

DeSoto County High School

Algebra I

Curriculum Calendar

2011-2012

UNIT/ORGANIZING PRINCIPLE: Relations and Functions				Pacing: 1st 9-weeks Days 1 – 12
Essential Question: How do you represent functions as verbal rules, equations, tables, and graphs?				Big Idea : Relations and Functions
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
Relations Functions	Describe the concept of a <u>function</u> , use <u>function</u> notation, determine whether a given <u>relation</u> is a <u>function</u> , and link <u>equations</u> to <u>functions</u> . Determine the <u>domain</u> and range of a <u>relation</u> . Solve <u>real-world problems</u> involving <u>relations</u> and <u>functions</u> .	M.A.912.A.2.3 Moderate M.A.912.A.2.4 Moderate M.A.912.A.2.13 High	compare and contrast relations and functions determine the domain and range represent a function using tables, rules, and graphs use the vertical line test to determine if a relation is a function : include linear, absolute value, quadratics etc evaluate functions using a function rule write function rules from words or tables solve real world problems involving relations use function notation to represent real life situations	Relation Domain Range Function Function notation Vertical line test Independent variable Dependent variable Function rule

UNIT/ORGANIZING PRINCIPLE: Tools of Algebra				Pacing: 1st 9-weeks Days 13 – 27
<u>Essential Question:</u> Why are properties and rules of real numbers important?				Big Idea : Algebraic Expressions
Concepts/ Content	Essential Content and Understanding	Benchmarks	Learning Targets/Skills	Terminology
Algebraic expressions	<p>Identify and apply the distributive, associative, and <u>commutative properties</u> of <u>real number s</u> and the properties of <u>equality</u>.</p> <p>Symbolically represent and solve multi-step and real-world applications that involve linear <u>equations</u> and inequalities.</p> <p>Perform <u>set operations</u> such as union and <u>intersection</u>, complement, and cross <u>product</u>.</p> <p>Use Venn diagrams to explore relationships and <u>patterns</u> and to make arguments about relationships between <u>sets</u>.</p>	<p>M.A.912.A3.2 Moderate</p> <p>M.A.912.A.3.5 Moderate</p> <p>M.A.912.D.7.1 Low</p> <p>M.A.912.D.7.2 Moderate</p>	<p>order of operations to evaluate numeric and algebraic expressions</p> <p>identify and apply properties of real numbers translate verbal phrases into algebraic expressions and vice versa</p> <p>use Venn Diagrams to discuss and perform set operations such as union, intersection and complement</p>	<p>Operations Exponents Powers Commutative Associative Distributive Identity Variable Expression Algebraic Venn Diagram Intersection Union compliment</p>

UNIT/ORGANIZING PRINCIPLE: Linear Equations in One Variable				Pacing: 1st 9-weeks Days 28 – 42
<u>Essential Question:</u> Why is it important to keep an equation balanced?				Big Idea : Equations
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
Equations One step Two step Multi-step Literal	<p>Solve linear <u>equations</u> in one <u>variable</u> that include simplifying <u>algebraic expressions</u>.</p> <p>Identify and apply the distributive, associative, and <u>commutative properties</u> of <u>real number</u> s and the properties of <u>equality</u>.</p> <p>Use a variety of problem-solving strategies, such as drawing a diagram, making a <u>chart</u>, guessing- and-checking, solving a simpler problem, writing an <u>equation</u>, working backwards, and creating a <u>table</u>.</p> <p>Decide whether a solution is reasonable in the context of the original situation.</p> <p>Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic</p>	<p>M.A.912.A.3.1 Moderate</p> <p>M.A.912.A.3.2 Moderate</p> <p>M.A.912.A.10.1 High</p> <p>M.A.912.A.10.2 Moderate</p> <p>M.A.912.A.10.3 High</p>	<p>Solve linear equations using appropriate operations and properties</p> <p>same</p> <p>translate real life problems into equations using a variety of problem solving techniques</p> <p>justify the solution of an equation</p> <p>solve literal equations for a specified variable</p>	<p>Equation</p> <p>Coefficient</p> <p>Constant</p> <p>Like-terms</p> <p>Terms</p> <p>Opposites</p> <p>Inverse</p> <p>Linear equation</p>

	<u>expressions, equations, or inequalities,</u> rational or <u>radical expressions,</u> or logarithmic or <u>exponential functions</u>).			
--	---	--	--	--

UNIT/ORGANIZING PRINCIPLE: Linear Equations in Two Variables

**Pacing: 1st/ 2nd 9-weeks
Days 43 - 71**

Essential Question: How do graphs relate to events and equations? When and why is slope useful?

Big Idea : Equations

Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
<p>RATE OF CHANGE Given two points From a table From a graph</p> <p>LINEAR EQUATIONS Slope-intercept form Standard form Graphing Parallel and perpendicular</p>	<p>Determine the <u>slope</u>, <u>x-intercept</u>, and <u>y-intercept</u> of a <u>line</u> given its graph, its <u>equation</u>, or two <u>points</u> on the <u>line</u>.</p> <p>Use <u>coordinate geometry</u> to find slopes, parallel <u>lines</u>, <u>perpendicular lines</u>, and <u>equations of lines</u>.</p> <p>Write an <u>equation</u> of a <u>line</u> that <u>models</u> a data set, and use the <u>equation</u> or the graph to make predictions. Describe the <u>slope</u> of the <u>line</u> in terms of the data, recognizing that the <u>slope</u> is the <u>rate</u> of change.</p> <p>Rewrite <u>equations</u> of a <u>line</u> into slope-intercept form and standard form.</p> <p>Graph a <u>line</u> given any of the following information: a <u>table</u> of values, the x- and y-intercepts, two <u>points</u>, the <u>slope</u> and a <u>point</u>, the <u>equation</u> of the <u>line</u> in slope-intercept form, standard form, or point-slope form .</p>	<p>M.A.912.A.3.9 Moderate</p> <p>M.A.912.G.1.4 Moderate</p> <p>M.A.912.A.3.11 High</p> <p>M.A.912.A.3.7 Low</p> <p>M.A.912.A.3.8 Moderate</p>	<p>determine/describe the slope, x and y-intercepts of a line given its graph, equation, or two points on a line</p> <p>describe the slope of a line in term of the data, recognizing that the slope is the rate of change</p> <p>rewrite equations of a line into slope-intercept form and standard form</p> <p>graph and write the equation of a line given a table of values, the x and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point slope form with or without graphing</p>	<p>Rate of change Domain Range Independent Dependent Input Output Slope Intercepts Coordinates Parallel Perpendicular Slope-intercept form Point-slope form Standard form</p>

Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.

Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.

M.A.912.A.3.12
Moderate

M.A.912.A.3.10
Moderate

technology.

find/write an equation of a new line parallel/perpendicular to the given information

write an equation that models a data set
use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines

UNIT/ORGANIZING PRINCIPLE: Linear Inequalities in One Variable				Pacing: 2nd 9-weeks Days 72 - 86
Essential Question: What are the differences between equations and inequalities?				Big Idea : Inequalities
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
<p>One step Multi-step Compound</p>	<p>Solve and graph simple and compound inequalities in one <u>variable</u> and be able to justify each step in a solution.</p> <p>Use a variety of problem-solving strategies, such as drawing a diagram, making a <u>chart</u>, guessing- and-checking, solving a simpler problem, writing an <u>equation</u>, working backwards, and creating a <u>table</u>.</p> <p>Decide whether a solution is reasonable in the context of the original situation.</p> <p>Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic <u>expressions</u>, <u>equations</u>, or inequalities, rational or <u>radical expressions</u>, or logarithmic or <u>exponential functions</u>).</p> <p>Symbolically represent and solve multi-step and real-world applications that involve linear</p>	<p>M.A.912.A.3.4 Moderate</p> <p>M.A.912.A.10.1 High</p> <p>M.A.912.A.10.2 Moderate</p> <p>M.A.912.A.10.3 High</p> <p>M.A.912.A.3.5 Moderate</p>	<p>solve linear inequalities using the appropriate operations (properties of inequalities)</p> <p>translate real life problems into algebraic inequalities</p> <p>solve, graph, and justify steps used in simple and compound inequalities</p>	<p>Inequality symbols Inequality Compound inequalities and/or statements</p>

equations and inequalities.

Perform set operations such as union and intersection, complement, and cross product.

M.A.912.D.7.1
Low

	<u>equations</u> and inequalities.			
	Perform <u>set operations</u> such as union and <u>intersection</u> , complement, and cross <u>product</u> .	M.A.912.D.7.1 Low		

UNIT/ORGANIZING PRINCIPLE: Systems of Equations				Pacing: 2nd/ 3rd 9-weeks Days 87 – 100
<u>Essential Question:</u> How can the best method for solving linear systems be determined?				Big Idea : Systems of Equations
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
<p>SYSTEM OF EQUATIONS Graphing Substitution Elimination (Linear Combination)</p>	<p>Use a graph to <u>approximate</u> the solution of a system of linear <u>equations</u> or inequalities in two <u>variables</u> with and without technology.</p> <p>Decide whether a solution is reasonable in the context of the original situation.</p> <p>Solve <u>real-world problem</u> s involving systems of linear <u>equations</u> and inequalities in two and three <u>variables</u>.</p>	<p>M.A.912.A.3.13 Moderate</p> <p>M.A.912.A.10.2 Moderate</p> <p>M.A.912.A.3.15 High</p>	<p>solve systems of linear equations using graphing without technology</p> <p>solve systems of linear equations using graphing with technology</p> <p>approximate the solution to a linear using a graph</p> <p>solve systems of linear equations using substitution and elimination (linear combination) method</p> <p>solve real world problems using systems of equations</p>	<p>solutions of systems of linear equations No solution Infinite number of solutions Substitution Elimination Linear combinations</p>

UNIT/ORGANIZING PRINCIPLE: Linear Inequalities in Two Variables				Pacing: 3rd 9-weeks Days 101 – 107
<u>Essential Question:</u> What are the similarities and the differences between systems of equations and systems of inequalities?				Big Idea : Inequalities
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
<p>Linear Inequalities in slope-intercept form</p> <p>Graphing systems of Linear Inequalities</p>	<p>Graph a linear <u>equation</u> or <u>inequality</u> in two <u>variables</u> with and without graphing technology. Write an <u>equation</u> or <u>inequality</u> represented by a given graph.</p> <p>Use a graph to <u>approximate</u> the solution of a system of linear <u>equations</u> or inequalities in two <u>variables</u> with and without technology.</p> <p>Solve systems of linear <u>equations</u> and inequalities in two and three <u>variables</u> using graphical, substitution, and elimination methods.</p> <p>Solve <u>real-world problem</u> s involving systems of linear <u>equations</u> and inequalities in two and three <u>variables</u>.</p>	<p>MA.912.A.3.12 Moderate</p> <p>MA.912.A.3.13 Moderate</p> <p>MA.912.A.3.14 Moderate</p> <p>MA.912.A.3.15 High</p>	<p>write a linear inequality in slope-intercept form and graph</p> <p>solve systems of linear inequalities using graphing with and without technology</p> <p>write systems of linear inequalities for real world situations</p>	<p>substitution</p> <p>elimination</p> <p>linear combinations</p> <p>slope-intercept form</p> <p>point-slope form</p>

UNIT/ORGANIZING PRINCIPLE: Exponents				Pacing: 3rd 9-weeks Days 108 – 121
<u>Essential Question:</u> How are the laws of exponents used to simplify algebraic expressions?				Big Idea : Exponents
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
EXPONENTS: • Integral exponents	<u>simplify monomials and monomial expressions</u> using the laws of <u>integral exponents</u> .	MA.912.A.4.1 Low	use multiplication and division properties of exponents zero and negative exponent properties	Base Power Square Cube Zero exponent Negative exponent

UNIT/ORGANIZING PRINCIPLE: Polynomials				Pacing: 3 rd 9-weeks Days 122 – 137
<u>Essential Question:</u> Why is it important to simplify polynomials before using operations?				Big Idea : Polynomials
Concepts/ Content	Learning Target/Skills	Benchmarks	Essential Content and Understanding	Terminology
POLYNOMIALS: <ul style="list-style-type: none"> • Monomials • Combine like terms • Polynomial operations 	<u>simplify monomials and monomial expressions</u> using the laws of <u>integral exponents</u> . Add, subtract, and multiply <u>polynomials</u> . <u>factor polynomial expressions</u> . Divide <u>polynomials</u> by <u>monomials</u> and <u>polynomials</u> with various techniques, including <u>synthetic division</u> .	MA.912.A.4.1 Low MA.912.A.4.2 Low MA.912.A.4.3 Moderate MA.912.A.4.4 Moderate	simplify monomials and monomial expressions add, subtract, and multiply polynomial expressions factoring polynomial expressions divide polynomials by monomials and polynomials with various techniques, including synthetic division	Degree of a monomial Monomials Binomials Trinomials Polynomials Difference of two squares Perfect square trinomials Synthetic Division

UNIT/ORGANIZING PRINCIPLE: Quadratic Equations				Pacing: 4th 9-weeks Days 138 – 154
<u>Essential Question:</u> How do you determine which method can be used to solve a quadratic equation?				Big Idea : Quadratics
Concepts/ Content	Learning Target/Skills	Benchmarks	Essential Content and Understanding	Terminology
QUADRATIC EQUATIONS: • Graphing include axis of symmetry and vertex	Graph quadratic <u>equations</u> with and without graphing technology. Use graphing technology to find <u>approximate</u> solutions of quadratic <u>equations</u> . Solve quadratic <u>equations</u> over the <u>real number</u> s by factoring and by using the quadratic <u>formula</u> . Use the zero <u>product</u> property of <u>real number</u> s in a variety of contexts to identify solutions to equations. Use quadratic <u>equations</u> to solve <u>real-world problems</u> .	MA.912.A.7.1 Moderate MA.912.A.7.10 Low MA.912.A.7.2 Moderate MA.912.A.1.8 Moderate MA.912.A.7.8 Moderate	graph quadratic equations with and without technology find approximate solutions of quadratic equations using technology solve quadratic equations by factoring or by using the quadratic formula solve real life problems using the quadratic equations	Axis of symmetry Vertex Quadratic equations Quadratic formula Zero-product property

UNIT/ORGANIZING PRINCIPLE: Radicals				Pacing: 4th 9-weeks Days 155 – 166
<u>Essential Question:</u> What role do radicals play in right triangles and in determining distance?				Big Idea : Radicals
Concepts/ Content	Learning Targets/Skills	Benchmarks	Essential Content and Understanding	Terminology
RADICALS: • Radical expressions • Simplify radicals	MA.912.A.6.2 Moderate	Add, subtract, multiply, and divide <u>radical expressions</u> (square <u>roots</u> and higher).	simplify radical expressions add, subtract, multiply, and divide radical expressions	Square root Radical Radicand

UNIT/ORGANIZING PRINCIPLE: Rational Expressions and Equations	Pacing: 4th 9-weeks Days 167 - 180
--	--

<u>Essential Question:</u> How are operations on rational expressions similar to those on rational numbers?	Big Idea : Rational Expressions and Equations
--	--

Concepts/ Content	Learning Target/Skills	Benchmarks	Essential Content and Understanding	Terminology
Rational Expressions and Equations	<u>simplify</u> algebraic ratios Solve algebraic <u>proportions</u> .	MA.912.A.5.1 Moderate MA.912.A.5.4 Low	simplify algebraic ratios solve algebraic proportions	ratio proportion rational expression

UNIT/ORGANIZING PRINCIPLE: Additional Learning Strategies				Pacing: Throughout course where appropriate
<u>Essential Question:</u> Can the student use appropriate language arts and mathematics strategies to achieve success in mathematics?				Big Idea : Learning Strategies
Concepts/ Content	Learning Target/Skills	Benchmarks	Essential Content and Understanding	Terminology
N/A	<p>The student will use new vocabulary that is introduced and taught directly;</p> <p>The student will listen to, read, and discuss familiar and conceptually challenging text;</p> <p>The student will relate new vocabulary to familiar words;</p> <p>The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.</p> <p>Use a variety of problem-solving strategies, such as drawing a diagram, making a <u>chart</u>, guessing- and-checking, solving a simpler problem, writing an <u>equation</u>, working backwards, and creating a <u>table</u>.</p>	<p>LA.910.1.6.1</p> <p>LA.910.1.6.2</p> <p>LA.910.1.6.5</p> <p>LA.910.3.1.3</p> <p>MA.912.A.10.1 High</p>	<p>The student will use new vocabulary that is introduced and taught directly.</p> <p>The student will listen to, read, and discuss familiar and conceptually challenging text.</p> <p>The student will relate new vocabulary to familiar words.</p> <p>The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.</p>	N/A

Decide whether a solution is reasonable in the context of the original situation.

Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).

MA.912.A.10.2
Moderate

MA.912.A.10.3
High

Use a variety of problem solving strategies. (diagram, charts, guess and check, solve simpler problem, write equation, work backwards, create table)

Decide whether solution is reasonable in the context of a problem.

Decide whether a statement is always, sometimes or never true.