Area & Surface Area (Unit 1)						
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**		
1	Recall the meaning of area.	Region Area				
2	Deepen understanding of the definition of area. Understand and explain that if two figures can be placed one on top of the other so that they match up exactly, then they have the same area. Understand that area is additive. Compose regions to make a figure with a given area. Decompose a region into pieces and rearrange the pieces to find the area.	Rearrange Compose Decompose		Activity 2: Composing Shapes	Color Code & Laminate For groups	Done
3	Find the area of polygons using reasoning strategies such as decomposing, decomposing and rearranging, and subtracting (enclosing). Explain a chosen strategy.	Enclosing		Activity 1: Comparing Regions	Only need 1 copy per class	
4	Describe a parallelogram, using specific vocabulary, as a four-sided figure whose opposite sides are parallel. Know that parallelograms have the property that opposite sides and opposite angles have equal measures. Reason about the area of a parallelogram by decomposing and rearranging the pieces into a rectangle. Reason about the parallelogram by enclosing it in a rectangle and subtracting the area of the extra region.	Parallelogram				
5	Use the terms base and height of a parallelogram to refer to the length of one side and the perpendicular distance between the side. Understand that there are always two base-height pairs for a given parallelogram. Find a base-height pair for a parallelogram. Write a formula for the area of a parallelogram in terms of a base and corresponding height, and use the formula to find the area of the parallelogram. Understand that the base and height of a parallelogram determine its area.	Base/Height of Parallelogram	Rulers			
6	Use the formula for area to find the area of any parallelogram.	A = B x H				
7	Describe how any parallelogram can be decomposed into two identical triangles by drawing a diagonal. Understand and explain that any two identical triangles can be composed into a parallelogram.		Rulers	Activity 3: A tale of 2 triangles (Part 2)	Color Code & Laminate For groups	Done
8	Reason about the area of any triangle using the base and height of an associated parallelogram. Recognize that a triangle has half the area of a parallelogram.	A = 1/2 (B x H)	Tape	Activity 3: Decomposing a Parallelogram	Optional Activity	
9	Write and use an expression equivalent to (bxh)/2 or 1/2xbxh for the area of triangle. Understand and explain that any side of a triangle can be a base and that its corresponding height is the perpendicular distance from that side to the opposite vertex. Find the area of any triangle (given sufficient information) by any valid reasoning method.	Opposite Vertex Base/Height of Triangle Formula for Triangle				

10	Identify bases and corresponding heights of any triangle accurately. Draw a segment showing the corresponding height of a given base.		Index Cards			
11	Understand and explain that one can find the area of any polygon by decomposing and rearranging it into rectangles and triangles. Understand the defining characteristics of a polygon.			Activity 4: Pinwheel	Optional Activity - 1 per group of students	
12	Understand that the surface area of a three-dimensional object with flat faces is a measurement of the combined area of all of its faces.		12 snap cubes per student Isometric dot			
13	Identify prisms and pyramids. Understand and use vocabulary for polyhedra. Understand the relationship between polyhedra and their nets.		Scissors Tape Pre-built Polyhedra sets	Activty 1: What are polyhedra? Activity 2: Prisms and Pyramids Optional: Activity 3: Assembling Polyhdra	#1 - For demonstration purposes #2 - Individual #3 - Optional Activity	
14	Match polyhedra to their nets and justify reasoning verbally or in writing. Visualize polyhedra given their nets. Calculate the surface area of prisms and pyramids given nets with grids.		Tape Scissors	Optional: Activity 1: Matching Nets Activity 2: Using Nets to	#1 - Individual copies. Cannot laminate #2 - Individual copies. Cannot laminate	
15	Draw the nets of prisms and pyramids. Calculate the surface area of prisms and pyramids.		Tape Scissors	Activity 2: Building prisms and pyramids	Laminate Individual	
16 Optional Lesson	Distinguish among measures and units of one-, two-, and three-dimensional attributes. See that volume and surface area are different attributes of a three-dimensional figure. Explain (in writing or in words) how two figures can have the same surface area but different volumes and vice versa.		16 Snap cubes each 2 Sticky notes each			
17	Calculate the volume of a cube given its edge length. Understand and explain the meaning of the exponent in the formula V = s cubed. Use units with exponents for area and volume.		27 snap cubes per table group			
18	Structurally understand why $s^2+s^2+s^2+s^2+s^2+s^2=6 \times s^2$. Use units with exponents for surface area and volume. Calculate the surface area and volume of a cube given its edge length.					
19 Optional lesson	Apply strategies and formulas for finding area of polygons to find surface area.			Tent Design (Part 1)	Copies for each student	

Unit 2 - Introducing Ratios						
Major work - Ratios and Rates						
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**		
1	Understand & use the word ratio to describe an association between two or more quantities. Use ratio languageà“The ratio of these to those is a:b or a to b.” Use ratio languageà“For every a of these, there are b of those.”	Ratio	Visual Display			
2	Use diagrams to represent ratios. Write different ratios to represent the same situation. Practice using ratio language from lesson 1.		Colored Pencils	Activity 4: Spaghetti Card Sort	Laminated & reusable	Done
3	Understand that doubling, tripling or halving a recipe yields something that will taste the same. Understand that doubling, tripling or halving applies to ALL ingredients. Represent multiple batches of recipes with discrete diagrams with circled groups. Use the term “equivalent ratios” to describe ratios that yield identically tasting recipes.	Equivalent Ratios	Kool-aid Mix Taste Cups			
4	Understand and communicate that doubling, tripling, or halving a recipe for colored water yields the same color. Understand that doubling means to double each ingredient, and multiples batches of a recipe result from multiplying the amount of each ingredient by the same number. Understand that equivalent ratios represent mixtures that are comprised of multiple batches of the same recipe.		Food coloring Graduated Cylinders			
5	Create diagrams that represent equivalent ratios. Find sets of equivalent ratios. Explain the meaning of equivalent ratios using words and diagrams.		Visual Display			
6	Describe how to draw a double number line diagram and how it can be used to identify equivalent ratios. Interpret a double line diagram in a familiar context. Make connections between discrete diagrams and double number line diagrams.	Double Number Line Diagram	Rulers			
7	Set up a double number line diagram by drawing two parallel lines with tick marks at regular intervals to line up. Use double number line diagrams to find a wider range of equivalent ratios. Recognize that the word “per” refers to “how much for one”.	Per	Rulers			
8	Use double number line diagrams to find equivalent ratios between prices and quantities. Use the word “per” to refer to cost of 1 item or unit of purchase. Understand what “at this rate” means in context to unit prices.	Unit price	Rulers			
9	Experience a context involving constant speed. Under what “at the same rate” means in context of moving objects. Use “per” language in the context of constant speed. Use a double number line diagram to find the speed expressed in distance traveled per 1 unit of time.	Meters per second	Stopwatch String Meter Stick			
10	Compare situations in familiar contexts (recipes, prices, speeds) by finding and examining ratios that describe each situation and have the same first or same second values. Understand that the term “at the same rate” implies that the relevant ratios are equivalent.	Same rate				
11	Understand how a table can be used to represent equivalent ratios. Reinforce that equivalent ratios can be created by using a multiple (scale factor). Use precise language to explain how multipliers can be used to create equivalent ratios.	Table				

12	Solve equivalent ratio problems using a table. Remember that dividing by a whole number is the same as multiplying by an associated unit fraction. First find a “1” row and then use to find other rows.					
13	Compare and contrast a table with a double number line that represents the same situation. Encounter a problem that illustrates how the greater flexibility of a table merits its use.			Activity 3: International Space Station	Not reusable	
14	Decide what information students need to know to be able to solve problems about situations happening at the same rate. Explaining reasoning using diagrams that student chooses.			Activity 2: Info Gap	Laminated & reusable	Done
15	Explain how to use tape diagrams to solve problems about ratios of quantities with the same units. Use a ratio of parts and a total to find the quantities of individual parts.	Tape Diagram	Snap Cubes Graph			
16	Apply double number lines, tables, and tape diagrams in solving problems in which the whole amount of something is given.		Rulers Graph Paper	Activity 3: Salad Dressing & Moving Boxes	Laminated & reusable	Done
17 Optional lesson	Apply reasoning developed throughout this unit to an unfamiliar situation. Decide what information is needed to solve a real-world problem. Make simplifying assumptions about a real-world situation.					

Unit Rates and Percentages (Unit 3)						
Major work - Ratios and Rates						
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**		
1	See that reasoning about a rate per 1 is one way to get to the solution of a problem. Find and make sense of minutes per window and meters climbed per minute. Bring rate and ratio understanding to bear on a novel problem.					
2 Optional Lesson	Know approximate and relative sizes for standard units of length: inch, foot, yard, mile, millimeter, centimeter, meter, kilometer. Know approximate and relative sizes for standard units of volume: cup, quart, gallon, milliliter, liter. Know approximate and relative sizes for standard units of weight and mass: ounce, pound, ton, gram, kilogram			Activity 3: Card Sort - Measurements	Optional	
3	Make estimates about different measurements for the same quantity based on the relative sizes of units. Understand that when you measure a quantity with a bigger unit, the numerical part of the measurement is smaller and vice versa. Measure actual things with actual measuring tools.			Activity 2: Measurement Stations		
4	Use rates per 1 to solve problems involving unit conversion. Use tables and double number lines to solve problems involving unit conversion. Understand that when we measure things in two different units, the pairs of measurements are equivalent ratios.					
5	Explain orally and in writing that if two ratios have the same rate per 1, they are equivalent ratios. Compare speeds and prices by calculating rates per 1, and use language like “meters per minute” and “dollars per pound.”					
6	See that the unit rate chosen for a given problem might depend on how we intend to use the unit rate. Understand that there are always two unit rates, a/b and b/a, associated with a ratio, a:b.	Unit rate				
7	Understand that unit rates are the factor that takes you from one column to the other column in a table of equivalent ratios. Calculate the rate per 1 for several ratios in a set of equivalent ratios. Understand that equivalent ratios have the same unit rates.					
8	Solve more sophisticated problems involving constant speed. Work with the most abbreviated table of equivalent ratios. Practice grade 5 arithmetic with fractions and decimals.	Pace Speed				
9	Practice grade 5 arithmetic with fractions and decimals. Find and use unit rates efficiently by multiplying and dividing.			Activity 2: Card sort - Is it real?	Laminated & Color-Coded	Done
10	Understand that a percentage is a rate per 100. Use a double number line with percentages on one line and corresponding values on the other to find other values. State explicitly what one is finding a percentage of.	Percent Percentage				
11	State explicitly what one is finding a percentage of. Use a double number line with percentages on one line and corresponding values on the other to solve problems of type A% of B is ? and type A% of ? is C. Understand that a percentage is a rate per 100.					
12	Use a tape diagram to solve problems of type A% of B is ? and type A% of ? is C.	Tape Diagram				
13	Know automatically that 10% of is 1/10 times, 25% of is 1/4 times, 50% of is 1/2 times, and 75% of is 3/4 times.					
14	Given that A% of B is C, find A, B, or C given the other two values and without scaffolding. Understand double number lines as a strategy for solving percent problems.			Activity 3: Info gap - Music Devices	Laminated & Color-Coded	Done

15	Find A% of B by computing A/100·B or other fraction or decimal equivalents of A/100. Understand that “A% of B” means “A/100·B.”					
16	Find the percentage that C is of B by computing C/B·100.					
17 Optiona	Apply understandings of ratio, rates, and percent to a less well-defined problem.					

Dividing Fractions (Unit 4)						
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**		
1	Understand that dividing a by a number that is much larger than a results in a very small number. Understand that dividing a by a number that is much smaller than a results in a very large number. Understand that dividing a by a number close to a gives a quotient that is close to 1.		None	Activity 3: All in Order	Color Code & Laminate	Done
2	Explain how multiplication and division are related. Write corresponding multiplication equations given a division expression or equation. See that a division expression can be interpreted in two ways—as representing a “how many groups?” question, or a “how many in each group?" question.		None			
3	Analyze a division context and tell if it represents a “how many groups?” question, or a “how many in each group?" question. Use equations and diagrams to represent and reason about division and multiplication situations.		None			
4	Recognize "how many groups?" questions as division problems. Use diagrams, multiplication equations, and division equations to represent "how many groups?" questions. Reason about division problems in which the divisor is not a whole number and the quotient is a whole number.		Pattern Blocks Each group needs: 2			
5	Recognize “how many groups?” questions as division problems. Use diagrams, multiplication equations, and division equations to represent "how many groups?" questions. Reason about division problems in which the divisor is not a whole number and the quotient is also not a whole number.		Pattern Blocks Each group needs: 1			
6	Use tape diagrams to reason about the number of equal-size groups in division problems.		None			
7	Use equations and diagrams to reason about “what fraction of a group?” problems (in which the number of groups is less than 1). Recognize “what fraction of a group?” questions as division problems.		None			
8	Recognize “how much in each group?” questions as division problems. Use equations and diagrams to reason about the amount in a group when it is not a whole number.		None			
9	Reason about the amount in one group in various division contexts.					
10	Recognize that dividing a number by a unit fraction 1/b is the same as multiplying by a whole number b. Recognize that dividing a number by a non-unit fraction ab produces the same result as multiplying the number by b and dividing by a.					
11	Understand that dividing by a/b has the same outcome as multiplying by b and then by 1/a (or multiplying by the reciprocal of that fraction). Use an algorithm to divide a number by any fraction.	Multiply by the reciprocal	None			
12	Use multiplication and division to solve measurement problems involving fractional lengths. Recognize multiplicative comparison situations (i.e. questions such as “how many times as much as a is b?”) as division problems. Use equations, diagrams, and division algorithm to reason about multiplicative comparison problems that involve					
13	Understand that, given the area and one side length of a rectangle, we can use division to find the other side length, even when the measurements are not whole numbers. Use multiplication and division to solve problems involving fractional lengths and areas of rectangles.					
14	Use multiplication and division to solve problems involving fractional areas and lengths in triangles. Understand that volume of a rectangular prism can be found by packing it with unit cubes with fractional edge lengths and finding the number of cubes. Know that the volume of a rectangular prism can also be found by multiplying its edge lengths.					

15	Determine volume of a prism by packing unit cubes of fractional lengths and by multiplying all the edge lengths. Solve volume problems involving fractional lengths.					
16	Solve a variety of contextual problems that involve division of fractions. Identify and use appropriate operations when solving problems involving fractions.		None			
17 Optiona	Apply multiplication and division of fractions in a modeling context.					

Arithmetic in Base Ten (Unit 5)					
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**	
1	Activate prior knowledge about estimation and operations with decimals.				
2 Optional lesson	Understand that we can compose 10 like base-ten units as a base-ten unit of higher value (e.g., 10 tenths is 1 one) when adding decimals. Understand that adding and subtracting decimals requires combining digits that represent like base-ten units. Add and subtract decimals by writing the calculations vertically with digits in the same places aligned.			Activity 2: Squares and Rectangles	Optional - Not done
3	Know that we can decompose a base-ten unit as 10 base-ten units of lower value (e.g., 1 tenth as 10 hundredths) when subtracting decimals. Use vertical calculation to subtract decimals, decomposing base-ten units and writing additional zeros as needed. Understand that writing additional zeros after the last non-zero digit in a decimal does not change its value.				
4	Use vertical calculations to add and subtract decimals, including calculations that require writing additional zeros and composing or decomposing a base-ten unit.				
5	Use understanding of place value and fractions to reason about multiplication of decimals and the placement of the decimal point in a product.				
6	Use area diagrams to represent and find products of decimals. Use understanding of place value and fractions to compute products of decimals.				
7	Use area diagrams to represent and find products of decimals. Use area diagrams and partial products to make sense of a multiplication algorithm.				
8	Use an algorithm to calculate products of decimals. Understand how a multiplication algorithm works.				
9	Use base-ten diagrams and use the partial quotients method to find quotients of whole numbers when the dividend is a multiple of the divisor.				
10	Use long division to find quotients of whole numbers when the dividend is a multiple of the divisor.	Long Division			
11	Use long division to find quotients of whole numbers when the dividend is not a multiple of the divisor.				
12	Understand that, like a whole number, a decimal can be partitioned into equal groups. Find quotients with decimal dividends and whole number divisors by partitioning into equal groups of base-ten units. Recognize that multiplying the dividend and the divisor by the same factor does not change the quotient.				
13	Understand that multiplying divisor and dividend by the same power of ten does not change their quotient. Calculate quotients of decimals by multiplying the numerator and denominator by an appropriate power of ten and finding the quotient of the resulting whole numbers.				
14 Optiona	Use the four arithmetic operations on decimals to solve problems.				

15 Optional Lesson	Use the four arithmetic operations on decimals to solve problems. Address precision in measurements and report results appropriately.			Activity 1: Folding paper boxes	Optional - Not done

Expressions and Equations (Unit 6) Major work - Algebraic Reasoning				
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master - None**
1	Represent equations of the form x+p=q and px=q with tape diagrams. Use tape diagrams to reason about writing the equations x+p=q and px=q in different forms. Use tape diagrams to reason about unknown values in equations of the form x+p=q and px=q.			x
2	Represent problems in context with equations of the form x+p=q and px=q. Understand that an equation can be true or false. Understand that, in an equation with a variable, a value substituted for the variable that makes the equation true is called a solution to the equation. Use substitution to determine whether a given number in a specified set makes an equation true. Understand that a letter standing in for a number is called a variable.	Solution to an Equation Variable Coefficient		x
3	Understand how a balanced hanger can represent a true equation. Write equations of the form x+p=q and px=q to represent balanced hangers. Use balanced hangers to reason about finding solutions to equations of the form x+p=q and px=q.			x
4	Represent addition and multiplication situations with equations in different forms. Fluently solve equations of the form x+p=q and px=q.			x
5	Apply understanding of a fraction as a division to solve equations of the form px=q. Given an equation of the form x+p=q or px=q, write a story that the equation might represent, explain what quantity the variable represents, and solve the equation.			x
6	Write an expression with a variable to describe a situation with an unknown amount. Use an expression to write an equation about a situation and solve the equation to find an unknown quantity.			x
7	If A% of B is C, find A or B by writing equations of the form px=q.			x
8	Understand that two expressions that are equal for every value of their variable are equivalent expressions. Use diagrams based on lengths of rectangles to show that some expressions are equal only for a value of their variable while others are equal for all values of their variable. Use the meanings and properties of operations to determine if expressions with variables are equivalent.	Equivalent Expressions		x
9	Apply the distributive property with addition and subtraction to generate equivalent expressions Represent the distributive property with side lengths and areas of rectangles and use the diagrams to write equivalent expressions			x
10	Represent the distributive property with known and unknown side lengths and areas of rectangles, and use the diagrams to write equivalent expressions with variables. Apply the distributive property to generate equivalent expressions with variables.			x

11 Optional	Apply the distributive property with addition and subtraction to generate equivalent expressions with variables.			x
12	Understand the meaning of positive integer exponents. Express numbers in terms of repeated multiplication. Use informal language to describe quantities that can be expressed using repeated multiplication.			x
13	Use the meaning of exponents to determine if numerical expressions with exponents are equal.			x
14	Evaluate expressions that have an exponent and one other operation by carrying out operations in the conventional order.			x
15	Work with simple equations involving exponents. Evaluate exponential expressions with variables.			x
16	Write algebraic representations for relationships between quantities in ratio contexts. Analyze the relationship between dependent and independent variables using tables and graphs and relate these to the equation.	Dependent Variable Independent Variable		x
17	Analyze the relationship between dependent and independent variables using tables and graphs and relate these to the equation. Write algebraic representations for relationships between quantities in ratio contexts.			x
18 Optional Lesson	Write algebraic representations for relationships between quantities in geometric contexts. Analyze the relationship between dependent and independent variables using tables and graphs and relate these to the equation.	Dependent Variable Independent Variable		x

Rational Numbers (Unit 7)						
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**		
1	Extend number line diagrams to represent negative numbers. Understand that positive and negative numbers are used together to describe quantities that have values both greater than and less than zero. Understand conventions for using positive and negative numbers in the contexts of temperature and elevation.	Negative Number Positive Number				
2	Understand a rational number as a point on the number line Understand opposites as numbers that are equally distant from zero and on opposite sides of zero on the number line.	Opposite Rational Number				
3	Explore the idea of magnitude and recognize it as different from relative position on the number line. Interpret numerical inequality statements as statements about the relative position of two numbers on a number line diagram.	Sign				
4	Use “greater than,” “less than,” and “opposites” (or “opposite of”) precisely to compare rational numbers. Compare and order rational numbers.			Activity 2: Ordering Rational Number Cards	Colored coded & laminated	Done
5	Use negative numbers in different contexts. Understand that positive numbers can represent money received and negative numbers can represent money that is paid.					
6	Distinguish between relative values and absolute values of rational numbers. Distinguish comparisons of absolute value from statements about order. Use absolute value notation to describe magnitude. Understand the absolute value of a rational number as its distance from 0 on the number line.	Absolute Value				
7	Use and interpret absolute values in the context of elevation situations. Distinguish between relative values and absolute values of rational numbers. Use inequalities to compare rational numbers and the absolute value of rational numbers.					
8	Identify solutions to inequalities in context. Write inequalities to represent problems in context. Write an inequality of the form x>c or x<c to represent a constraint or condition in a real-world or mathematical problem.			Activity 2: Stories about 9	Colored coded & laminated	Done
9	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Recognize that inequalities of the form x>c or x<c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. Write inequalities to represent problems in context. Identify solutions to inequalities in context. Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	Solution to an inequality		Optional Activity 3: What Number Am I?	Optional - Colored coded & laminated	Done
10	Write and interpret inequalities involving two variables. Interpret inequalities and their solutions in context.					

11	Extend number line diagrams and coordinate axes familiar from previous grades to represent negative quantities. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. Find and plot pairs of integers and other rational numbers on a coordinate plane.	Quadrant				
12	Let's investigate different ways of creating a coordinate plane.					
13	Use points on coordinate plane to answer real-world and mathematical questions. Graph points in all four quadrants of the coordinate plane.					
14	Use coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.					
15	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.					
16	Find the greatest common factor of 2 whole numbers less than 100 Understand what the greatest common factor of two whole numbers is Understand what a common factor of two whole numbers is	Common Factor Greatest Common Factor (GCF)				
17	Find the least common multiple of 2 whole numbers Understand what the least common multiple of two whole numbers is Understand what a common multiple of two whole numbers is	Common Multiple Least Common Multiple				
18 Optional Lesson	Solve problems involving common multiples Solve problems involving common factors			Activity 4: Factors and Multiples Bingo	Optional - not done	

Data Sets and Distributions (Unit 8)						
Lesson	**Learning Goals**	**Vocabulary Introduced**	**Required Materials**	**Blackline Master**		
1	Understand the difference between categorical data and numerical data. Describe how a quantity is measured and identify its unit of measurement. Collect data and report the number of observations.	Categorical Data Numerical Data Dot Plot	Sticky Notes Rulers Measuring Tape			
2	Write statistical questions for given data. Recognize variability in data. Distinguish statistical questions from non-statistical ones. Understand that a statistical question is one that can be answered by collecting data in which variability is expected.	Variability Statistical Question	Dot Plot Poster (1 per class) Dot stickers Rulers	Activity 4: Sifting for Statistical Questions	Color Code & Laminate For groups	Done
3	Recognize that a dot plot displays numerical data, and a bar graph displays categorical data. Read and interpret numerical data sets, tables with frequencies, dot plots, and bar graphs. Represent distributions using tables, dot plots, and bar graphs.	Distribution Frequency	Sticky Notes (1 each) Dot Sticker (1 each) Ruler			
4	Understand that a data set can be characterized by the center and spread of its distribution. Informally describe the center and spread of a distribution represented by a dot plot. Interpret dot plots					
5	Describe the variability of values in the data set in terms of the center and spread. Understand that the center of a distribution can be used to describe the distribution using a typical member of the population. Use dot plots to represent distributions and answer questions about the context.	Spread Center				
6	Recognize that histograms provide an effective way to summarize large data sets, where is it more difficult to construct a dot plot. Recognize that a histogram allows us to see characteristics of the distribution that are hard to see in the raw data.	Histogram	Ruler			
7	Use a histogram to describe a data distribution, determine what a typical value for a data distribution represents in a situation, and answer other statistical questions. Represent a numerical data set with a histogram.		CM Rulers			
8	Describe the overall shape and features of a distribution, including peaks, symmetry, clusters, and gaps, as shown on a histogram. Distinguish between bar graphs and histograms.			Activity 2: Sorting Histograms Activty 3: Getting to school	#2 - Laminated & Color coded #3 - Individual copies	#2 - Done

9	Determine the mean for a numerical data set. Understand the interpretation of the mean as a "leveling out" of the data or an indication of "fair share." Understand that the mean is a measure of center that summarizes the data using a single number.	Mean Average	Snap Cubes Ruler			
10	Understand the interpretation of the mean as a “balance point” in both symmetrical (including uniform) and non-symmetrical distributions. Relate the mean of a data set to a dot plot and interpret it in the context of the situation.	Measure of Center				
11	Understand that mean absolute deviation (MAD) is a measure of variability and that it summarizes with a single number how the data vary. Know that MAD measures the average distance from the mean and calculate it for a numerical data set. Compare distributions with the same mean but different MADs.	Mean Absolute Deviation (MAD)	Deck of cards			
12	Calculate and compare the means and MADs of different distributions. Compare distributions with the same MAD but different means. Interpret the mean and MAD in the context of the data.					
13	Determine median from data lists, tables, and dot plots. Recognize that the median is another measure of center; one that uses the middle of all values in an ordered list to summarize the data.	Median	Index Card			
14	Recognize that the median is a better estimate of a typical value for distributions that are not symmetric or contain values far from the center. Recognize that the shape and distribution of data can have an effect on measures of center. Select and make a case for selecting a particular measure of center for given data sets			Activity 3: Mean or Median?	Laminated & Color Coded	Done
15	Find the quartiles and interquartile range (IQR) of a data set, given a list of the values or a dot plot. Recognize the median as the second quartile. Understand that the interquartile range is a measure of variability and that it can tell us about the distribution of data.	Range Interquartile Range (IQR) Quartile				
16	Make sense of box plots and interpret them in context. Understand that a box plot uses five numbers (quartiles, maximum, and minimum) to summarize a data set.	Box Plot	Scissors Tape Markers			
17	Answer statistical questions by comparing box plots that show the same median but very different IQRs and the same IQR but very different medians. Use box plots to answer questions about data sets. Compare a dot plot and a box plot of the same data set.		Ruler	Activity 2: Info gap - Sea Turtles	Laminated & Color Coded	Done
18 Optional Lesson	Understand that the mean and MAD and the median and IQR both describe center and variability of a distribution, but may give different insights. Understand the unique features of graphical representations of data and choose an appropriate display for a data set. Choose appropriate graphical display and measures of center and variability for a data set. Interpret graphical display and measures of center and variability in context.		Visual Display Rulers			