Teacher: CORE Math Grade 8 Year: 2010-11

Course: Math Grade 8 Month: All Months

August

ALGEBRA

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards

September

ALGEBRA

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Algebraic Expressions: Translation	Identify in writing verbal phrases that match mathematical operations Recognize in writing the difference between an algebraic expression and the algebraic inequality	algebraic expression algebraic inequalities verbal expression verbal form verbal sentence written symbols				8.A.2 -Write verbal expressions that match given mathematical expressions

MEASUREMENT

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Equivalent Measurements: Conversions	Convert temperatures from Fahrenheit to Celsius and vice versa	convert within a given system Celsius Fahrenheit proportion				8.M.1-Solve equations/proportions to convert to equivalent measurements within metric and customary measurement systems Note: Also

		Multiply fractions by integers Add and subtract real numbers					allow Fahrenheit to Celsius and vice versa.

REASONING AND PROOF

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Square Roots: Estimation	Evaluate numeric and algebraic expressions Evaulate square roots with/without a calculator Explain in writing the justification of an answer	estimate justify				8.N.6 -Justify the reasonableness of answers using estimation

October

SOLVING EQUATIONS AND INEQUALITIES

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Equations and Inequalities: 1-Step	Solve and check 1-step equations using addition, subtraction, multiplication and division Solve and check 1-step inequalities using	solutions organize work symbols in written form algebraic inequalities solution set of an equation verbal form verbal sentence				8.A.1 - Translate verbal sentences into algebraic inequalities

		addition, subtraction, multiplication and division Translate written sentences into algebraic equations and inequalities	written symbol					
	Equations and Inequalities: 2-Step	Solve and check 2-step equations using addition, subtraction, multiplication and division Solve and check 2-step inequalities using addition, subtraction, multiplication and division Translate written sentences into algebraic equations and inequalities	solutions organize work symbols in written form algebraic inequalities solution set of an equation verbal form verbal sentence written symbol					
	Algebraic Expressions: Simplify	Identify visually and in writing like terms Add and subract						

		monomials						
	Equations and Inequalities: Multi-Step	Solve and check multi-step equations using addition, subtraction, multiplication and division Solve and check multi-step equations that involve combining like terms and using the distributive property Solve, check and graph multi-step inequalities using addition, subtraction, multiplication and division Create and label a number line Distinguish between the symbols used for less than/less than or equal to and greater than/greater	algebraic inequalities solutions symbols in written form graphically linear inequality				8.A.13 -Solve multi-step inequalities and graph the solution set on a number line 8.A.14 -Solve linear inequalities by combining like terms, using the distributive property, or moving variables to one side of the inequality (include multiplication or division of inequalities by a negative number) 8.G.19 - Graph the solution set of an inequality on a number line	

		than or equal to Determine the appropriate circle (open or closed) used for less than/less than or equal to and greater than/greater than or equal to Determine the appropriate direction in which to shade a given inequality on a graph						

November

VISUALIZATION AND SPATIAL REASONING

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Angle Relationships: Identify	Identify vertical angles Identify vertical angles as congruent Identify pairs of supplementary angles Identify pairs of complementary	explain alternate exterior angles alternate interior angles angle pairs complementary angles congruent corresponding angles exterior angle interior angle parallel lines supplementary				8.G.1-Identify pairs of vertical angles as congruent 8.G.2 -Identify pairs of supplementary and complementary angles 8.G.4 - Determine angle pair relationships when given

			angles Identify pairs of corresponding angles Identify pairs of corresponding angles are congruent Identify pairs of alternate interior angles Identify pairs of alternate interior angles as congruent Identify pairs of alternate exterior angles Identify pairs of alternate exterior angles as congruent Identify pairs of interior angles Identify pairs of interior angles as supplementary Identify pairs of exterior angles Identify pairs of exterior	angles transversal vertical angles				two parallel lines cut by a transversal

		angles as supplementary					

ALGEBRA

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Angle Relationships: Calculate	Identify supplementary angles add to 180 degrees Identify that complementary angles add to 90 degrees Create an equation to calculate a missing angle in a pair of supplementary angles Create an equation to calculate a missing angle in a pair of complementary angles Identify vertical angles as congruent Create an equation to calculate a missing angle in a pair of vertical angles by setting the expressions equal to each	explain algebraically alternate exterior angles alternate interior angles angle pairs complementary angles congruent corresponding angles exterior angle interior angle parallel lines simplify expressions supplementary angles transversal vertical angles				8.G.3 - Calculate the missing angle in a supplementary or complementary pair 8.G.5 - Calculate the missing angle measurements when given two parallel lines cut by a transversal 8.G.6 - Calculate the missing angle measurements when given two intersecting lines and an angle 8.A.12 -Apply algebra to determine the measure of angles formed by or contained in parallel lines cut by a transversal and by intersecting lines

			other Identify alternate interior angles as congruent Create an equation to calculate a missing angle in a pair of alternate interior angles by setting the expressions equal to each other Identify alternate exterior angles as congruent Create an equation to calculate a missing angle in a pair of alternate exterior angles by setting the expressions equal to each other Identify interior angles as supplementary Create an equation to calculate a missing angle in a pair of interior angles by adding the					

		expressions and setting them equal to 180 Identify a pair of exterior angles as supplementary Create an equation to calculate a missing angle in a pair of exterior angles by adding the expressions and setting them equal to 180 Identify corresponding angles as congruent Create an equation to calculate a missing angle in a pair of corresponding angles by setting the expressions equal to each other					

NUMBER SENSE

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Percents: Identify	Convert decimals, fractions, and percents from one	estimate percent percent of quantity				8.N.3-Read, write, and identify percents less than

		form to another Compare and order decimals, fractions, and percents Read, write, and identify percents less than 1% and greater than 100% Estimate a percent of a quantity given an application					1% and greater than 100% 8.N.5- Estimate a percent of quantity, given an application

OPERATIONS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Percents: Calculate	Calculate percent problems given sales tax Calculate percent problems given simple interest Calculate percent problems given commission Calculate percent problems given interest rates Calculate percent problems given gratutities Calculate the sale price given the discount	commission gratuity interest rates percent increase percent decrease sale price sales simple interest tax				8.N.4 -Apply percents to: Tax Percent increase/decrease Simple interest Sale price Commission Interest rates Gratuities

		Calculate the percent increase/decrease given a situation					

REASONING AND PROOF

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Percents: Estimate	Estimate percents of a number Justify, orally and in writing, the reasonableness of an answer	estimate explain justify percent percent of quantity				8.N.6 -Justify the reasonableness of answers using estimation

December

VISUALIZATION AND SPATIAL REASONING

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Transformations: Graph	Plot points on a coordinate plane Identify the quadrants on a coordinate plane Graph a translation on a coordinate plane Graph a reflections on a coordinate plance Graph a	accurately label work dilate dilation graphically image ordered pair pre-image reflect reflection rotate rotation rotational symmetry straight edge symmetry transformation transformational geometry translate				8.G.8 - Draw the image of a figure under rotations of 90 and 180 degrees 8.G.9 - Draw the image of a figure under a reflection over a given line 8.G.10 - Draw the image of a

		rotation on a coordinate plane Graph a dilation on a coordinate plane Label the pre-image and image of a transformation	translation				figure under a translation 8.G.11 - Draw the image of a figure under a dilation
	Graphs: Create	Draw a graph to match a given story	draw conclusions graphically model problems model situations				8.A.4 - Create a graph given a description or an expression for a situation involving a linear or nonlinear relationship

REASONING AND PROOF

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Transformations: Identify	Recognize transformations (translations, refections, dilations, and rotations) on a coordinate plane Write the correct notation for transformations	dilation preserved not-preserved reflection rotation translation				8.G.7 - Describe and identify transformations in the plane, using proper function notation (rotations, reflections, translations, and dilations) 8.G.12 - Identify the

			Identify the properties preserved and not preserved for transformations					properties preserved and not preserved under a reflection, rotation, translation, and dilation
	Graphs: Describe	Write a story that matches a given graph	draw conclusions graphically model problems model situations					8.A.3 - Describe a situation involving relationships that matches a given graph

January

VISUALIZATION AND SPATIAL REASONING

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Graph: Linear Relationships	Determine what ordered pairs satify a given linear equation Plot points on a coordinate plane Draw a line that represents a given linear equation Identify slope as rise over run Identify slope as constant rate of change	equation of a line horizontal horizontal lines line linear equation linear relationship nonlinear equation nonlinear relationship quadratic equation quadratics rate of change slope slope-intercept form solution set				8.A.16 -Find a set of ordered pairs to satisfy a given linear numerical pattern (expressed algebraically); then plot the ordered pairs and draw the line 8.G.13-Determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change 8.G.14 - Determine the y-intercept of a line from a graph and be able to explain the y-intercept 8.G.15 -Graph a line using a table

			Recognize graphs and linear equations as having positive, negative, zero or undefined slope Identify the y-intercept of a line given a graph Explain, orally and in writing, the meaning of slope and y-intercept Graph a line using a table of values Label graphs with their equation Identify the y-intercept and slope given an equation and slope-intercept form Graph a line given an equation in slope-intercept form Write the equation of a line given the	of an equation system of equations vertical vertical lines y-intercept				of values 8.G.16 - Determine the equation of a line given the slope and the y-intercept 8.G.17 -Graph a line from an equation in slope-intercept form (b mx y + =) 8.G.18 -Solve systems of equations graphically (only linear, integral solutions, b mx y + = format, no vertical/horizontal lines) 8.G.20 - Distinguish between linear and nonlinear equations ax2 + bx + c; a=1 (only graphically) 8.G.21 - Recognize the characteristics of quadratics in tables, graphs, equations, and situations

		slope and y-intercept Solve systems of equations graphically and state the solution as an ordered pair Recognize linear and nonlinear equations graphically Recognize the characteristics of quadratics in tables, graphs, equations, and situations					

ALGEBRA

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Slope: Calculate	Calculate the slope of a line using slope formula given a graph or two ordered pairs	line ordered pairs slope				8.G.13- Determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change

F e b r u a

RATES, RATIOS, PROPORTIONS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Rates	Set up unit	equivalent				7.M.5 -

r y			rate based on information given Set up and solve proportions based on unit price	rate unit rate unit price					Calculate unit price using proportions 7.M.6 - Compare unit prices
		Ratios	Write equivalent ratios to create proportions	ratio					
		Proportions	Solve multi-step proportions Set up and solve proportions based on money conversion	cross multiplication cross product proportion					7.M.7 - Convert money between different currencies with the use of an exchange rate table and a calculator
		Scale Drawings	Set up and solve proportions based on map scales	map scale scale					7.M.1 - Calculate distance using a map scale
	Measurement Conversions		Set up and solve equations/proportions to convert measurements Set up and solve temperature conversion using the formula given on NYS Grade 8 Math						8.M.1-Solve equations/proportions to convert to equivalent measurements within metric and customary measurement systems Note: Also allow Fahrenheit to

		Reference Sheet.					Celsius and vice versa.

EXPONENTS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Exponents: Properties	Apply and simplify exponents using the Product of Powers Property, Quotient of Powers Property, Power of Powers Property, Negative Exponent Property and Zero Property Evaluate integer powers of real number product and quotients Rewrite powers of products and quotients Justify the reasonableness of a solution	exponent Product of Powers Property Quotient of Powers Property Power of Powers Property Negative Exponent Property Zero Property				8.N.1- Develop and apply the laws of exponents for multiplication and division 8.N.2 - Evaluate expressions with integral exponents 8.A.6- Multiply and divide monomials 8.A.9 -Divide a polynomial by a monomial (integer coefficients) Note: The degree of the denominator is less than or equal to the degree of the numerator for all variables.

March

POLYNOMIALS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards

	Polynomials	Classify polynomials by degree and by the number of terms	monomial polynomial binomial trinomial degree of a polynomial							
	Simplifying Polynomials	Simplify polynomials by adding or subtracting like terms Use physical models (algebra tiles) to model addition and subtraction of polynomials	monomial polynomial binomial trinomial degree of a polynomial				8.A.7 -Add and subtract polynomials (integer coefficients)			
	Multiplying Polynomials by Monomials	Multiply polynomials by monomials using the distributive property or chart method	monomial polynomial binomial trinomial degree of a polynomial				8.A.8 - Multiply a binomial by a monomial or a binomial (integer coefficients)			
	Multiplying Binomials	Multiply binomials using FOIL or other method (chart)					8.A.8 - Multiply a binomial by a monomial or a binomial (integer coefficients) 8.A.5 -Use physical models to perform operations with polynomials			

FACTORING

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	GCF Factoring	Determine the GCF of the coefficients and variables in order to factor a polynomial into a product of a monomial and a polynomial	greatest common factor factor coefficient variable exponent				8.A.10 - Factor algebraic expressions using the GCF
	Factoring Trinomials	Factor a trinomial into a product of two binomials; leading coefficient a = 1	factor trinomial binomial				8.A.11 - Factor a trinomial in the form ax2 + bx + c; a=1 and c having no more than three sets of factors

April

ASSESSMENT REVIEW

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards

May

CONSTRUCTIONS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Constructions	Construct a segment congruent to a segment using a straight edge and compass	angle angle bisector compass congruent construct perpendicular				8.G.0- Construct the following, using a straight edge and compass: Segment

		Construct an angle congruent to an angle using a straight edge and compass Construct a perpendicular bisector using a straight edge and compass Construct an angle bisector using a straight edge and compass	perpendicular bisector segment straight edge				congruent to a segment Angle congruent to an angle Perpendicular bisector Angle bisector

FUNCTIONS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Functions	Determine if a relation is a function Recognize multiple representations of a function (equation, table, graph) Define vocabulary terms associated with functions	domain function range				8.A.17 -Define and use correct terminology when referring to function (domain and range) 8.A.18 - Determine if a relation is a function 8.A.19 - Interpret multiple representations using equation, table of values, and graph

Jun	STATISTICS ~	This is not an 8th grade standard, however, it was agreed that the 8th grade teachers would introduce these standards.

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Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Graph: Organization and Display of Data	Identify: Appropriate Interval and Scale for the X and Y Axis Construct: Histogram From a Given Set of Data Construct: Cumulative Frequency Histogram From a Given Set of Data Identify: Minimum, Maximum, First, Second, and Third Quartiles Given a Set of Data Construct: Box-and-Whisker Plot From a Given Set of Data	Mean Median Mode Histogram Cummulative Frequency Histogram Box-and-Whisker Plots Quartiles First Quartile Second Quartile Third Quartile				A.S.5- Construct a histogram, cumulative frequency histogram, and a box-and-whisker plot, given a set of data A.S.6 - Understand how the five statistical summary (minimum, maximum, and the three quartiles) is used to construct a boxand-whisker plot A.S.9 - Analyze and interpret a frequency distribution table or histogram, a cumulative frequency distribution table or histogram, or a box-and-whisker plot