Map: **Math Grade 8** Grade Level: **8**

District: **Island Trees**

Created: **11/09/2007** Last Updated: **11/09/2007**

	Essential Questions	Content	Skills		Standards/PIs	
Unit 1	What is the differnece between an equation and an expression? What makes a mathematical sentence algebraic versus numeric? How can writing expressions and equations help us to solve problems? Where and when do we use or see integers in real life integers?	Algebra: Variables / Expressions (the basics)	translates numerical & algebraic expressions into verbal phrases translates verbal phrases into numerical & algebraic expressions evaluates expressions following the order of operations (with integral exponents) writes and evaluates numerical & algebraic expressions to solve word problems uses substitution to evaluates algebraic expressions simplifies basic algebraic expressions (combining constant terms) translates verbal sentences into numerical & algebriac equations translates numerical & algebraic equations into verbal sentences reviews real number system defines and determines the absolute value of rational numbers reviews integer rules		**MST3-8.A.2** **MST3-8.N.2**	

Unit 2	How can we simplify and solve algberaic expressions and equations? How can I use this as a tool to solve real-life problems?	Algebra: Simplifing Expressions / Solving Equations Factors & Monomials	identifies and applies the distributive property in numerical & algebraic expressions, as well as word problems simplifies algebraic expressions by combining like terms reviews solving one-step equations using inverse operations writes and solves two-step equations solves two-step equations (w/ combining like terms & negative coefficients) reviews factors & divisibility rules idenifies and describes a monomial develop the laws of exponents for multiplication and division		**MST3-7.A.4**
Unit 3		Exponents / Factoring / Monomials	reviews prime factorization factors monomials & algebraic expressions using the GCF simplifies algebraic fractions (intro. to dividing monomials)		**MST3-8.A.5** **MST3-8.A.6** **MST3-8.A.7** **MST3-8.A.10** **MST3-8.N.1** **MST3-8.N.2** **MST3-7.A.2** **MST3-7.A.3**

		Polynomials	develops the laws of exponents for multiplication and division multiplies and divides monomials (integer coefficients) evaluates expressions containing negative exponents identifies & classifies polynomials (binomial, trinomial) uses physical models to perform operations with polynomials adds and subtracts polynomials (integer coefficients)			

	Essential Questions	Content	Skills	Assessments	Standards/PIs	
Unit 4		Polynomials Graphing	divides a polynomial by a monomial (integr coefficients) note: the degree of the denominator is less than or equal to the degree of thenumerator for all variables multiplies polynomials by monomials multiplies binomials by binomials (integer coefficients) factors a trinomial in the form ax2 + bx + c; a=1 and c having no more than 3 sets of factors reviews the coordinate system (graphing ordered pairs) creates a graph given a description or an expression for a situation involving a linear or non linear relationship creates a table of value to graph an algebraic relationship writes an equation to represent a function from a table of values		**MST3-8.A.8** **MST3-8.A.9** **MST3-8.A.11** **MST3-7.A.7** **MST3-7.A.8** **MST3-7.A.10** **MST3-8.A.4** **MST3-8.A.15** **MST3-8.A.16** **MST3-8.A.17** **MST3-8.A.18** **MST3-8.G.15**	

Unit 5	What are the relationships among various angles? How can these relationships help me to determine missing angle measures?	Geometry: Geometric Relationships (angles, pythagorean theorem)	identify pairs of supplementary and complementary angles calculate the missing angle in a supplementary or complementary pair determine angle pair relationship when given two parallel lines cut by a transversal apply algebra to determine the measure of angles formed by or contained in parallel lines cut by a transversal and by intersecting lines calculate the missing angle measurements when given two parallel lines cut by a transversal		**MST3-8.G.1** **MST3-8.G.2** **MST3-8.G.3** **MST3-8.G.4** **MST3-8.G.5** **MST3-8.G.6** **MST3-8.G.7** **MST3-8.G.8** **MST3-8.G.9** **MST3-8.G.10** **MST3-8.G.11** **MST3-8.G.12** **MST3-7.G.5** **MST3-7.G.6** **MST3-7.G.8** **MST3-7.G.9** **MST3-7.A.9**	
		Geometry: Transformations	identify paris of vertical angles as congruent uses the Pythagorean Theorem to determine the unknown length of a side of a right triangle calculate the missing angle measurements when given two intersecting lines and an angle builds a pattern to develop a rule for determining the sum of the interior angles of polygons describes and identifies transformations using proper function notation (rotations, reflections, translations, and dialtions)			

			draws the image of a figure under rotations of 90 and 180 degrees draws the image of a figure under a reflection over a given line draws the image of a figure under a translation draws the image of a figure under a dilation			
Unit 6	How can I easily convert between differnt units of measure?	Measurement Percents	solve equations/proportions to convert equivalent measurements within metric and customary measurement systems (include Fahrenheit to Celsius and vice versa) calculates distance using map scale, calculates unit price using proportions, compares unit prices, convert money between different currencies with use of an exchange rate table and calculator reads, writes, and identifies percents less than 1% and greater than 100% applies percents to: tax, increase/decrease, simple interest, sale price, commission, interest rates,		**MST3-8.M.1** **MST3-7.M.1** **MST3-7.M.5** **MST3-7.M.6** **MST3-7.M.7** **MST3-8.N.3** **MST3-8.N.4** **MST3-8.N.5** **MST3-8.N.6**	

			and gratuities estimates a percent of quantity, given an application justifies the reasonableness of answers using estimation			

	Essential Questions	Content	Skills		Standards/PIs	
Unit 7	What are the steps I should take to solve multi-step inequalities / equations?	Algebra/Equations & Inequalities	solve multi-step inequalities and graph the solution set on a number line solve linear inequalities by combining like terms, using the distributive property, moving variables to one side to the inequaltiy (include multiplication or division by a negative number) solve multi-step equations		**MST3-8.A.13** **MST3-8.A.14**	
Unit 8	What is a function? How do we define range and domain? What are geometric constructions? Where will I use these in real life?	Algebra/Patterns,Relations and Functions Geometry/Constructions	define and use correct terminology when referring to a function (domain and range) determine if a relation is a function interpret multiple representations using equation, table of values and graph construct using straight edge and compass: segment congruent to a segment, angle congruent to an angle; perpendicular bisector; and angle bisector		**MST3-8.A.17** **MST3-8.A.18** **MST3-8.A.19** **MST3-8.G.0**	
Unit 9	What is slope? What is the significance of the y-intercept? What are a linear / nonlinear equations? Quadratic equations? What are the various ways I can graph a line?	Geometry/Coordinate Geometry	determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change determine the y-intercept of a line from a graph and be able to explain the y-intercept graph a line using a table of values		**MST3-8.G.13** **MST3-8.G.14** **MST3-8.G.15** **MST3-8.G.16** **MST3-8.G.17** **MST3-8.G.18** **MST3-8.G.19**	

			determine the equation of a line given the slope and the y-intercept graph a line from an equation in the slope-intercept form (y= mx + b) solve systems of equations graphically(only linear, integral solutions, y=mx+b format, no vertical/horizontal lines) distinguish between linear and nonlinear equations ax2 + bx +c; a=1 (only graphically) recognize the characteristics of quadratics in tables, graphs, equations and situtations		**MST3-8.G.20** **MST3-8.G.21**	

	Essential Questions	Content	Skills	Assessments	Standards/PIs	Resources/Notes
Unit 10		Review for final exam				

Key to Standards used in this Map

MST3-8.N.1 [1 occurence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator 8.N.1 - develop and apply the laws of exponents for multiplication and division [Grade 8]

MST3-8.N.2 [2 occurences] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator 8.N.2 - evaluate expressions with integral exponents [Grade 8]

MST3-8.N.3 [1 occurence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator 8.N.3 - read, write, and identify percents less than 1% and greater than 100% [Grade 8]

MST3-8.N.4 [1 occurence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator 8.N.4 - apply percents to: tax - percent increase/decrease - simple interest - sale price - commission - interest rates - gratuities [Grade 8]

MST3-8.N.5 [1 occurence] - MST Standard 3 - Number Sense and Operations Strand - Students will compute accurately and make reasonable estimates. [Estimation] - Performance Indicator 8.N.5 - estimate a percent of quantity, given an application [Grade 8]

MST3-8.N.6 [1 occurence] - MST Standard 3 - Number Sense and Operations Strand - Students will compute accurately and make reasonable estimates. [Estimation] - Performance Indicator 8.N.6 - justify the reasonableness of answers using estimation [Grade 8]

MST3-7.A.2 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 7.A.2 - add and subtract monomials with exponents of one [Grade 7]

MST3-7.A.3 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 7.A.3 - identify a polynomial as an algebraic expression containing one or more terms [Grade 7]

MST3-7.A.4 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator 7.A.4 - solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation [Grade 7]

MST3-7.A.7 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 7.A.7 - draw the graphic representation of a pattern from an equation or from a table of data [Grade 7]

MST3-7.A.8 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 7.A.8 - create algebraic patterns using charts/tables, graphs, equations, and expressions [Grade 7]

MST3-7.A.9 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 7.A.9 - build a pattern to develop a rule for determining the sum of the interior angles of polygons [Grade 7]

MST3-7.A.10 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 7.A.10 - write an equation to represent a function from a table of values [Grade 7]

MST3-8.A.2 [1 occurence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Variables and Expressions] - Performance Indicator 8.A.2 - write verbal expressions that match given mathematical expressions [Grade 8]

MST3-8.A.4 [1 occurence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Variables and Expressions] - Performance Indicator 8.A.4 - create a graph given a description or an expression for a situation involving a linear or nonlinear relationship [Grade 8]

MST3-8.A.5 [1 occurence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Variables and Expressions] - Performance Indicator 8.A.5 - use physical models to perform operations with polynomials [Grade 8]

MST3-8.A.6 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 8.A.6 - multiply and divide monomials [Grade 8]

MST3-8.A.7 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 8.A.7 - add and subtract polynomials (integer coefficients) [Grade 8]

MST3-8.A.8 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 8.A.8 - multiply a binomial by a monomial or a binomial (integer coefficients) [Grade 8]

MST3-8.A.9 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 8.A.9 - divide a polynomial by a monomial (integer coefficients) [Grade 8]

MST3-8.A.10 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 8.A.10 - factor algebraic expressions using the gcf [Grade 8]

MST3-8.A.11 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator 8.A.11 - factor a trinomial in the form ax2 + bx + c; a=1 and c having no more than three sets of factors [Grade 8]

MST3-8.A.13 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator 8.A.13 - solve multi-step inequalities and graph the solution set on a number line [Grade 8]

MST3-8.A.14 [1 occurence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator 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) [Grade 8]

MST3-8.A.15 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 8.A.15 - understand that numerical information can be represented in multiple ways: arithmetically, algebraically, and graphically [Grade 8]

MST3-8.A.16 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 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 [Grade 8]

MST3-8.A.17 [2 occurences] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 8.A.17 - define and use correct terminology when referring to function (domain and range) [Grade 8]

MST3-8.A.18 [2 occurences] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 8.A.18 - determine if a relation is a function [Grade 8]

MST3-8.A.19 [1 occurence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Patterns, Relations and Functions] - Performance Indicator 8.A.19 - interpret multiple representations using equation, table of values, and graph [Grade 8]

MST3-7.G.5 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 7.G.5 - identify the right angle, hypotenuse, and legs of a right triangle [Grade 7]

MST3-7.G.6 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 7.G.6 - explore the relationship between the lengths of the three sides of a right triangle to develop the pythagorean theorem [Grade 7]

MST3-7.G.8 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 7.G.8 - use the pythagorean theorem to determine the unknown length of a side of a right triangle [Grade 7]

MST3-7.G.9 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 7.G.9 - determine whether a given triangle is a right triangle by applying the pythagorean theorem and using a calculator [Grade 7]

MST3-8.G.0 [1 occurence] - MST Standard 3 - Geometry Strand - Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes. [Constructions] - Performance Indicator 8.G.0 - construct the following using a straight edge and compass: segment congruent to a segment - angle congruent to an angle perpendicular bisector - angle bisector [Grade 8]

MST3-8.G.1 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 8.G.1 - identify pairs of vertical angles as congruent [Grade 8]

MST3-8.G.2 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 8.G.2 - identify pairs of supplementary and complementary angles [Grade 8]

MST3-8.G.3 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 8.G.3 - calculate the missing angle in a supplementary or complementary pair [Grade 8]

MST3-8.G.4 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 8.G.4 - determine angle pair relationships when given two parallel lines cut by a transversal [Grade 8]

MST3-8.G.5 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 8.G.5 - calculate the missing angle measurements when given two parallel lines cut by a transversal [Grade 8]

MST3-8.G.6 [1 occurence] - MST Standard 3 - Geometry Strand - Students will identify and justify geometric relationships, formally and informally. [Geometric Relationships] - Performance Indicator 8.G.6 - calculate the missing angle measurements when given two intersecting lines and an angle [Grade 8]

MST3-8.G.7 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply transformations and symmetry to analyze problem solving situations. [Transformational Geometry] - Performance Indicator 8.G.7 - describe and identify transformations in the plane, using proper function notation (rotations, reflections, translations, and dilations) [Grade 8]

MST3-8.G.8 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply transformations and symmetry to analyze problem solving situations. [Transformational Geometry] - Performance Indicator 8.G.8 - draw the image of a figure under rotations of 90 and 180 degrees [Grade 8]

MST3-8.G.9 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply transformations and symmetry to analyze problem solving situations. [Transformational Geometry] - Performance Indicator 8.G.9 - draw the image of a figure under a reflection over a given line [Grade 8]

MST3-8.G.10 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply transformations and symmetry to analyze problem solving situations. [Transformational Geometry] - Performance Indicator 8.G.10 - draw the image of a figure under a translation [Grade 8]

MST3-8.G.11 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply transformations and symmetry to analyze problem solving situations. [Transformational Geometry] - Performance Indicator 8.G.11 - draw the image of a figure under a dilation [Grade 8]

MST3-8.G.12 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply transformations and symmetry to analyze problem solving situations. [Transformational Geometry] - Performance Indicator 8.G.12 - identify the properties preserved and not preserved under a reflection, rotation, translation, and dilation [Grade 8]

MST3-8.G.13 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.13 - determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change [Grade 8]

MST3-8.G.14 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.14 - determine the y-intercept of a line from a graph and be able to explain the y-intercept [Grade 8]

MST3-8.G.15 [2 occurences] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.15 - graph a line using a table of values [Grade 8]

MST3-8.G.16 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.16 - determine the equation of a line given the slope and the y-intercept [Grade 8]

MST3-8.G.17 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.17 - graph a line from an equation in slope-intercept form (y=mx+b) [Grade 8]

MST3-8.G.18 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.18 - solve systems of equations graphically (only linear, integral solutions, y=mx+b format, no vertical/horizontal lines) [Grade 8]

MST3-8.G.19 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.19 - graph the solution set of an inequality on a number line [Grade 8]

MST3-8.G.20 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.20 - distinguish between linear and nonlinear equations ax2 + bx + c; a=1 (only graphically) [Grade 8]

MST3-8.G.21 [1 occurence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator 8.G.21 - recognize the characteristics of quadratics in tables, graphs, equations, and situations [Grade 8]

MST3-7.M.1 [1 occurence] - MST Standard 3 - Measurement Strand - Students will determine what can be measured and how, using appropriate methods and formulas. [Units of Measurement] - Performance Indicator 7.M.1 - calculate distance using a map scale [Grade 7]

MST3-7.M.5 [1 occurence] - MST Standard 3 - Measurement Strand - Students will determine what can be measured and how, using appropriate methods and formulas. [Units of Measurement] - Performance Indicator 7.M.5 - calculate unit price using proportions [Grade 7]

MST3-7.M.6 [1 occurence] - MST Standard 3 - Measurement Strand - Students will determine what can be measured and how, using appropriate methods and formulas. [Units of Measurement] - Performance Indicator 7.M.6 - compare unit prices [Grade 7]

MST3-7.M.7 [1 occurence] - MST Standard 3 - Measurement Strand - Students will determine what can be measured and how, using appropriate methods and formulas. [Units of Measurement] - Performance Indicator 7.M.7 - convert money between different currencies with the use of an exchange rate table and a calculator [Grade 7]

MST3-8.M.1 [1 occurence] - MST Standard 3 - Measurement Strand - Students will determine what can be measured and how, using appropriate methods and formulas. [Units of Measurement] - Performance Indicator 8.M.1 - solve equations/proportions to convert to equivalent measurements within metric and customary measurement systems note: also allow fahrenheit to celsius and vice versa. [Grade 8]