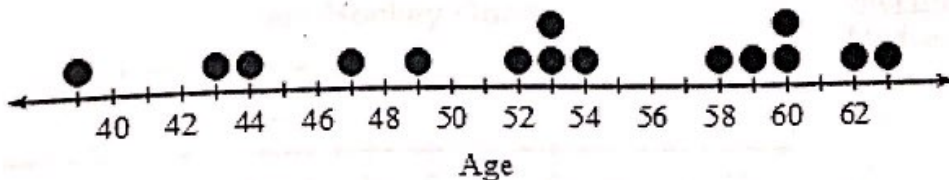
Life Expectancy by State



Games per World Series

- 6 7 4 7 4 7 7 4
 4 7 6 7 7 6 4 4
 6

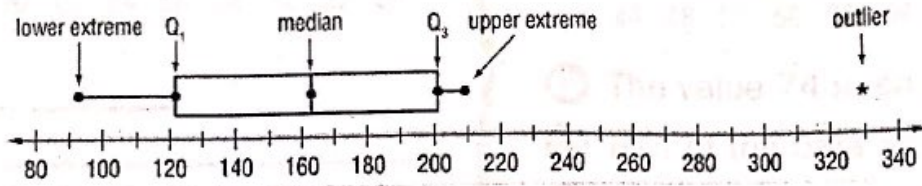
US Senators When Assuming Office



Lesson: Box Plots (aka Box and Whisker Plots)



A box plot, or box-and-whisker plot, uses a number line to show the distribution of a set of data by 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 data points that are not outliers. The median is marked with a vertical line. Box plots separate data into four parts. Even though the parts may differ in length, each contains 25% of the data. The box shows the middle 50% of the data.



Median:

Q1:

Q3:

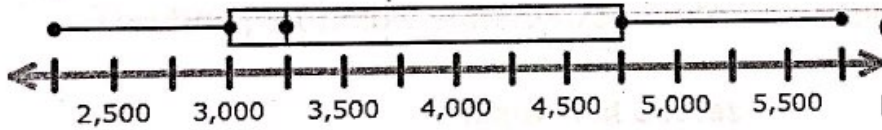
Range:

Interquartile Range:

Outlier:

Terrel is running for office and wants to know the amount of income tax paid last year by households in his district. This box-and-whisker plot shows the results.

Amount paid in taxes (\$)



Find the measures of variability:

Median:

Q1:

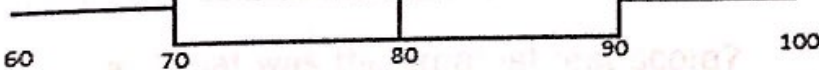
Q3:

Range:

Interquartile Range:

Outlier:

Mrs. H's Benchmark Scores - 20 students



Find the measures of variability:

Median:

Q1:

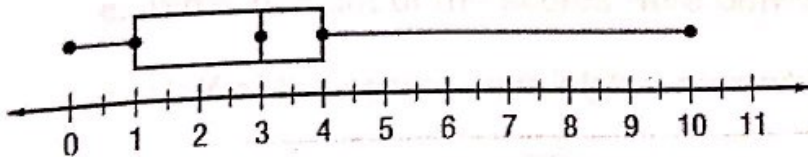
Q3:

Range:

Interquartile Range:

Outlier:

Field Hockey Goals



Find the measures of variability:

Median:

Q1:

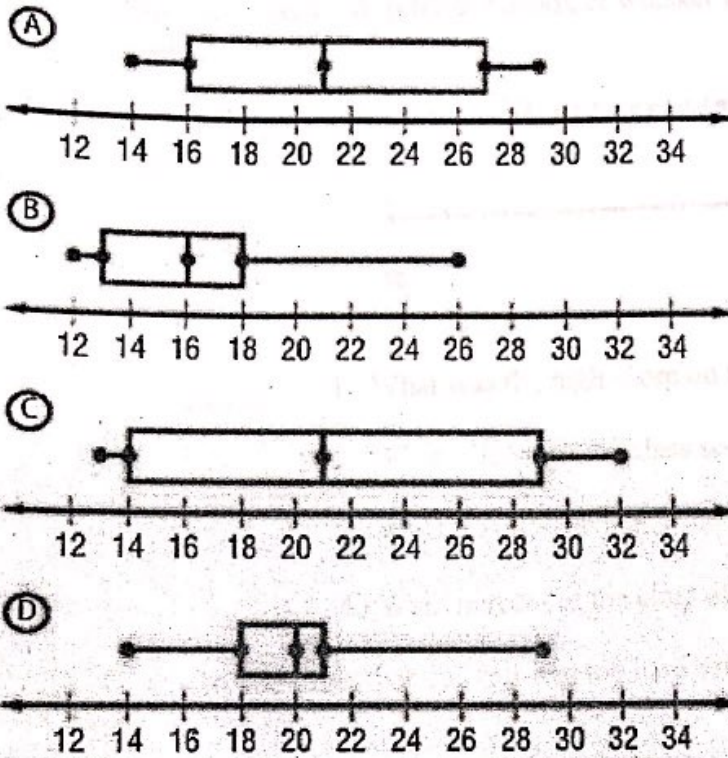
Q3:

Range:

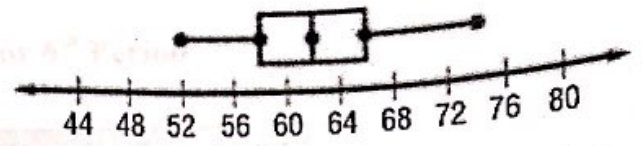
Interquartile Range:

Outlier:

Which box plot represents the data set 14, 18, 21, 24, and 29?

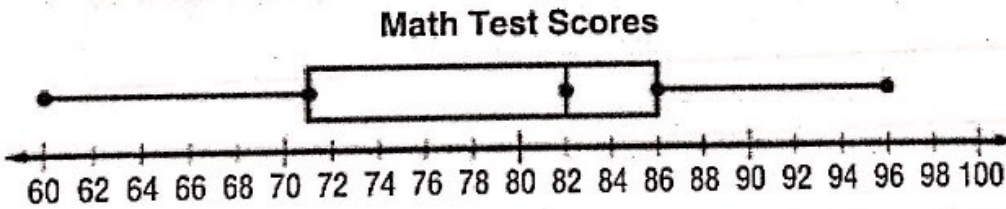


Which of the following statements is *not* true concerning the box plot below?



- (F) The value 74 is an extreme value.
- (G) Half of the data are above 62.
- (H) Half of the data are in the interval 62-74.
- (I) There are more data values in the interval 52-62 than there are in the interval 62-74.

The box plot below summarizes math test scores.



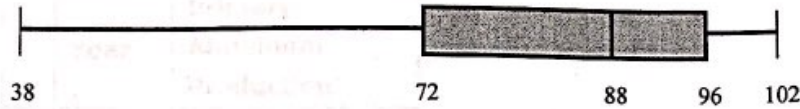
- a. What was the greatest test score? _____
- b. Explain why the median is not in the middle of the box.

- c. What percent of the scores were between 71 and 96? _____
- d. Half of the scores were higher than what score? _____

Box & Whisker Worksheet

For questions 1 – 6, refer to the box & whisker graph below which shows the test results of a math class.

Test Scores (as %) for 6th Period

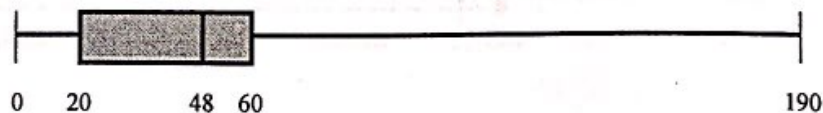


- _____ 1. What was the high score on the test?
- _____ 2. What percent of the class scored above a 72?
- _____ 3. What was the median score on the test?
- _____ 4. What percent of the class scored between 88 & 96?
5. Do you think that this test was too hard for the students? Explain.

6. Would you expect the mean to be above or below the median? Explain.

For questions 7 – 11 refer to the box & whisker graph below that shows how much time was spent per night on homework for sophomore class at a certain high school during September.

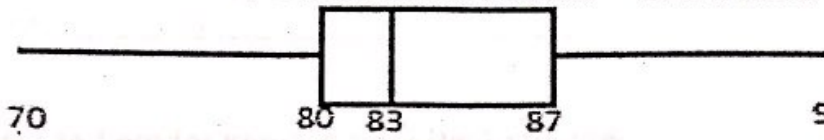
Average Minutes Per Night Spent On Homework



- _____ 7. What percent of the sophomores spend more than 60 minutes on homework per night?
- _____ 8. What is the range of times that the middle 50% of the sophomores spend on homework per night?

Mrs. M's Benchmark Scores – 16 students

Find the measures of variability:



Median:

Q3:

98

Interquartile Range:

Q1:

Range:

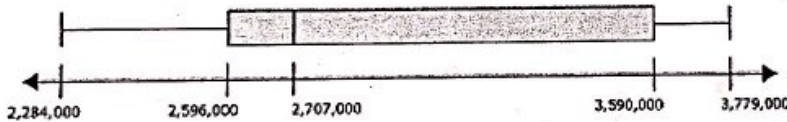
Outlier:

The table shows the aluminum production over a period of years.

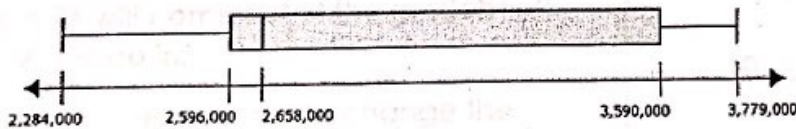
Year	Primary Aluminum Production	Year	Primary Aluminum Production
1994	3,299,000	2002	2,707,000
1995	3,375,000	2003	2,703,000
1996	3,577,000	2004	2,516,000
1997	3,603,000	2005	2,481,000
1998	3,713,000	2006	2,284,000
1999	3,779,000	2007	2,554,000
2000	3,668,000	2008	2,658,000
2001	2,637,000		

Which box plot correctly shows the data?

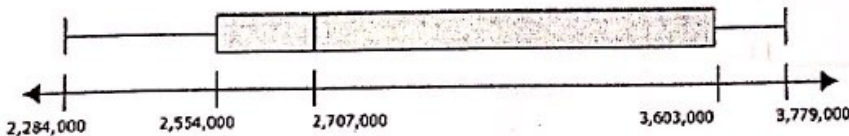
A



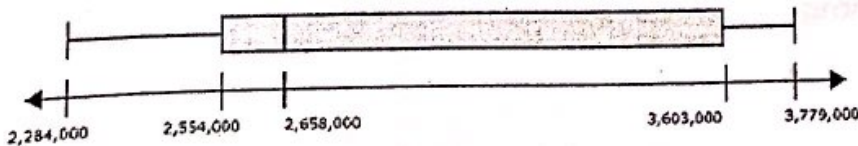
B



C



D



Data Analysis Study Guide

Name: _____

Date: _____

Shay's test grades from first semester Language Arts were: 81, 85, 76 and 82.

1. What is the mean of his test scores?
2. What is the median of his test scores?
3. What is the mode of his test scores?

Shay decided to retake the test he got 76 on. He worked really hard and got an 80, which means the 76 will come out of the gradebook and the 80 will go in.

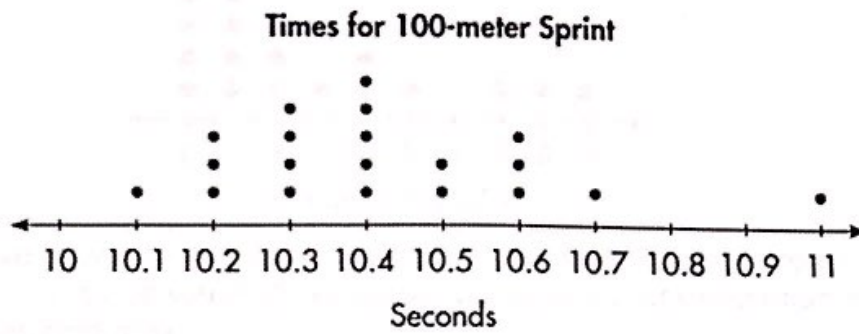
4. How will the new grade change the mean of his test scores?
5. How will this new grade change the median of his test scores?

6. What must be true to call a question statistical?

Which of the following are statistical questions? Write "Yes" on the line if the question is statistical and "No" if it is not.

7. _____ What is the favorite flavor of lollipops?
8. _____ How many students attend Elkins Pointe Middle School?
9. _____ What is the average age of dogs on this street?
10. _____ What is the lowest elevation in the ocean?
11. _____ How many students like pizza?
12. _____ How many phone calls do sixth graders make each day?

Use the dot plot to answer questions below. Each dot represents 5 students.



13. How many students ran 100 meters in 10.5 seconds?

14. What was the most common time?

15. How many students raced?

16. Label the shape of this plot. Use some of the following words: outlier, peak, cluster, and gap.

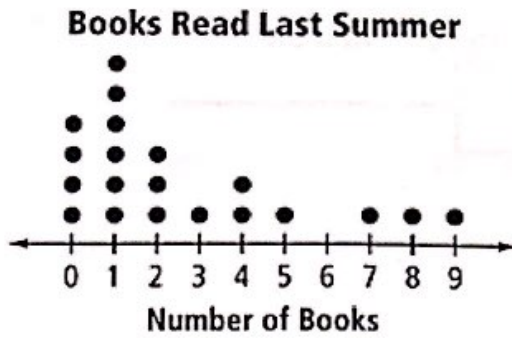
The following data set is the ages of patients at Sunshine Senior care:

{87, 89, 99, 89, 87, 74, 44, 98, 80, 99, 67}

17. What is the mode of the data above?

18. What is the median of the data?

19. What is the mean of the data?



20. The dot plot above shows the number of minutes students take to eat breakfast. Describe the shape of the data. Include some of the following words in your description: outlier, center, peak, skew, cluster, and gap.

21. Which interval of books represents the most number of students?

22. Which interval has six students?

23. How many students read at least 40 books?

24. How many students read at most 39 books?

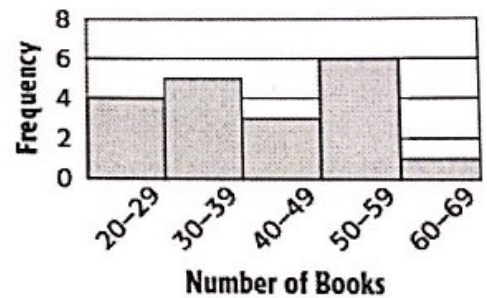
25. Which interval of books represents the least number of students?

26. How many students have 2-3 siblings?

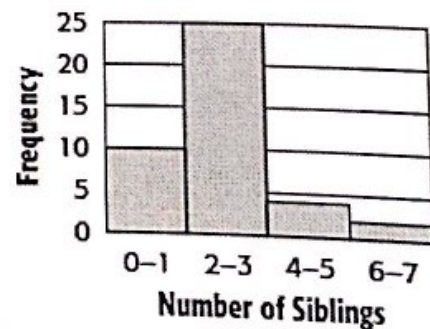
27. How many students have greater than or equal to 4 siblings?

28. How many students have less than or equal to 3 siblings?

Number of Books for Each Student



Number of Siblings for Each Student



29. Find the following information for the box and whisker plot:

Minimum:

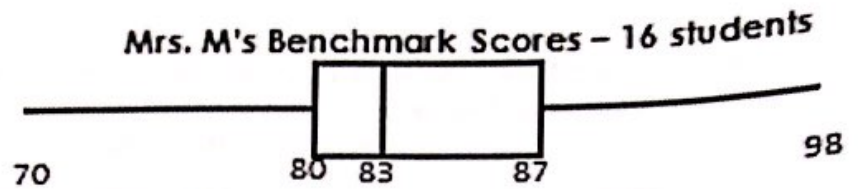
Q1:

Median:

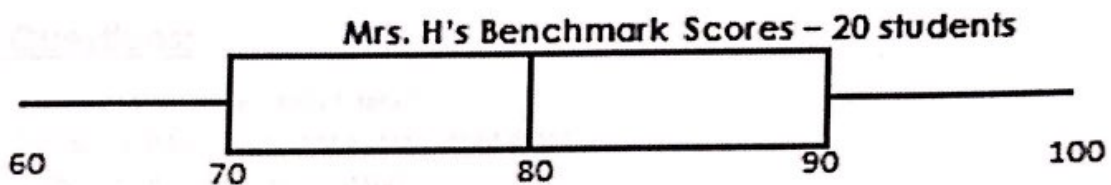
Q3:

Maximum:

Interquartile Range:



30. Find the following information for the box and whisker plot:



Minimum:

Q1:

Median:

Q3:

Maximum:

Interquartile Range:

Key Words: