6th Grade Mathematics

Unit 2 Curriculum Map: October 28th – January 3rd

ORANGE PUBLIC SCHOOLS

OFFICE OF CURRICULUM AND INSTRUCTION

OFFICE OF MATHEMATICS

Common Core Standards

GRADE 6 NUMBER SENSE	
<u>6.NS.6</u>	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line with negative number coordinates. 　a.　Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite. 　b.　Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. 　c.　Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
<u>6.NS.7</u>	Understand ordering and absolute value of rational numbers. 　a.　Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right. 　b.　Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write -3°C > -7°C to express the fact that -3°C is warmer than -7°C. 　c.　Understand the absolute value of a rational number as its distance from – on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of debt in dollars. 　d.　Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.
<u>6.NS.8</u>	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

GRADE 6 STATISTICS AND PROBABILITY	
<u>6.SP.1</u>	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.
<u>6.SP.2</u>	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.
<u>6.SP.3</u>	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.
<u>6.SP.4</u>	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
<u>6.SP.5</u>	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 and/or mean absolute deviation), as well as describing any overall pattern and any striking deviation from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Model Curriculum Student Learning Objectives

SLO	Description	Calculator Allowed (PARCC)
1 6.NS.6 6.NS.7	Locate positive and negative rational numbers on the number line and explain the meaning of absolute value of a rational number as indicating locations on opposite sides of zero on the number line.	NO
2 6.NS.7	Write and compare rational numbers using inequality signs	NO
3 6.NS.6	Plot ordered pairs in all four quadrants on the coordinate plane and describe their reflections.	NO
4 6.NS.7	Interpret and explain absolute value as magnitude for a positive or negative quantity in a real-world situation.	NO
5 6.NS.8	Solve real world problems mathematically by graphing points in all four quadrants of the coordinate plane. Use the absolute value of the differences of their coordinates to find distances between points with the same first coordinate or same second coordinate.	NO
6 6.SP.1 6.SP.2 6.SP.3 6.SP.5c,d	Calculate, compare, and interpret measures of center and variability in a data set to answer a statistical question. (Including median, mean, interquartile range, mean absolute deviation and overall pattern).	YES
7 6.SP.4 6.SP.5a,b	Display numerical data in plots on the number line (including dot plots, histograms, and box plots) and summarize in relation to their context.	YES

Connections to the Mathematical Practices

1	**Make sense of problems and persevere in solving them** - Students will make sense of the data distributions by interpreting the measures of center and variability in the context of the situations they represent. - Students make sense of problems involving points in the coordinate plane
2	**Reason abstractly and quantitatively** - Students reason about the appropriate measures of center or variability to represent a data distribution. - Students demonstrate abstract reasoning about rational numbers with their visual representations. Students consider the values of these numbers in relation to distance (number lines).
3	**Construct viable arguments and critique the reasoning of others** - Students construct arguments regarding which measures of center or variability they would use to represent a particular data distribution. They may critique other students' choices when considering how outliers are handled in each situation. - Students construct and critiques arguments regarding number line representations and the use of inequalities to represent real-world contexts.
4	**Model with mathematics** - They use measures of center and variability and data displays (i.e. box plots and histograms) to draw inferences about and make comparisons between data sets. Students need many opportunities to connect and explain the connections between the different representations. Students collect data regarding real-world contexts and create models to display and interpret the data. - Students use number lines to compare numbers and represent inequalities in mathematical and real-world contexts.
5	**Use appropriate tools strategically** - Students consider available tools (including estimation and technology) when answering questions about data or representing data distributions. They decide when certain tools might be helpful. For instance, students in grade 6 may decide to represent similar data sets using dot plots with the same scale to visually compare the center and variability of the data. - Students select and use tools such as two-color counters, number line models and the coordinate plane to represent situations involving positive and negative numbers.
6	**Attend to precision** - Students attend to the language of real-world situations to determine if positive or negative quantities/distances are being represented. - Students use appropriate terminology when referring data displays andstatistical measures.
7	**Look for and make use of structure** - Students examine the structure of data representations by examining intervals, units, and scale in box plots, line plots, histograms and dot plots. - Students relate the structure of number lines to values of rational numbers as they use the coordinate plane
8	**Look for and express regularity in repeated reasoning** - Students relate new experiences to experiences with similar contexts when studying positive and negative representations of distance and quantity. In the study of absolute value, students demonstrate repeated reasoning by showing

| | that both positive and negative quantities represent the same distance from zero. |
| | - Students recognize typical situations in which outliers skew data. They can explain patterns in the way data is interpreted in the various representations they study throughout this unit |

Vocabulary

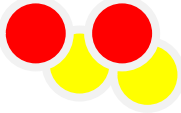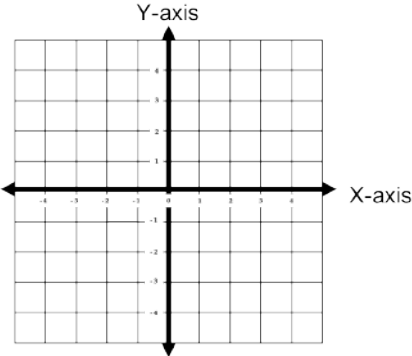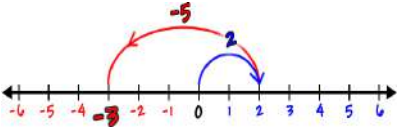| Term	Definition
Box and Whisker Plot	A diagram that summarizes data using the median, the upper and lowers quartiles, and the extreme values (minimum and maximum). Box and whisker plots are also known as box plots. It is constructed from the five-number summary of the data: Minimum, Q1 (lower quartile), 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 of 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 Absolute Deviation	The average distance of each data value from the mean. The MAD is a gauge of "on average" how different the data values are from the mean value.
Mean	The "average" or "fair share" value for the data. The mean is also the balance point of the corresponding data distribution. $$arithmetic\ mean = \bar{x} = \frac{x_1 + x_2 + x_3 + \cdots x_n}{n}$$
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 Mean Absolute Deviation 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 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 mean absolute deviation.
Absolute Value	The distance between a number and zero on the number line. The symbol for absolute value is shown in the equation $|-8| = 8$.

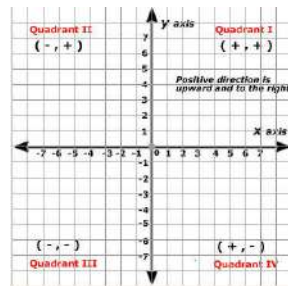| Coordinate Plane	A plane containing two perpendicular axes (x and y) intersecting at a point called origin (0, 0).
Coordinates	An ordered pair, $(x,)$, that locates a point in a plane.
Distance	Amount of separation between 2 points
Inequality	Any mathematical sentence that contains the symbols > (greater than), < (less than), ≤ (less than or equal to), or ≥ (greater than or equal to).
Integers	The set of whole numbers and their opposites
Magnitude	Greatness in size or amount
Negative Numbers	The set of numbers less than zero
Opposite Number	Two different numbers that have the same absolute value. Example: 4 and −4 are opposite numbers because both have an absolute value of 4.
Ordered Pair	A pair of numbers, $(x,)$, that indicate the position of a point on the Cartesian coordinate Plane.
Origin	The point of intersection of the vertical and horizontal axes of a Cartesian coordinate plane. The coordinates of the origin are (0, 0).
Positive Number	The set of numbers greater than zero
Quadrant	One of the four regions on a Coordinate plane formed by the intersection of the x-axis and the y-axis.
Rational Number	The set of numbers that can be written in the form a/b where a and b are integers and $b \neq 0$.
Sign	a symbol that indicates whether a number is positive or negative. Example: in −4, the (−) sign how this number is read "negative four".
x-axis	The horizontal number line on the Cartesian coordinate plane
x-coordinate	The first number of in ordered pair; the position of a point relative to the vertical axis
y-axis	The vertical number line on the Cartesian coordinate plane
y-coordinate	The second number in an ordered pair; the position of a point on the horizontal axis.

Potential Student Misconceptions

- Students may believe all graphical displays are symmetrical. Exposing students to graphs of various shapes will show this to be false.

- Mode is remembered as the "most" and often students think this means the largest value, not "most frequent".

- Students do not remember to put the numbers in order before finding median.

- Students assume that mean is always the best way to describe a set of data.

- Students need to understand that mean is a redistribution of the data where mode and median are not.

- Students may think that when data is "skewed to the left" that most of the data is on the left. In fact, the tail of the data is on the left and most of the data is on the right. Students confuse clustering and skewing

Teaching Multiple Representations

CONCRETE REPRESENTATIONS	
• Number cubes	
• Rulers (inches and centimeters)	
• 2-color counters to represent negatives and positives	
• Thermometers and other equally partitioned tools	
• Coordinate graphing	
• Floor tiles and tape	
PICTORIAL REPRESENTATIONS	
• Number Lines (Vertical and Horizontal)	

- Coordinate graph

- Data Displays (dot plot, histogram, box plot)
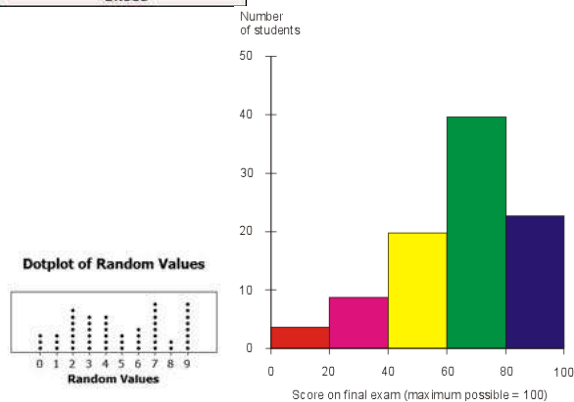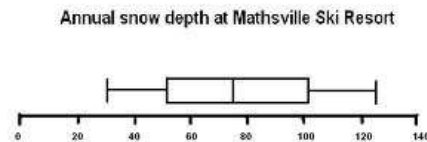
ABSTRACT REPRESENTATIONS

- Distributive Property
- Statements of Inequality
- Absolute Value
- Coordinate Plane
- Negative and Positive Coordinates
- Direction and Origin

CMP3 Pacing Guide

Activity	Common Core Standards/SLO	Estimated Time
Illustrative Math Task: Above and Below Sea Level	6.NS.7 SLO 1, 2, 4	1 day
Illustrative Math Task: Integers and Fractions on the Number Line	6.NS.7a SLO 2	1 day
Illustrative Math Task: Comparing Temperatures	6.NS.7b SLO 4	1 day
Variables and Patterns (CMP3) Investigation 1	6.NS.6c, 6.NS.8 SLO 1, 3, 5	3 days
Variables and Patterns (CMP3) Investigation 2	6.NS.6b, 6.NS.6c, 6.NS.8 SLO 1, 3, 5	3 days
Assessment Check 1	6.NS.6, 6.NS.7, 6.NS.8 SLOs 1, 2, 3, 4, 5	1 day
Data About Us (CMP2) Investigation 1	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 SLO 6, 7	3 days
Data About Us (CMP2) Investigation 2	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 SLO 6, 7	3 days
Data About Us (CMP2) Investigation 3	6.SP.1, 6.SP.2, 6.SP.4, 6.SP.5 SLO 6, 7	3 days
Illustrative Math Task: Zeke's Buttons	6.SP.1 SLO 6, 7	1 day
How Likely Is It? (CMP2) Investigations 1-4	6.SP.5a SLO 6, 7	4 days
Illustrative Math Task: Puppy Weights	6.SP.2, 6.SP.4 SLO 6, 7	1 day
Common Core Investigation 5: Histograms and Box Plots	6.SP.4, 6.SP.5 SLO 7	3 days
Illustrative Math Task: Electoral College	6.SP.5d SLO 7	1 day
Assessment Check 2	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 SLO 6, 7	1 day
Unit 2 Assessment	6.NS.6, 6.NS.7, 6.NS.8, 6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 All SLOs	2 days

CMP2 Pacing Guide

Activity	Common Core Standards/SLO	Estimated Time
Illustrative Math Task: Above and Below Sea Level	6.NS.7 SLO 1, 2, 4	1 day
Illustrative Math Task: Integers and Fractions on the Number Line	6.NS.7a SLO 2	1 day
Illustrative Math Task: Comparing Temperatures	6.NS.7b SLO 4	1 day
Bits and Pieces I (CMP2) Investigation 1	6.NS.6, 6.NS.7 SLO 1, 2, 3, 4	3 days
Bits and Pieces I (CMP2) Investigation 2	6.NS.6, 6.NS.7 SLO 1, 2, 3, 4	3 days
Common Core Investigation 3: Integers in the Coordinate Plane	6.NS.6, 6.NS.7, 6.NS.8 SLO 1, 2, 3, 4, 5	2 days
Assessment Check 1	6.NS.6, 6.NS.7, 6.NS.8 SLO 1, 2, 3, 4, 5	1 day
Data About Us (CMP2) Investigation 1	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 SLO 6, 7	3 days
Data About Us (CMP2) Investigation 2	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 SLO 6, 7	3 days
Data About Us (CMP2) Investigation 3	6.SP.1, 6.SP.2, 6.SP.4, 6.SP.5 SLO 6, 7	3 days
Illustrative Math Task: Zeke's Buttons	6.SP.1 SLO 6	1 day
How Likely Is It? (CMP2) Investigations 1-4	6.SP.5a SLO 7	4 days
Illustrative Math Task: Puppy Weights	6.SP.2, 6.SP.4 SLO 6, 7	1 day
Common Core Investigation 5: Histograms and Box Plots	6.SP.4, 6.SP.5 SLO 6, 7	3 days
Illustrative Math Task: Electoral College	6.SP.5d SLO 6	1 day
Assessment Check 2	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 SLO 6, 7	1 day
Unit 2 Assessment	6.NS.6, 6.NS.7, 6.NS.8, 6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5 All SLOs	2 days

Associated Illustrative Math Tasks

Above and Below Sea Level (6.NS.7)

The table below shows the lowest elevation above sea level in three American cities.

City	State	Elevation above sea level	Elevation below sea level
Denver	Colorado	5130	
New Orleans	Louisiana	-8	
Seattle	Washington	0	

Finish filling in the table as you think about the following statements. Decide whether each of the following statements is true or false. Explain your answer for each one.

   a. True or False? New Orleans is |−8| feet below sea level.

   b. True or False? New Orleans is −8 feet below sea level.

   c. True or False? New Orleans is 8 feet below sea level.

   d. True or False? Seattle is 0 feet above sea level.

   e. True or False? Seattle is |0| feet below sea level.

   f. True or False? Denver is −5130 feet below sea level.

   g. True or False? Denver is |−5130| feet below sea level.

   h. True or False? Denver is −|5130| feet below sea level.
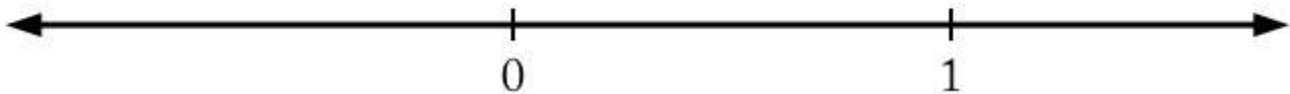
Integers and Fractions on the Number Line (6.NS.7a)

Integers
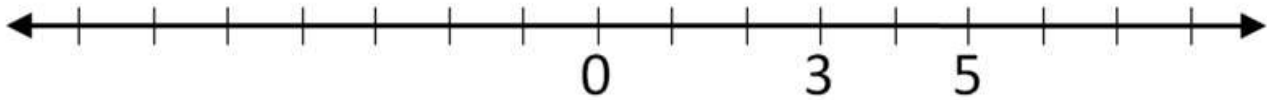
    a. Find and label the numbers −3 and −5 on the number line.

    b. For each of the following, state whether the inequality is true or false. Use the number line diagram to help explain your answers.

    i.   −3>−5

    ii.   −5>−3

    iii.   −5<−3

    iv.   −3<−5

Fractions

    a. Find and label the numbers 4/3, 5/4, −2/3, and −3/4 on the number line.

    b. For each of the following, state which inequality is true. Use the number line diagram to help explain your answers.

    i.   Is 4/3>5/4, or is 4/3<5/4?

    ii.   Is −2/3>−3/4, or is −2/3<−3/4?

    c. Is −3/4 closer to 0 or is 5/4? Explain how you know.

Comparing Temperatures (6.NS.7b)

a. Here are the low temperatures (in Celsius) for one week in Juneau, Alaska:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
5	-1	-6	-2	3	7	0

b. Arrange them in order from coldest to warmest temperature.

c. On a winter day, the low temperature in Anchorage was 23 degrees below zero (in $\circ C$) and the low temperature in Minneapolis was 14 degrees below zero (in $\circ C$). Sophia wrote,

   Minneapolis was colder because −14<−23.

   Is Sophia correct? Explain your answer.

d. The lowest temperature ever recorded on earth was −89∘C in Antarctica. The average temperature on Mars is about −55∘C. Which is warmer, the coldest temperature on earth or the average temperature on Mars? Write an inequality to support your answer.

Zeke's Buttons (6.SP.1)

Zeke likes to collect buttons and he keeps them in a jar. Zeke can empty the buttons out of the jar, so he can see all of his buttons at once.

a.   Which of the following are statistical questions that someone could ask Zeke about his buttons? (A statistical question is one that anticipates an answer based on data that vary.) For each question, explain why it is or is not a statistical question.

      i.   What is a typical number of holes for the buttons in the jar?

      ii.   How many buttons are in the jar?

      iii.   How large is the largest button in the jar?

      iv.   If Zeke grabbed a handful of buttons, what are the chances that all of the buttons in his hand are round?

      v.   What is a typical size for the buttons in the jar?

      vi.   How are these buttons distributed according to color?

b.   Write another statistical question related to Zeke's button collection.

Puppy Weights (6.SP.2, 6.SP.4)

Below are the 25 birth weights, in ounces, of all the Labrador Retriever puppies born at Kingston Kennels in the last six months.

13 14 15 15 16 16 16 16 17 17 17 17 17 17 17 18 18 18 18 18 18 18 18 19

a.   Use an appropriate graph to summarize these birth weights.

b.   Describe the distribution of birth weights for puppies born at Kingston Kennels in the last six months. Be sure to describe shape, center and variability.

c.   What is a typical birth weight for puppies born at Kingston Kennels in the last six months? Explain why you chose this value

Electoral College (6.SP.5d)

Unlike many elections for public office where a person is elected strictly based on the results of a popular vote (i.e., the candidate who earns the most votes in the election wins), in the United States, the election for President of the United States is determined by a process called the Electoral College. According to the National Archives, the process was established in the United States Constitution "as a compromise between election of the President by a vote in Congress and election of the President by a popular vote of qualified citizens." (http://www.archives.gov/federal-register/electoral-college/about.html accessed September 4, 2012).

Each state receives an allocation of electoral votes in the process, and this allocation is determined by the number of members in the state's delegation to the US Congress. This number is the sum of the number of US Senators that represent the state (always 2, per the Constitution) and the number of Representatives that represent the state in the US House of Representatives (a number that is directly related to the state's population of qualified citizens as determined by the US Census). Therefore the larger a state's population of qualified citizens, the more electoral votes it has. Note: the District of Columbia (which is not a state) is granted 3 electoral votes in the process through the 23rd Amendment to the Constitution.

The following table shows the allocation of electoral votes for each state and the District of Columbia for the 2012, 2016, and 2020 presidential elections. (*http://www.archives.gov/federal-register/electoral-college/allocation.html* accessed September 4, 2012).

State	Electoral Votes	State	Electoral Votes	State	Electoral Votes
Alabama	9	Kentucky	8	North Dakota	3
Alaska	3	Louisiana	8	Ohio	18
Arizona	11	Maine	4	Oklahoma	7
Arkansas	6	Maryland	10	Oregon	7
California	55	Massachusetts	11	Pennsylvania	20
Colorado	9	Michigan	16	Rhode Island	4
Connecticut	7	Minnesota	10	South Carolina	9
Delaware	3	Mississippi	6	South Dakota	3
District of Columbia	3	Missouri	10	Tennessee	11
Florida	29	Montana	3	Texas	38
Georgia	16	Nebraska	5	Utah	6
Hawaii	4	Nevada	6	Vermont	3
Idaho	4	New Hampshire	4	Virginia	13
Illinois	20	New Jersey	14	Washington	12
Indiana	11	New Mexico	5	West Virginia	5
Iowa	6	New York	29	Wisconsin	10
Kansas	6	North Carolina	15	Wyoming	3

a.   Which state has the most electoral votes? How many votes does it have?

b.   Based on the given information, which state has the second highest population of qualified citizens?

c.   Here is a dot-plot of the distribution.

Electoral Votes
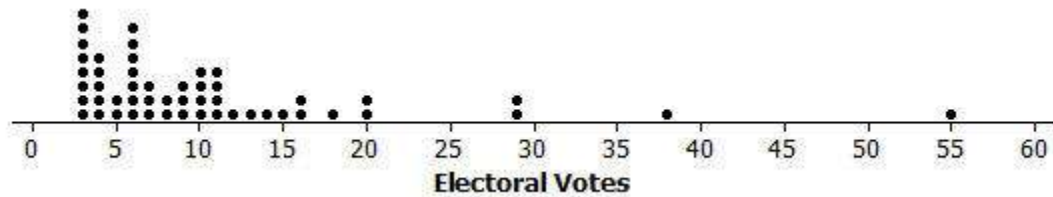
  i. What is the shape of this distribution: skewed left, symmetric, or skewed right?

 ii. Imagine that someone you are speaking with is unfamiliar with these shape terms. Describe clearly and in the context of this data set what the shape description you have chosen means in terms of the distribution.

d.   Does the dotplot lead you to think that any states are outliers in terms of their number of electoral votes? Explain your reasoning, and if you do believe that there are outlier values, identify the corresponding states.

e.   What measure of center (mean or median) would you recommend for describing this data set? Why did you choose this measure?

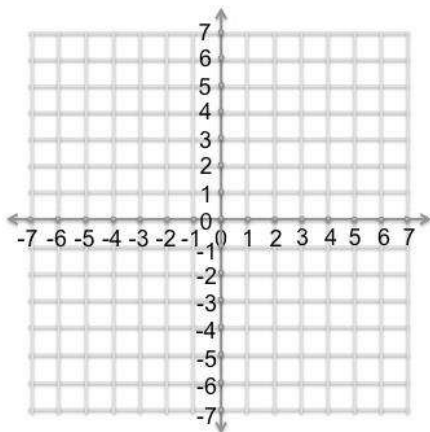f.   Determine the value of the median for this data set (electoral votes).

Assessment Checks

Assessment Check 1

1. The coordinates of point P are (-6,5). Point R is a reflection of point P across the x-axis.

The coordinates of point Q are (-1,0). Point T is a reflection of point Q across the y-axis.

Plot and label points P, Q, R, and T on the coordinate plane.

2. The level of the top of the water in the ocean is considered to be at an altitude of zero (0) feet.

      The ocean floor at a particular dive site is –20 feet.

      A diver is located at –5 feet at that same site.

      The captain of a boat is located at an altitude of 15 feet, directly above the diver.

a. The distance from the captain to the diver is greater than the distance from the top of the water to the ocean floor.

              True   False

b. The distance from the captain to the top of the water is the same as the distance from the diver to the ocean floor.

              True   False

c. When the diver swims to –10 feet, the diver will be the same distance below the top of the water as the captain is above the top of the water.

              True   False

d. When the diver swims to –10 feet, the diver's distance to the ocean floor will be equal to the diver's distance to the top of the water.

              True   False

3. Between noon and 10:00 p.m., Tyrone recorded –18°F as the change in temperature. Which best describes the change in temperature?

A. The temperature decreased by 18°F by 10:00 p.m.
B. The temperature increased 18°F by 10:00 p.m.
C. The temperature was –18°F at 10:00 p.m.
D. The temperature was 18°F at 10:00 p.m.

4.
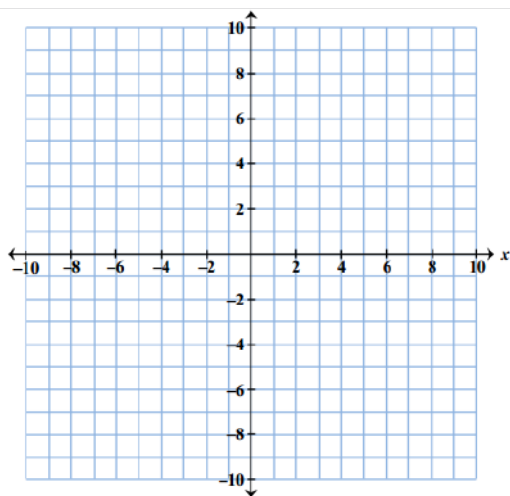
Listed below are the locations of six buildings that will be added to the above coordinate plane.

- Bank (-8,5)
- School (-8,-6)
- Park (4,5)
- Post Office (-9,5)
- Store (-9, -6)

For items a-d, select True or False for each statement based on the given information.

a.   The bank is closer to the school than the post office is from the store.

□True □False

b. The distance from the bank to the school is equal to $|5|+|-6|$

□True □False

c. The library has the same y-coordinate as the store. If the library is the same distance from the store as the park is from the bank, then the x-coordinate of the library is 4.

□True □False

d. The distance from the bank to the post office is equal to $|8|+|-9|$

□True □False

Assessment Check 2

1. Mary Peterson has just written a book about American work habits, and she is at the local bookstore answering questions. Which of the following are statistical questions that you could ask Mary Peterson?

A. How many Americans work more than 40 hours per week?
B. Which industry is the hardest working?
C. How many hours does the hardest-working industry work?
D. How far does the average American commute to work?

2. The table below shows the number of turkey and ham sandwiches sold by Derby's Deli for several days in one week.

Sandwiches Sold at Derby's Deli

Day	Turkey	Ham
Monday	7	9
Tuesday	13	11
Wednesday	8	8
Thursday	15	6
Friday	12	16

What is the difference between the median number of turkey sandwiches sold and the median number of ham sandwiches sold?
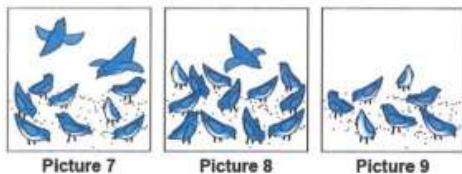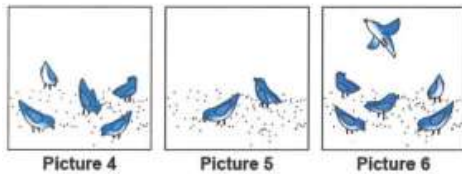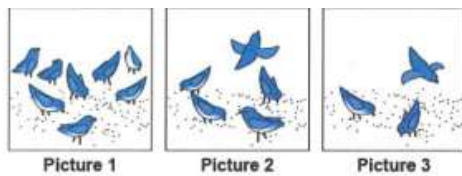
a. 0
b. 1
c. 2
d. 3

3. Michael Phelps is an employee at Google researching demand for the new Google Glass. Michael surveys a dozen people and asks each of them how much they would pay. The results are shown below.
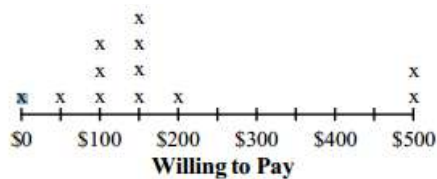
a. Summarize the data using the mean

b. Summarize the data using the median.

c. Which measure provides a better summary of the data?

4. Mike takes pictures of birds.

a. Count the number of birds in each of Mike's pictures and enter the numbers into the table below.
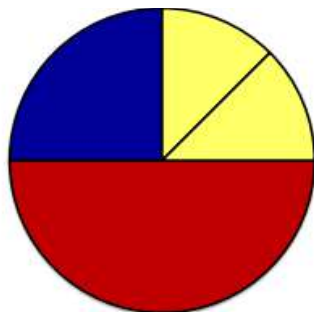

Picture 1   Picture 2   Picture 3

Picture 4   Picture 5   Picture 6

Picture 7   Picture 8   Picture 9

Mike's Pictures

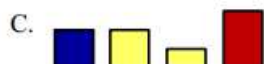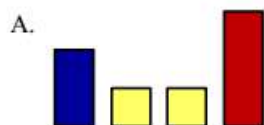| Picture	Number of Birds
1	
2	
3	
4	
5	
6	
7	
8	
9	

b. Create a box plot that represents the data in part a.

5.

Which set of bars below represents the data in the circle graph?

A.

B.

C.

D.

23

Extensions

Online Resources

http://www.illustrativemathematics.org/standards/k8
- Performance tasks, scoring guides

http://www.ixl.com/math/grade-6
- Interactive, visually appealing fluency practice site that is objective descriptive

https://www.khanacademy.org/
- Interactive, tracks student points, objective descriptive videos, allows for hints

http://www.doe.k12.de.us/assessment/files/Math_Grade_6.pdf
- Common Core aligned assessment questions, including Next Generation Assessment Prototypes

6.NS.6-7 Summative Task (From PARCC Prototypes)

The Tasty Treats Cake Factory bakes cakes to sell for a grocery chain. Each cake is weighed to see how close it is to the factory's target weight of 30 ounces. The scale shows how close the cake's weight is to the target. The scale will display:

- o   A positive number if the cake's weight is over 30 ounces
- o   A negative number if the weight is less than 30 ounces
- o   Zero if the weight is exactly 30 ounces.

Part A: On Monday, 3 cakes are weighed. The readings for the cakes are -2.1 ounces, -2.9 ounces, and 1.2 ounces.
Place the numbered dots to record the location of the readings on the number line.
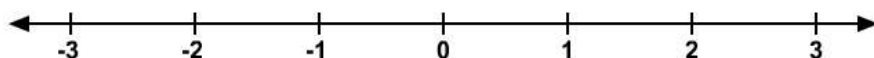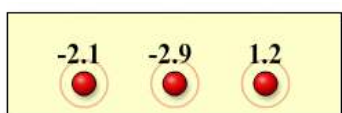
Part B: The table shows two readings from the scale on Tuesday.

Cake	Reading
F	-5 oz.
G	-3 oz.

Which of the following statements is true?
- a) Cake F weighs less than Cake G because -5 < -3
- b) Cake F weighs more than Cake G because -5 < -3
- c) Cake F weighs less than Cake G -3 < -5
- d) Cake F weighs more than Cake G because -3 < -5

Part C: On Wednesday, the factory records the weights of 5 cakes. The reading with the largest absolute value belongs to:

- a) The cake that weighs the least
- b) The cake the is closest to the target weight
- c) The cake that weighs the most
- d) The cake that is furthest from the target weight

Part D: The scale is set to reject any cake that is more than 3 ounces from the target weight of 30 ounces. Which of the cakes would be rejected? Select all that apply.
- a) A cake with a reading of -1.2 oz
- b) A cake with a reading of 2.7 oz
- c) A cake with a reading of -5.3 oz
- d) A cake with a reading of 3.1 oz

6.SP.4, 6.SP.5 Summative Task

Each of the 20 students in Mr. Anderson's class timed how long it took them to solve a puzzle. Their times (in minutes) are listed below:

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Time (minutes)	3	5	4	6	4	8	5	4	9	5	3	4	7	5	8	6	3	6	5	7

a.   Display the data using a dot plot.

b.   Find the mean and median of the data. Does it surprise you that the values of the mean and median are not equal? Explain why or why not.