

Teacher: CORE Math Grade 7

Year: 2010-11

Course: Math Grade 7

Month: All Months

S e p t e m b e r	NUMBER SENSE AND OPERATIONS							
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
		Place Value	Identify whole number place value in writing and verbally Identify decimal place value in writing and verbally Round to the nearest place value by identifying the given place value Justify the reasonableness of answers using estimation	Decimal Notation Whole Number Place Value Interval Tick Mark Rounding to the Nearest Estimate				7.N.19 -Justify the reasonableness of answers using estimation
		Greatest Common Factor	Identify the factors of a given number Calculate the greatest common factor of two or more numbers using a variety of methods ('T' charts, rainbow, listing)	Greatest Common Factor (GCF) Factor 'T' Chart				7.N.8 -Find the common factors and greatest common factor of two or more numbers

	Prime Factorization	Identify the prime factors of a given number Write the prime factorization of a given number in exponential form	Prime number Exponential form Exponent Factor					7.N.10 - Determine the prime factorization of a given number and write in exponential form
	Least Common Multiple	Identify the multiples of a given number or set of numbers Find the least common multiple of a given set of numbers	LCM (Least Common Multiple) Multiple Multiple Zip-line Least Common Denominator					7.N.9 - Determine multiples and least common multiple of two or more numbers
	Fractions- Decimals- Percents	Convert fractions to decimals to percents in any order Convert a fraction into a decimal by using a calculator or long division	Mixed Number Improper Fraction					
	Percent of Quantity	Calculate the percent given a quantity Calculate the percent of a quantity	Percent Discount					

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O c t o b e r	ALGEBRA							
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
		Algebraic Expressions: 2-Step	Translate in writing an algebraic expression from a verbal phrase Translate in writing a verbal phrase into an algebraic expression Determine the appropriate operation when given key words	Algebraic expression Variable Value of an algebraic expression				7.A.1- Translate two-step verbal expressions into algebraic expressions
NUMBER SENSE								
Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards	
	Integers	Identify integers on a number line Order integers with or without the use of a number line Compare integers, decimals and whole numbers as a set of numbers	Negative Positive Integer Opposite Number Line Interval Negative Sign Inequality sign Greater then Less than Equal to Not Equal to					
	Integer	Add and/or	Difference					7.N.12 -



e m b e r	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
		Metric System:Conversions US Customary System:Conversions	List the prefixes within the Metric System (KHDMDCM-nnemonic devise) Convert units within the Metric System (Mass, Capacity and Length) Identify appropriate unit of mass for given object(s) within both systems Convert units within the US Customary System (Mass, Capacity and Length)	Balance Produce Scale Bathroom Scale Truck Scale Mass Capacity Volume Length Gallon Ounce Conversion Equation Inch Yard Mile Fluid Ounce Foot Customary System Pound Ton Cup Quart Pint Mile Metric System Meter Gram Liter Quart				7.M.2 - Convert capacities and volumes within a given system 7.M.3 - Identify customary and metric units of mass 7.M.4 - Convert mass within a given system 7.M.9 - Determine the tool and technique to measure with an appropriate level of precision: mass 7.M.12 - Determine personal references for customary /metric units of mass 7.M.13 - Justify the reasonableness of the mass of an object
NUMBER SENSE								
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
		Real Numbers:	Identify the various	Real Number				7.N.17 -Classify irrational

		Subsets	<p>subsets of real numbers as Rational, Irrational, Integer, whole number and natural numbers</p> <p>Distinguish between rational and irrational numbers</p> <p>Place Rational and Irrational numbers on a number line</p> <p>Classify irrational numbers as non-terminating or non-repeating</p>	<p>Rational</p> <p>Irrational</p> <p>Integer</p> <p>Whole Number</p> <p>Natural Number</p> <p>Repeating decimal</p> <p>Infinite</p> <p>Terminating decimal</p>				<p>numbers as non-repeating/non-terminating decimals</p> <p>7.N.1- Distinguish between the various subsets of real numbers (counting/natural numbers, whole numbers, integers, rational numbers, and irrational numbers)</p> <p>7.N.2 - Recognize the difference between rational and irrational numbers (e.g., explore different approximations of ?)</p> <p>7.N.3 -Place rational and irrational numbers (approximations) on a number line and justify the placement of the numbers</p>
		Square Roots	<p>Calculate a square root of a number on a calculator</p> <p>Recognize a square root as a perfect square</p> <p>State the</p>	<p>Square root</p> <p>Perfect square</p> <p>Radical sign</p>				<p>7.N.15 - Recognize and state the value of the square root of a perfect square (up to 225)</p> <p>7.N.16 - Determine the square</p>

			value of a perfect square up to 225 Identify a square root as a rational number or irrational number without the use of a calculator. Identify the two consecutive whole numbers a non-perfect square lies between				root of non-perfect squares using a calculator 7.N.18 - Identify the two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)
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## D e c e m b e r

### STATISTICS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Probability	Make predictions based on data established from an experiment Predict outcomes based on valid sampling methods Determine the validity of sampling	Frequency of an outcome Relative Frequency Probability Outcome Event Random Experiment Fair Mutually Exclusive Complement of an Event Independent				6.S.8-Justify predictions made from data 6.S.10 - Determine the probability of dependent events 6.S.11 - Determine the number of possible outcomes for a



			<p>methods Design and conduct experiments to test predictions Compare actual results to predicted results Apply the counting principal to given probability events</p>	<p>Events Probability of event A AND event B Probability of event A OR event B</p>				<p>compound event by using the fundamental counting principle and use this to determine the probabilities of events when the outcomes have equal probability 7.S.8 - Interpret data to provide the basis for predictions and to establish experimental probabilities 7.S.9 - Determine the validity of sampling methods to predict outcomes 7.S.10 - Predict the outcome of an experiment 7.S.11 - Design and conduct an experiment to test predictions 7.S.12 - Compare actual</p>
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							results to predicted results
J a n u a r y	STATISTICS						
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Standards
		Graph: Organization and Display of Data	Find the most appropriate graph to display a given set of data (Pictograph, bar graph, line graph, histogram, circle graph)  Construct a Double Bar and Double Line Graph (By selecting an appropriate interval and scale on the x-axis and y-axis) Construct a Circle Graph (Label and Protractor use) Draw central angles using a protractor Construct a Venn Diagram by using the overlap principle Read and	Statistic Frequency Table Range Uniform Scale Bar Graph Double Bar Graph Histogram Line Plot Pictograph Double Like Graph Venn Diagram Overlap Principal			7.S.2 - Display data in a circle graph 7.S.3 - Convert raw data into double bar graphs and double line graphs 7.M.8 - Draw central angles in a given circle using a protractor (circle graphs) 6.S.3 - Construct Venn diagrams to sort data 6.S.4 - Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram,

		interpret Venn Diagram based on questions					or circle graph)
	Data: Collection Methods	Identify and collect data using various methods (e.g., survey, reading results from media sources)					7.S.1- Identify and collect data using a variety of methods
	Data: Analysis	Read Data in a pictograph, bar graph, histogram, line graph, double bar/line graph, circle graph Interpret Data in a pictograph, bar graph, histogram, line graph, double bar/line graph, circle graph Calculate the range of a given set of data  Calculate measure of central tendency (mean, median,	Ray Angle Sides Vertex Degree Protractor Base line of Protractor Right Angle Central Angle Acute Angle Obtuse Angle Perpendicular Mean Median Mode Range Measure of Central Tendency Relative Error and Magnitude				7.S.4 - Calculate the range for a given set of data 7.S.5 - Select the appropriate measure of central tendency 7.S.6 -Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs or circle graph) 7.S.7- Identify and explain misleading

		<p>mode)</p> <p>Select the appropriate measure of central tendency</p> <p>Identify in writing misleading statistics and graphs</p> <p>Explain in writing the misleading representation of the data</p> <p>Identify the appropriate scale and interval of a given set of data</p>					statistics and graphs data
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## ALGEBRA

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Inequalities: Solving 1-step	Identify and perform the appropriate inverse operation Recognize the difference between an inequality and an equation Determine	Commutative Property of Addition Associative Property of Addition Additive Identity Property of Zero Property of Opposites Equation				7.A.5 - Solve one-step inequalities (positive coefficients only) (See 7.G.10) 6.A.4 - Solve and explain two-step equations

			the solution set to the inequality	Unknown Equation of the form $ax + b = c$ Multiplication Property of Equality Multiplication Property of Zero Multiplication Property of One Like Terms Unlike Terms Inequality Symbols Commutative Property of Addition Associative Property of Addition Additive Identity Property of Zero Property of Opposites Equation Unknown Equation of the form $ax + b = c$ Multiplication Property of Equality Multiplication Property of Zero Multiplication Property of One Like Terms Unlike Terms Inequality				involving whole numbers using inverse operations
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			Symbols				
	Formulas: Application	Identify the appropriate formula with/without reference sheet Identify the relevant values for the given problem Substitute values into the appropriate variables in the formula Solve formula using the appropriate order of operations	Formula Substitution				7.A.6 - Evaluate formulas for given input values (surface area, rate, and density problems)

## VISUALIZATION AND SPATIAL REASONING

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Polygons: Angles	Recognize the sum of the interior angles in a triangle is 180 degrees Recognize the sum of the interior angles in a quadrilateral is 360 degrees Classify	Triangle Sum Property Quadrilateral				7.G.7 -Find a missing angle when given angles of a quadrilateral

		given polygon as a triangle or quadrilateral Solve for a missing angle within a triangle or quadrilateral using the given values					
	Shapes: 3-Dimensional Figures	Identify 2-dimensional shapes that make up the faces and bases of 3-dimensional shapes (prisms, cylinders, cones, and pyramids) Identify the number of edges, vertices, faces and bases	Face Base Edge Vertex 3-D Shape				7.G.3 - Identify the two-dimensional shapes that make up the faces and bases of three-dimensional shapes (prisms, cylinders, cones, and pyramids)
	Circles: Circumference/Area	Determine the appropriate formula to use Solve for the radius given the area or circumference Solve for the diameter given the area or circumference	Radius Diameter Circumference Formula Pi				7.G.1- Calculate the radius or diameter, given the circumference or area of a circle
	Surface Area: Prisms and Cylinders	Identify the appropriate formula to use given	Surface Area Length Width				7.M.11 - Estimate surface area 7.G.4 -

		the 3-Dimensional figure Identify the relevant values for the given problem Determine when to use estimation given the values in a problem Substitute values into the appropriate variables in the formula	Height				Determine the surface area of prisms and cylinders, using a calculator and a variety of methods
	Volume: Prisms and Cylinders	Identify the appropriate formula to use given the 3-Dimensional figure Identify the relevant values for the given problem Substitute values into the appropriate variables in the formula	Volume				7.G.2 - Calculate the volume of prisms and cylinders, using a given formula and a calculator
	Inequalities: Graphing 1-Step	Determine the appropriate direction in which to shade on the graph	Number Line Open Circle Closed Circle Less than Greater than				7.G.10- Graph the solution set of an inequality (positive coefficients)



		Determine the appropriate symbol (open vs closed circle) to use on the number line	Inequality				only) on a number line (See 7.A.5)	
M a r c h	ALGEBRA							
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
		Polynomials: Classification	Classify a polynomial as a monomial, binomial and trinomial	Polynomial Monomial Binomial Trinomial Monomial Constant Coefficient Variable Term				7.A.3 - Identify a polynomial as an algebraic expression containing one or more terms
		Equations: Multiple-Step	Identify and combine like terms in an equation Apply the Distributive Property to simplify an algebraic equation Move variable(s) to one side of the equation	Like term Unlike term Algebraic Expression Equation Combining Like terms Distributive Property				7.A.4 -Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation 7.A.2 -Add and subtract monomials with exponents of one
		Patterns:Algebraic/Functions	Plot a set of points on a coordinate	Pattern Graph Ordered Pair				7.A.7 -Draw the graphic representation of a pattern

			plane from given data. Substitute input values of a variable into a given equation to find the output value (x,y). Identify the algebraic pattern given a table of values (x, y). Identify the algebraic pattern given a graph.	Linear Equation Input value Output value function table			from an equation or from a table of data 7.A.8 -Create algebraic patterns using charts/tables, graphs, equations, and expressions
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#### VISUALIZATION AND SPATIAL REASONING

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Formulas: Pythagorean Theorem	Identify a triangle as a right triangle Identify the legs and hypotenuse of a right triangle Determine the relationship	Square root Radical sign Right triangle Right angle Pythagorean theorem Hypotenuse Leg Theorem Pythagoras				7.G.5- Identify the right angle, hypotenuse, and legs of a right triangle 7.G.6 - Explore the relationship between the lengths of

			<p>between the lengths of three sides that the sum of the squares of the legs is equal to the square of the hypotenuse</p> <p>Identify the hypotenuse of a right triangle by drawing an arrow from the right angle to the side</p> <p>Determine whether solving for a leg or the hypotenuse</p> <p>Solve for a missing side using the Pythagorean Theorem</p>				<p>the three sides of a right triangle to develop the Pythagorean Theorem</p> <p>7.G.8 -Use the Pythagorean Theorem to determine the unknown length of a side of a right triangle</p> <p>7.G.9 - Determine whether a given triangle is a right triangle by applying the Pythagorean Theorem and using a calculator</p>
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## A p p r i l

### NYS ASSESSMENT REVIEW

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards						
	Students will complete a review unit to prepare for the NYS Assessment												

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### VISUALIZATION AND SPATIAL REASONING

Essential	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
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Questions							
	Patterns: Algebraic/Functions	Identify the type of polygon. Identify that a any given triangle's interior angles have a sum of 180 degrees. Find the number of sides in a given polygon(s). Find the number of triangles in a given polygon. Develop a rule based on the number of triangles in a given polygon to find the total degrees of the polygon's interior angles.	Pattern Polygon Interior angle				7.A.9 - Build a pattern to develop a rule for determining the sum of the interior angles of polygons
ALGEBRA							
Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Functions: Input/Output	Identify the relationship	Input Output				7.A.10 - Write an

		<p>between the input and output values</p> <p>Write a function to represent the relationship between the input and output values</p> <p>Graph the linear relationship on a coordinate plane</p>	Equation				equation to represent a function from a table of values
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## MEASUREMENT

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Proportions: Calculations	<p>Set up unit rate based on information given</p> <p>Write equivalent ratios to create proportions</p> <p>Set up and solve proportions based on map scales</p> <p>Set up and solve proportions based on unit price</p> <p>Set up and solve</p>	<p>cross multiplication</p> <p>equivalent map scale</p> <p>rate ratio</p> <p>scale proportion</p> <p>unit rate</p> <p>unit price</p> <p>cross products</p>				<p>7.M.1 - Calculate distance using a map scale</p> <p>7.M.5 - Calculate unit price using proportions</p> <p>7.M.6 - Compare unit prices</p> <p>7.M.7 - Convert money between different currencies with the use of an exchange</p>

			proportions based on money conversions					rate table and a calculator
J u n e	FINAL PROJECT							
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
		Students will complete a final cummulative project on various topics from 7th grade.						