Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides

	QUARTER 1			
	Unit 1 – Algebraic Expressions & Equations			
	1. Evaluating Algebraic Expressions	2	Before, Now & Why? Textbook, pg. 2 NYSED math glossary and math vocabulary list McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org NYSED Sample Tasks	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – variable, constant, power, base, exponent, algebraic expression, evaluate, multiple representation, standard notation, denominator, numerator, fraction, order of operations, hierarchy, parenthesis, brackets, grouping symbols, product, quotient, PEMDAS			
	• Define and identify variables, constants, powers, bases, and exponents.			
	• Translate a word phrase into a power expression.			
	• Evaluate the power of a number.			
	• Evaluate algebraic expressions with and without powers.			
	• Problem solving applications.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A.PS.4	• Use multiple representations to represent and explain			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	problem situations (e.g., verbally, numerically, algebraically, and graphically).		
A.CM.3	• Present organized mathematical ideas with the use of appropriate standard notations, including the use of symbols and other representations when sharing an idea in verbal and written form.		
A.A.2	• Write a verbal expression that matches a given mathematical expression.		
A.N.6	• Evaluate expressions involving factorial(s), absolute value(s), and exponential expression(s) (no factorials or absolute values).		
	2. Order of Operations	2	Textbook, pg. 8 1.2 Activity, pg. 13 NYSED Math Glossary and Math Vocabulary List Graphing Calculator SMART View	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – algebraic expression, order of operations, hierarchy, parenthesis, brackets, evaluate, and grouping symbols, denominator, numerator, product, quotient, PEMDAS		
	• Apply PEMDAS.		
	• Without calculator.		
	• With calculator (stress parentheses).		
A.N.1	• Identify and apply the properties of real numbers		

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	(closure, commutative, associative, distributive, identity, and inverse).		NYSED Sample Tasks	
A.N.6	• Evaluate expressions involving factorial(s), absolute value(s), and exponential expression(s) (no factorials or absolute values).			
	3. Translating Verbal Phrases into Algebraic Expressions (not equations)	2	Textbook, pg. 15 NYSED Sample Tasks NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	Class Work Homework Questions on Quizzes on Tests
	• *Vocabulary* – verbal model, sum, plus, total, more than, increased by, added to, difference, less than, minus, decreased by, subtracted from, times, twice, product, multiplied by, of, quotient, divided by, divided into, consecutive integers, consecutive even integers, consecutive odd integers, interpretation, quantitative model, rate, unit rate			
	• Translate a quantitative verbal phrase into an algebraic expression (no equations).			
	• Interpret a verbal expression into its matching mathematical expression (no equations).			
	• Problem solving applications.			
A.PS.2	• Recognize and understand equivalent representations			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	of a problem situation or a mathematical concept.			
A.A.1	• Translate a quantitative verbal phrase into an algebraic expression.			
A.A.2	• Write a verbal expression that matches a given mathematical expression.			
	4. Translate Word Sentences into Algebraic Equations and Inequalities (Linear in one variable only – NO solving, only setup)	2	Textbook, pg. 21 NYSED Sample Tasks NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – equation, inequality, open sentence, plus, minus, sum, difference, product, quotient, increased by, decreased by, more than, less than, times, twice, the difference of, subtracted from, added to, consecutive, consecutive even, consecutive odd, break-even point, equal to, is less than (<), is smaller than (<), is more than (>), is greater than (>), is at least (≥), is at most (≤), is not more than (≤), is not less than (≥), solution			
	• Differentiate between an expression and an equation.			
	• Translate a quantitative verbal sentence into a mathematical equation.			
	• Represent a situation with an algebraic equation.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Translate a quantitative verbal sentence into a mathematical inequality.			
	• Represent a situation with an algebraic inequality.			
A.A.1	• Translate a quantitative verbal phrase into an algebraic expression.			
A.A.3	• Distinguish the difference between an algebraic expression and an algebraic equation.			
A.A.4	• Translate verbal sentences into mathematical equations or inequalities.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.6	• Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
	5. Analyze and Solve Verbal Problems (Algebraic solutions of equations/inequalities not applied)			
	• *Vocabulary* – review vocabulary from 1.1 through 1.4, formula, strategy, appropriate, interpret, explain, elicit,	2	Textbook, pg. 28	Class Work Homework

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	check, formula, quantity, formulate		Q-Tips Problem Solving Strategies, pg. 936 NYSED Sample Tasks NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	Questions on Quizzes & Tests
	• Analyze a verbal problem whose solution requires solving a linear equation in one variable and formulate a solution plan.			
	• Analyze a verbal problem whose solution requires solving a linear inequality in one variable and formulate a solution plan.			
	• Apply problem solving strategies to determine a problem solving plan and solution.			
	• Verify the appropriateness of a solution.			
	• Apply formulas to solve for given quantity.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.6	• Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable.			
A.PS.5	• Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic).			
A.PS.6	• Use a variety of strategies to extend solution methods to other problems.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.PS.8	• Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A.PS.10	• Evaluate the relative efficiency of different representations and solution methods of a problem.			
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.CM.6	• Support or reject arguments or questions raised by others about the correctness of mathematical work.			
A.CM.8	• Reflect on strategies of others in relation to one's own strategy.			
A.CM.11	• Represent word problems using standard mathematical notation.			
	6. Functions			
	• *Vocabulary* – relation, function, domain, range, ordered pair, vertical line test, independent variable, dependent variable	2	Textbook, pg. 35, 43 Extension on pg. 49 NYSED Sample Tasks	Class Work Homework Questions on Quizzes & Tests
	• Define and identify functions given their input/output tables.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Determine if an input/output table is a function using its ordered pairs.		NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	
	• Verbalize based on a graph or table if a function exists (ex: It is a function because there is one y-coordinate for each x-coordinate).			
	• Identify the domain and range of a function.			
	• Identify the independent and dependent variable.			
	• Given a scatter plot, determine whether it is a function.			
	• Apply the vertical line list.			
	• Given the equation of a linear function, with a limited domain, determine its input/output table.			
	• Problem solving applications.			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
A.G.3	• Determine when a relation is a function by examining ordered pairs and inspecting graphs of relations.			
	7. Review	1		
	8. Test	1	Test Generator	Chapter Test
	Total Days	**14**		

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
Unit 2 – Real Numbers			
1. Introduction to Real Numbers	3	Before, Now & Why? Textbook, pgs. 64, 110 Supplement for Number Systems Omit Absolute Value Omit Conditional Statements Library of Virtual Manipulatives NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org	Class Work Homework Questions on quizzes & tests
• *Vocabulary* – natural numbers, whole numbers, opposites, integers, rational numbers, irrational numbers, real numbers, decimals, fractions, set, element, union, intersection, square root, perfect square, absolute value, symbol: | |			
• Define absolute value.			
• Find the absolute value of a number.			
• Evaluate absolute value expressions with multiple absolute values. (Ex. |3-7| -2 |1+9 |).			
• Define and identify the following sets and their symbolic representation: natural numbers, whole numbers, integers, rationals, irrationals, and real numbers (include their roster form).			
• Refer to historic development of each number set.			
• Define π and identify undefined terms.			
• Compare and rank order the Real Numbers in different forms (decimals, fractions, integers, and radicals) using a number line.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Classify a number to which set it is a member of: whole, natural, integer, rational, irrational and real.		JMAP.org	
	• Rank order the Real Numbers in different forms (decimals, fractions, integers, and radicals).			
	• Compare and order the Real Numbers in different forms (decimals, fractions, integers, and radicals) using <, >, <, >.			
	• Finding the exact square root of a rational number.			
	• Approximate the square root of an irrational number.			
	• Use the calculator to find the square root of a number exactly or to a given decimal place.			
	• Problem solving applications.			
A.N.2	• Simplify radical terms (no variable in the radicand).			
A.CM.3	• Present organized mathematical ideas with the use of appropriate standard notations, including the use of symbols and other representations when sharing an idea in verbal and written form.			
A.R.2	• Recognize, compare, and use an array of representational forms.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A.CN.8	• Develop an appreciation for the historical development of mathematics.			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
A.RP.3	• Recognize when an approximation is more appropriate than an exact answer.			
	2. Addition, Subtraction, Multiplication, Division of Integers, Fractions and Decimals	3	Textbook, pgs. 73, 74, 80, 88, 103 Omit Properties & Mean, pg. 105, ex. #4 Library of Virtual Manipulatives NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – integers, fractions, decimals, additive identity, additive inverse, opposites.			
	• Define and apply the rules for addition and subtraction of integers, fractions, and decimals.			
	• Review mixed numbers and improper fractions.			
	• Add and subtract positive/negative of integers, fractions, and decimals without the calculator.			
	• Add the subtract positive/negative of integers, fractions, and decimals with the calculator (stress difference between negative key and subtraction key on calculator).			
	• Define and apply the rules for multiplication and			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	division integers, fractions, and decimals.		Regentsprep.org JMAP.org Graphing Calculator'' SMART View	
	• Multiply and divide without a calculator.			
	• Multiply and divide with a calculator.			
	• Use a calculator to express division in fractional form.			
	• Verbal applications (expressions not equations).			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.CM.11	• Represent word problems using standard mathematical notation.			
A.CN.6	• Recognize and apply mathematics to situations in the outside world.			
A.CN.7	• Recognize and apply mathematical ideas to problem situations that develop outside of mathematics.			
A.R.4	• Select appropriate representations to solve problem situations.			
	3. Properties of the Real Numbers and Distributive Property	2	Textbook, pg. 75, 89, 96 Stress Example on pg. 100	Class Work Homework Questions on quizzes &
	• *Vocabulary* – closure, commutative, associative,			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	distributive, identity, opposite, additive inverse, multiplicative inverse, logical argument, commutative property of addition, commutative property of multiplication, associative property of addition, associative property of multiplication, distributive property of multiplication over addition, identity element of addition, identity element of multiplication, equivalent expressions, term, coefficient, constant, like terms, variable, combining like terms		NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials	tests
	• Identify and apply the properties of Real Numbers (closure, commutative property of addition, commutative property of multiplication, associative property of addition, associative property of multiplication, distributive property of multiplication over addition, identity element of addition, identity element of multiplication, additive inverse, multiplication inverse) *Note: Students do not need to identify groups and fields, but students should be engaged in the ideas.*			
	• Apply properties to simplify calculations (i.e. (25)(37)(4) = (25)(4)(37) = (25•4)(37) = (100)(37) = 3700).			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Define and apply the distributive property to numerical expressions (no variables).			
	• Define and apply the distributive property to algebraic expressions (with degree 2 or lower).			
	• Applications using the distributive property o Ex. 13(12) = 13(10+2) = 13(10) + 13(2) = 130 + 26 = 156 o Ex. 13(95) = 13(100-5) = 13(100) – 13(5) = 1300-65 = 1235			
A.N.1	• Identify and apply the properties of real numbers (closure, commutative, associative, distributive, identity, and inverse).			
A.RP.4	• Develop, verify, and explain an argument, using appropriate mathematical ideas and language.			
A.RP.7	• Evaluate written arguments for validity.			
A.RP.9	• Devise ways to verify results or use counterexamples to refute incorrect statements.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
4. Review	1		
5. Test	1	Test Generator	Chapter Test
Total Days	**10**		
Unit 3 – Solutions of Linear Equations			
1. Solution of single step equations applying addition or subtraction or multiplication or division	2	Before, Now & Why? Textbook, pg. 134 Use Vertical Format Supplement on Distinguish Between Expression & Equation Investigation Activity, pg. 132 Library of Virtual Manipulatives Graphing Calculator	Class Work Homework Questions on quizzes & tests
• *Vocabulary* – inverse operations, equivalent equations, additive inverse, opposite, reciprocal, multiplicative inverse.			
• Distinguish the difference between an algebraic expression and an algebraic equation (i.e., Can you solve 3x + 9?).			
• Given algebraic expressions and algebraic equations determine which can be solved and which cannot be solved.			
• Solve a one-step equation with addition or subtraction.			
• Solve a one-step equation with multiplication or division.			
• Justify the solution (check).			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.A.3 • Distinguish the difference between an algebraic expression and an algebraic equation.		SMART View	
A.A.21 • Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.22 • Solve all types of linear equations in one variable.			
A.CM.1 • Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.RP.2 • Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
A.RP.9 • Devise ways to verify results or use counterexamples to refute incorrect statements.			
A.R.1 • Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
2. Solutions to Two-Step Equations	2	Textbook, pg. 141	Class Work Homework
• *Vocabulary* – like terms, solutions, check, simplify, distributive property, reciprocal		Library of Virtual	Questions on Quizzes &

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
			Manipulatives	Tests
	• Solve two-step linear equations containing variable one side.			
	• Justify the solution (check).			
	• Problem solving applications.			
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.22	• Solve all types of linear equations in one variable.			
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.R.1	• Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
A.RP.2	• Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
	3. Mid Chapter Quiz	1		
	Total Days	**5**		

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
CYCLIC REVIEW (Approximately 3 Days)			Quarterly Exam
QUARTER 2			
Unit 3 – Continued			
4. Review Solving One & Two Step Equations	1		
5. Multi-Step Equations with Variables on One Side	2	Textbook, pg. 149 Library of Virtual Manipulatives	Class Work Homework Questions on quizzes & tests
• *Vocabulary* – like terms, solutions, check, simplify, distributive property, reciprocal			
• Solve multi-step linear equations containing variable one side.			
• Solve multi-step equations by applying the distributive property.			
• Justify the solution (check).			
• Problem solving applications.			
A.A.21 • Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.22 • Solve all types of linear equations in one variable.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.R.1	• Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
A.RP.2	• Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
	6. Solving Equations with Variables on Both Sides	2	Textbook, pg. 154 Liberty of Virtual Manipulatives McDougal Supplemental Materials Classzone.com NYSED Sample Tasks	Class Work Homework Questions on Quizzes & Test
	• Solve multi-step equations with variables on both sides of equation.			
	• Solve multi-step equations that apply the distributive property.			
	• Solve multi-step equations that apply the distributive property where there is a negative outside the parentheses.			
	• Solve equations that lead to x = 0.			
	• Justify the solution (check).			
	• Problem solving applications (include consecutive			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	integers, consecutive even and consecutive odd).			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.22	• Solve all types of linear equations in one variable.			
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.RP.2	• Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
A.R.1	• Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
	7. Solving Mixed Equations	1	McDougal Supplemental Materials Classzone.com	Class Work Homework Questions on Quizzes & Tests
	• Solve various types of one-step and multi-step equations.			
	• Justify the solution (check).			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Problem solving.		Regentsprep.org JMAP.org	
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.22	• Solve all types of linear equations in one variable.			
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.RP.2	• Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
A.R.1	• Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
	8. Applications	1	McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	Class Work Homework Questions on Quizzes & Tests
	• Solving linear equation consecutive integers word problems.			
	• Solving linear equation coin word problems.			
	• Solving linear equation break even word problems.			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Stress the application of let statements and give examples where they are appropriate.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
	9. Review	1		
	10. Test	1	Test Generator	Chapter Test
	Total Days	**9**		
	Unit 4 – Literal Equations, Proportions, & Percents			
	1. Solving Literal Equations	2	Textbook, pg. 184	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – literal equation, formula			
	• Define and identify literal equations.			
	• Solve for a given variable in a *literal equation.*			
	• Apply formulas to solve for a certain variable.			
	• Problem solving applications.			
A.A.23	• Solve literal equations for a given variable.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
	2. Solving Proportions	2	Textbook, pg. 162, 168 Verbal Applications in Section & pg. 174 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – ratio, proportion, simplest form, cross product property			
	• Find the ratio of two quantities.			
	• Solve proportions that lead to linear equations.			
	• Applications of ratios.			
	• Applications of proportions.			
	• Problem solving applications.			
A.N.5	• Solve algebraic problems arising from situations that involve fractions, decimals, percents (decrease/increase and discount), and proportionality/direct variation.			
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.22	• Solve all types of linear equations in one variable.			
A.A.25	• Solve equations involving fractional expressions. *Note:*			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	Expressions which result in linear equations in one variable.			
A.A.26	• Solve algebraic proportions in one variable which result in linear or quadratic equations.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.CM.5	• Communicate logical arguments clearly, showing why a result makes sense and why the reasoning is valid.			
	3. Conversions	1	Textbook, pgs. A4, 929 Supplement, pg. 234 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – metric system, customary system, inches, feet, etc.			
	• Given a relationship between two units, convert within the measurement system.			
	• Calculate rates.			
	• Solve verbal problems involving conversions within measurement systems given the relationship between the units (i.e. Ellen traveled six times as far as Beth. If Ellen traveled 150 km, how many *meters* did Beth travel? 1 km = 1,000 m or A dress on sale was			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	reduced to $25. If that was 1/6 of the original price, find the original price in Euros. The current conversion is 1 Euro = $1.50).		JMAP.org Graphing Calculator SMART View NYSED Sample Tasks	
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.6	• Analyze and solve verbal problems whose solution requires solving linear equation in one variable or linear inequality in one variable.			
A.M.1	• Calculate rates using appropriate units (e.g., rate of a space ship versus the rate of a snail).			
A.M.2	• Solve problems involving conversions within measurement systems, given the relationship between the units.			
A.PS.5	• Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic).			
A.PS.6	• Use a variety of strategies to extend solution methods to other problems.			
A.PS.7	• Work in collaboration with others to propose, critique, evaluate, and value alternative approaches to problem solving.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
	4. Solving Word Problems in Percents, Leading to Linear Equations	3	Textbook, pg. 176 Extension, pg. 182 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – percent, proportion, percent of change, percent of increase, percent of decrease, discount			
	• Determine the percent of a number (ex. What is 9% of 12?).			
	• Determine the percentage (ex. What % of 20 is 17?).			
	• Given a percentage, determine the number (ex. 19 is 50% of what number?).			
	• Determine the percent of increase.			
	• Determine the percent of decrease.			
	• Determine the percent of change.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Problem solving applications.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.N.5	• Solve algebraic problems arising from situations that involve fractions, decimals, percents (decrease/increase and discount), and proportionality/direct variation.			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
	5. Review	1		
	6. Test	1	Test Generator	Chapter Test
	Total Days	**10**		
	Unit 5 – Graphing Two Variable Linear Equations			
	1. Introduction to Graphing Linear Equations	2	Textbook, pg. 207 Library of Virtual Manipulatives NYSED Math Glossary and	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – coordinate plane, abscissa, ordinate, ordered pair, x-coordinate, y-coordinate, x-axis, y-axis, axes, quadrants, origin, linear function, vertical, horizontal, slant, oblique			
	• Define and identify coordinate plane, abscissa,			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	ordinate, ordered pair, quadrants, axes.		Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org NYSED Sample Tasks	
	• Plot points (include those that lie on the x and y axis).			
	• Explore and generalize how to determine the quadrant in which a point lies.			
	• Identify the quadrant in which a point lies (stress quadrantals, and the Roman numeral names of quadrants).			
	• Introduce general form for equation of a line (equation of a line can have only x^1, y^1, or x1 *and* y^1. General form is Ax + By = C).			
	• Given a linear function, with a limited domain, set up a table and graph the points (not a line).			
A.R.1	• Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
A.CM.2	• Use mathematical representations to communicate with appropriate accuracy, including numerical tables,			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams.			
A.CM.4	• Explain relationships among different representations of a problem.			
	2. Graph Linear Equations	3	Textbook, pg. 215 Library of Virtual Manipulatives NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org NYSED Sample Tasks	Class Work Homework Questions on Quizzes & Tests
	• Given an ordered pair, check whether it is a solution to an equation.			
	• Discuss the concept that a line is a linear function.			
	• Given a linear equation in two variables, using the table method, graph the line ***(this is to be done by hand, not the calculator. The students are not putting the equation in y = mx + b form).***			
	• Introduce graphing horizontal lines.			
	• Graph horizontal lines.			
	• Introduce graphing vertical lines.			
	• Graph vertical lines.			
	• Read a graph to determine ordinate when given abscissa.			
	• Read a graph to determine abscissa when given			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	ordinate.			
A.R.3	• Discuss and generalize the three types of lines that can slant in either direction, have no slant, or have undefined slant.			
A.R.1	• Use physical object, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
A.A.4	• Translate verbal sentences into mathematical equations or inequalities.			
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.A.36	• Write the equation of a line parallel to the x- or y-axis.			
A.A.39	• Determine whether a given point is on a line, given the equation of the line.			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
A.CM.2	• Use mathematical representations to communicate with appropriate accuracy, including numerical tables,			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams.			
A.CM.4	• Explain relationships among different representations of a problem.			
	3. Graphing Linear Equations Using x & y Intercepts	1	Textbook, pg. 225 Library of Virtual Manipulatives NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – linear equation, x-intercept, y-intercept, general form of a line			
	• Given the graph of a line determine the x and y intercepts.			
	• Develop the concepts of intercepts and their connections to the equation of a line.			
	• Explore, conjecture, and generalize about the x and y-intercepts of horizontal and vertical lines.			
	• Given the equation of line in Ax + By = C form, find the x-intercept (A or B or C can equal zero).			
	• Given the equation of line in Ax + By = C form, find the y-intercept (A or B or C can equal zero).			
	• Given the equation of a line use the x and y intercepts to graph the line.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Conjecture and rationalize the appropriateness of this method and when other methods are more appropriate (intercept is a fraction).		SMART View	
A.R.1	• Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
A.A.4	• Translate verbal sentences into mathematical equations or inequalities.			
A.A.36	• Write the equation of a line parallel to the x- or y-axis.			
A.A.39	• Determine whether a given point is on a line, given the equation of the line.			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
A.CM.2	• Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams.			
A.CM.4	• Explain relationships among different representations of a problem.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	4. Slope of a Line	2	Textbook, pg. 235 Supplement, pg. 234 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – slope, rate of change, positive slope, negative slope, zero slope, undefined slope			
	• Define and introduce slope as a rate of change (do not simply use x and y as the variables).			
	• Discover by looking at a graph, if the slope of a line is positive, negative, zero, or no slope (stress the difference between zero & no slope).			
	• Determine the exact slope of a line by looking at its graph.			
	• Determine the slope of a line given in any form.			
	• Discover the formula for slope of a line by investigating graphs of lines.			
	• Apply the slope formula to find the slope of a line given two points on the line.			
	• Apply the slope formula to find the rate of change.			
	• Given a point on a line and the slope of a line, find the coordinates of another point on that line.			
	• Given the slope of a line and a point on the line, find			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	the missing x or y-coordinate of the point (i.e. A line with a slope of ¾ goes through the points (2, 7) and (6, y). What is the value of y?).			
A.A.32	• Explain slope as a rate of change between dependent and independent variables.			
A.A.33	• Determine the slope of a line, given the coordinates of two points on the line.			
A.A.36	• Write the equation of a line parallel to the x- or y- axis.			
A.A.37	• Determine the slope of a line, given its equation in any form.			
A.CM.7	• Read and listen for logical understanding of mathematical thinking shared by other students.			
A.CM.10	• Use correct mathematical language in developing mathematical questions that elicit, extend, or challenge other students' conjectures.			
	5. Applications of Slope	1	Textbook, pg. 235 Ex. on pg. 240 NYSED Math Glossary and Math Vocabulary List	Class Work Homework Questions on quizzes & tests
	• Given a point on a line and the slope of a line, find the coordinates of another point on that line.			
	• Given the slope of a line and a point on the line, find the missing x or y-coordinate of the point (i.e. A line			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	with a slope of ¾ goes through the points (2,7) and (6,y). What is the value of y?).		McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	
A.A.32	• Explain slope as a rate of change between dependent and independent variables.			
A.A.33	• Determine the slope of a line, given the coordinates of two points on the line.			
A.A.36	• Write the equation of a line parallel to the x or y- axis.			
A.CM.7	• Read and listen for logical understanding of mathematical thinking shared by other students.			
A.CM.10	• Use correct mathematical language in developing mathematical questions that elicit, extend, or challenge other students' conjectures.			
	6. Graphing Linear Equations Using Slope-Intercept Form (y = mx + b)	2	Textbook, pg. 244 Liberty of Virtual Manipulatives NYSED Math Glossary and Math Vocabulary List McDougal Supplemental	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – slope, y-intercept, slope intercept form, parameter changes, general form of a line, m, b			
	• Given an equation in y = mx + b form, identify the slope and y-intercept.			
	• Given an equation of a line, write as an equivalent equation in slope-intercept form.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Graph a linear equation given in slope-intercept form by using the slope and y-intercept.		Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View NYSED Sample Tasks	
	• Given the line in Ax + By = C form, apply the slope-intercept form to graph.			
	• Given the equation of a line in any form, graph by hand.			
	• Given the equation of a line in any form, graph by using the graphing calculator.			
	Discuss direct variation (i.e., what happens when y-intercept – 0).			
	• Conjecture and generalize the effects of changing the slope or y-intercept to a family of lines.			
	• Determine if lines are parallel, given the equation in any form.			
	• Problem solving applications.			
A.A.37	• Determine the slope of a line, given its equation in any form.			
A.A.38	• Determine if two lines are parallel, given their equations in any form.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.G.4	• Identify and graph linear, quadratic (parabolic), absolute value, and exponential functions.			
A.CN.2	• Understand the corresponding procedures for similar problems or mathematical concepts.			
A.RP.10	• Extend specific results to more general cases.			
	7. Review	1		
	8. Test	1	Test Generator	Chapter Test
	CYCLIC REVIEW (Approximately 3 Days)			Quarterly Exam
QUARTER 3				
	Unit 6 – Equations of Lines			
	1. Slope-Intercept Form (without calculator)	2	Before, Now and Why? Textbook, pg. 283 Omit Example 4 NYSED Math Glossary and Math Vocabulary List	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – slope, y-intercept, slope-intercept form, parallel			
	• Determine the equation of a line, given the graph of a line that includes the y-intercept.			
	• Determine the equation of a line, given two points.			
	• Determine the equation of a line, given its graph.			
	• Determine the equation of a line, parallel to the x- or y-			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	axis.		McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	
	• Problem solving applications.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.34	• Write the equation of a line, given its slope and the coordinates of a point on the line.			
A.A.35	• Write the equation of a line, given the coordinates of two points on the line.			
A.A.36	• Write the equation of a line parallel to the x- or y-axis.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.CM.2	• Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.CM.3	• Present organized mathematical ideas with the use of appropriate standard notations, including the use of symbols and other representations when sharing an idea in verbal and written form.			
A.CN.2	• Understand the corresponding procedures for similar problems or mathematical concepts.			
A.CN.4	• Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics.			
	2. Families of Lines (applying the graphing calculator)	1	Textbook, pg. 290 Library of Virtual Manipulatives NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – slope, y-intercept, slope-intercept form, parameters, parallel			
	• Conjecture and generalize the effects of changing the slope or y-intercept to a family of lines.			
	• Draw conclusions of the effects of m & b on a line.			
	• Given the slope and y-intercept of a line, determine the equation.			
	• Given the slope and y-intercept of a line, determine if a point lies on that line.			
A.PS.3	• Observe and explain patterns to formulate			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	generalizations and conjectures.		Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	
A.RP.2	• Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
A.RP.4	• Develop, verify, and explain an argument, using appropriate mathematical ideas and language.			
A.CM.3	• Present organized mathematical ideas with the use of appropriate standard notation, including the use of symbols and other representations when sharing an idea in verbal and written form.			
A.CM.13	• Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing.			
A.R.3	• Use representation as a tool for exploring and understanding mathematical ideas.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.32	• Explain slope as a rate of change between dependent and independent variables.			
A.A.34	• Write the equation of a line, given its slope and the coordinates of a point on the line.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.A.36	• Write the equation of a line parallel to the x- or y-axis.			
	3. Equations of Lines Continued	3	Textbook, pg. 292 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	Class Work Homework Questions on quizzes & tests Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – y-intercept, slope, slope-intercept form, parallel			
	• Determine the equation of a line in slope-intercept form, given its slope and a point on the line.			
	• Determine the equation of a line in slope-intercept form, given any two points on the line.			
	• Determine the equation of a line given its graph.			
	• Problem solving applications.			
A.A.33	• Determine the slope of a line, given the coordinates of two points on the line.			
A.A.35	• Write the equation of a line, given the coordinates of two points on the line.			
A.A.36	• Write the equation of a line parallel to the x- or y-axis.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically,			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	algebraically, and graphically).			
A.CM.2	• Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams.			
A.CN.2	• Understand the corresponding procedures for similar problems or mathematical concepts.			
A.CN.4	• Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics.			
	4. Standard Form Equation of a Line	2	Textbook, pg. 311 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Regentsprep.org	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – standard form, Ax + By = C, parallel			
	• Define and identify a line in standard form.			
	• Determine the standard form equation of a line, parallel to the x- or y-axis.			
	• Discover equivalent standard form equations (Ax + By = C and its multiple).			
	• Reason about A, B & C and their values in parallel lines.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Determine the equation in standard form, given the slope and y-intercept.		JMAP.org Graphing Calculator SMART View	
	• Determine the equation in standard form, given the slope and a point on the line.			
	• Determine the equation in standard form, given two points on the line.			
	• Determine the slope of a line, given the equation in any form.			
	• Problem solving applications.			
A.A.34	• Write the equation of a line, given its slope and the coordinates of a point on the line.			
A.A.35	• Write the equation of a line, given the coordinates of two points on the line.			
A.A.37	• Determine the slope of a line, given its equation in any form.			
A.A.38	• Determine if two lines are parallel, given their equations in any form.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
	5. Equations of Parallel Lines	2	Textbook, pg. 319	Class Work

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• *Vocabulary* – parallel		Omit Perpendicular NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	Homework Questions on quizzes & tests
	• Define and discuss parallel lines and their slopes.			
	• Determine if two lines are parallel given their graphs.			
	• Given the equation of two lines in any form, determine if they are parallel.			
	• Determine the equation of a line parallel to a given line and passing through a given point.			
	• Problem solving applications.			
A.A.38	• Determine if two lines are parallel, given their equations in any form.			
A.PS.2	• Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
	6. Best Fit Line	2	Textbook, pg. 325 Graphing Calculator Activity pg. 332 Investigation Activity, pg. 334	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – scatter plot, univariate data, bivariate data, positive correlation, negative correlation, no correlation			
	• Define and recognize the difference between univariate and bivariate data.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Given a set of data, determine whether it is univariate or bivariate.		NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	
	• Create and investigate a scatter plot of bivariate data (*minimal calculator use*).			
	• Construct manually a reasonable line of best fit for a scatter plot.			
	• Determine the equation of the reasonable line of best fit **MANUALLY**.			
	• Determine predictions from line of best fit using linear interpolation and linear extrapolation.			
	• Justify predictions found from line of best fit.			
	• Verbal applications.			
A.S.2	• Determine whether the data to be analyzed is univariate or bivariate.			
A.S.7	• Create a scatter plot of bivariate data.			
A.S.8	• Construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line.			
A.S.12	• Identify the relationship between the independent and dependent variables from a scatter plot (positive,			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	negative, or none).			
A.S.17	• Use a reasonable line of best fit to make a prediction involving interpolation or extrapolation.			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
A.PS.8	• Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A.PS.9	• Interpret solutions within the given constraints of a problem.			
	7. Applications of Scatter Plots	2	Textbook, pg. 335 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – scatter plot, best fit line, linear regression, interpolation, extrapolation, zero of a function			
	• Create and investigate a scatter plot of bivariate data.			
	• Define linear interpolation and linear extrapolation.			
	• Apply linear interpolation and linear extrapolation to predictions.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Problem solving applications.		Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	
A.PS.8	• Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A.PS.9	• Interpret solutions within the given constraints of a problem.			
A.RP.2	• Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture.			
A.RP.3	• Recognize when an approximation is more appropriate than an exact answer.			
A.CM.2	• Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams.			
A.CM.8	• Reflect on strategies of others in relation to one's own strategy.			
A.CN.3	• Model situations mathematically, using representations to draw conclusions and formulate new situations.			
A.R.4	• Select appropriate representations to solve problem situations.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.R.5	• Investigate relationships between different representations and their impact on a given problem.			
A.S.7	• Create a scatter plot of bivariate data.			
A.S.8	• Construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line.			
A.S.17	• Use a reasonable line of best fit to make a prediction involving interpolation or extrapolation.			
	8. Review	1		
	9. Test	1	Test Generator	Chapter Test
	Total Days	**16**		
	Unit 7 – Solving & Graphing Linear Inequalities			
	1. Solving Linear Inequalities in One Variable	2	Before, Now & Why? Textbook, pgs. 356, 363, 369 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – $<$, $>$, $\leq$, $\geq$, $\neq$, inequality, solution, set, braces { }, number line			
	• Define linear inequalities.			
	• Graph linear inequalities on a number line (stress open & closed circle).			
	• Determine the values that make the inequality true or false.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Determine the linear inequality represented by a graph on the number line.		McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View Algebra 1 Textbook: Sections 6.1 – 6.3	
	• Define and apply the addition/subtraction property of inequality.			
	• Define and apply the multiplication/division property of inequality.			
	• Explain and prove the effect of multiplying or dividing by a negative in a given inequality.			
	• Solve linear inequalities in one variable.			
	• Graph the solution to a linear inequality on a number line.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.6	• Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable.			
A.G.7	• Graph and solve systems of linear equations and inequalities with rational coefficients in two variables.			
A.A.24	• Solve linear inequalities in one variable.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.RP.12	• Apply inductive reasoning in making and supporting mathematical conjectures.			
A.CN.1	• Understand and make connections among multiple representations of the same mathematical idea.			
	2. Applications of Linear Inequalities	1	NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Algebra 1 Textbook: Sections 6.1 – 6.3	
	• Translate verbal sentences into mathematical inequalities and solve.			
	• Translate real life situations into mathematical inequalities and solve.			
	• Determine acceptable solutions to applications of linear inequalities.			
A.A.4	• Translate verbal sentences into mathematical equations or inequalities.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.6	• Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	linear inequality in one variable.		SMART View	
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.PS.8	• Determine information required to solve a problem chose methods for obtaining the information, and define parameters for acceptable solutions.			
A.CM.11	• Represent word problems using standard mathematical notation.			
A.CN.6	• Recognize and apply mathematics to situations in the outside world.			
	3. Compound Inequalities in one Variable	2	Textbook, pg. 380 Graphing Calculator Activity, pg. 388 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials	Class Work Homework Questions on quizzes & tests
	• Compound inequality, intersection, union, and, or			
	• Define and graph on the number line compound inequalities with no solution needed (ex. $-2 < x < 5$).			
	Solve compound inequalities with *and* (ex. $-15 < 15p - 10 \leq 25$).			
	• Solve compound inequalities with *and* (ex. $-2 < 3x + 1$ *and* $7x - 3 < 19$).			
	• Solve compound inequalities with *or*			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Graph the solution set to a compound inequality (stress open & closed circle).		Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View Algebra 1 Textbook: Section 6.4	
	• Write the solution to a compound inequality as a solution set with braces (ex. {x} -2 < x < 5}.			
	• Solve and graph compound inequalities on a number line using the graphing calculator (stress inability to see open/closed circle on calculator).			
	• Problem solving applications.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.6	• Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable.			
A.A.24	• Solve linear inequalities in one variable.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.RP.12	• Apply inductive reasoning in making and supporting mathematical conjectures.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.CM.11	Represent word problems using standard mathematical notation.			
A.CN.1	• Understand and make connections among multiple representations of the same mathematical idea.			
	4. Solve Absolute Value Equations	1	Textbook, pg. 390 Supplement for Expressions OMIT Absolute Deviation NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprepg.org JMAP.org Graphing Calculator SMART View	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – absolute value, symbol: | |, absolute value equation			
	• Solve absolute linear equation of the form | ax + b | = c.			
A.A.22	• Solve all types of linear equations in one variable.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
			Algebra 1 Textbook: Section 6.5	
	5. Graphing Absolute Value Functions	2	Textbook, pgs. 396 Key Concept on pg. 397 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View Algebra 1 Textbook: Section 6.5 Extension	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – absolute value, function			
	• Properties of the parent function y = |x|			
	• Graph absolute value linear functions with the calculator.			
	• Compare and contrast the graphs of linear absolute value functions with the parent function.			
A.N.6	• Evaluate expressions involving factorial(s), absolute value(s), and exponential expression(s).			
A.A.22	• Solve all types of linear equations in one variable.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	6. Graphing Linear Inequalities in Two Variables – On the Coordinate Plane	3	Textbook, pg. 405 NYSED Math Glossary and Math Vocabulary List McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View Algebra 1 Textbook: Section 6.7	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – coordinate plane, linear inequality, solution			
	• Given an ordered pair, determine if it is a solution of a two variable inequality.			
	• Graphing a linear inequality in one variable.			
	• Graphing a linear inequality in two variables given in any form.			
	• Graph linear inequalities using the graphing calculator (with shading).			
	• Determine a point in the solution set and verify your solution.			
	• Determine a point not in the solution set and prove it is not in the solution set.			
A.G.6	• Graph linear inequalities.			
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A.CN.2 • Understand the corresponding procedures for similar problems or mathematical concepts.			
7. Review	1		
8. Test	1	Test Generator	Chapter Test
Total Days	**14**		
Unit 8 – Systems of Equations and Inequalities			
1. Solving Linear Systems Graphically	2	Before, Now & Why? Textbook, pgs. 427, 459 Activity, pg. 434 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com	Class Work Homework Questions on Quizzes & Tests
• *Vocabulary* – linear system, solution, consistent system, inconsistent system, consistent dependent			
• Given a graph of a linear system, find the solution and check algebraically.			
• Review graphing lines in any form.			
• Review graphing lines in the calculator.			
• Graph a linear system to find the solution and check algebraically (include lines that are parallel to x- and y-axis).			
• Discuss and identify a system with no solution (inconsistent).			
• Discuss and identify a system with an infinite number			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	of solutions (consistent dependent).		Regentsprep.org JMAP.org Graphing Calculator SMART View	
	• Find and label the solution.			
	• Utilize the graphing calculator to graph a linear system.			
	• Problem solving applications.			
A.A.10	• Solve systems of two linear equations in two variables algebraically.			
A.A.21	• Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable.			
A.G.7	• Graph and solve systems of linear equations and inequalities with rational coefficients in two variables.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.CM.11	• Represent word problems using standard mathematical notation.			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	2. Solving Linear Systems by Elimination	5	Textbook, pgs. 443, 444, 451	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – linear system, solution, consistent system, inconsistent system, elimination, least common multiple	Day 1 (where the variable is already opposite)	**Use ONLY Addition Method DO NOT SUBTRACT**	
	• Re-write system as an equivalent system with both equations in standard form (Ax + By = C).		NYSED Math Glossary and Math Vocabulary List	
	• Solve a linear system by elimination when addition can be used to eliminate a variable.	Days 2 & 3 (multiply one equation)	NYSED Sample Tasks	
	• Solve a linear system by elimination when multiplying one of the equations by -1 can be used to eliminate a variable.		McDougal Supplemental Materials	
	• Solve a linear system by elimination when one equation must be multiplied by a constant to eliminate a variable.	Day 4 (multiply both equations)	Classzone.com Regentsprep.org JMAP.org	
	• Solve a linear system by elimination when both equations must be multiplied by a constant to eliminate a variable.		Graphing Calculator	
	• Verify solution by substitution into each of the original equations.	Day 5 (mixed)	SMART View	
A.A.10	• Solve systems of two linear equations in two variables			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
algebraically.			
A.CM.1 • Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
3. Solve Systems of Linear Equations Algebraically	1	Textbook, pg. 458 Supplement is in the Math Folder NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org SMART View	Class Work Homework Questions & Quizzes & Tests

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• *Vocabulary* – linear system, solution, consistent system, inconsistent system, elimination, least common multiple			
	• Determine and apply the most appropriate method for solving a system of linear equations.			
	• Problem solving applications (*include all past Regents problems from parts II, III, and IV*).			
	• Include coin problems.			
	• Include sum and difference problems (Ex: The sum of two numbers is 47, and their difference is 15. What is the larger number?).			
	• Include examples where the students must find only the x-coordinate or y-coordinate.			
A.A.5	• Write algebraic equations or inequalities that represent a situation.			
A.A.7	• Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables.			
A.A.10	• Solve systems of two linear equations in two variables algebraically (see A.G.7).			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.R.4	• Select appropriate representations to solve problem situations.			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A.CN.6	• Recognize and apply mathematics to situations in the outside world.			
A.RP.1	• Recognize that mathematical ideas can be supported by a variety of strategies.			
A.PS.1	• Use a variety of problem solving applications strategies to understand new mathematical content.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.PS.5	• Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic).			
A.PS.8	• Determine information required to solve a problem,			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	choose methods for obtaining the information, and define parameters for acceptable solutions.			
A.PS.9	• Interpret solutions within the given constraints of a problem.			
A.PS.10	• Evaluate the relative efficiency of different representations and solution methods of a problem.			
	4. Review	1		
	5. Test	1		
	Total Days	**10**		
	CYCLIC REVIEW (Approximately 3 Days)			Quarterly Exam
QUARTER 4				
	Unit 9 – Solving Systems & Applications			
	1. Solve System of Linear Equations Algebraically Using Matrices	2	Supplement McDougal Supplemental Materials	Class Work Homework Questions on quizzes & tests
	• Solve by matrices using the calculator.			
	• Set up and solve a system.			
	• Verbal applications.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A.RP.1	• Recognize that mathematical ideas can be supported by a variety of strategies.			
	2. Verbal Problems Using Systems	2	Textbook, pg. 458 Supplement NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – linear system, solution, consistent system, inconsistent system, elimination, least common multiple			
	• Verbal problem applications (*include all past Regents problems from parts II, III, and IV*).			
A.A.7	• Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables.			
A.A.10	• Solve systems of two linear equations in two variables algebraically. (see A.G.7)			
A.R.4	• Select appropriate representations to solve problem situations.			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
A.CM.1	• Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	explanation for the steps used in solving a problem.			
A.CN.6	• Recognize and apply mathematics to situations in the outside world.			
A.RP.1	• Recognize that mathematical ideas can be supported by a variety of strategies.			
A.PS.1	• Use a variety of problem solving application strategies to understand new mathematical content.			
A.PS.4	• Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A.PS.5	• Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic).			
A.PS.8	• Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A.PS.9	• Interpret solutions within the given constraints of a problem.			
A.PS.10	• Evaluate the relative efficiency of different representations and solution methods of a problem.			
	3. Solve Systems of Linear Inequalities Graphically	2	Textbook, pg. 466	Class Work

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• *Vocabulary* – linear inequalities in two variables, systems of linear inequalities		NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	Homework Questions on quizzes & tests
	• Review graphing a linear inequality on a coordinate plane.			
	• Graph a system of linear inequalities on a coordinate plane.			
	• Graph a system of linear inequalities on a coordinate plane using the graphing calculator.			
	• Determine a point in the solution set of the linear inequality system.			
	• Label the solution set on the graph.			
	• Determine whether a given point is in the solution set of the linear inequality system from the graph.			
	• Determine whether a given point is in the solution set of the linear inequality system algebraically.			
A.A.40	• Determine whether a given point is in the solution set of a system of linear inequalities.			
A.G.7	• Graph and solve systems of linear equations and inequalities with rational coefficients in two variables.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	4. Review	1		
	5. Test	1	Test Generator	Chapter Test
	Total Days	**8**		
	Unit 10 – Exponents & Exponential Functions			
	1. Laws of Exponents Involving Products	2	Before, Now & Why? Activity, pg. 488 Textbook, pgs. 489, 503 NYSED Math Glossary and Math Vocabulary NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – power, base, exponent, reciprocal			
	• Apply positive, negative, and zero exponents to all of the below (*integral exponents only*) *Final answers may be left with negative exponents.*			
	• Define x^0, x^a, x^{-a}.			
	• Multiply two powers of the same base (do examples with the like bases as numbers and/or variables).			
	• Multiply monomials by monomials.			
	• Power of a Power Property.			
	• Power of a Product Property.			
	• Product of a Power Property			
	• Define and apply zero and negative exponents.			
	• Compare and rank different bases raised to powers.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Applications with verbal problems (i.e. area of a square, area of a rectangle).		Graphing Calculator SMART View	
A.A.12	• Multiply and divide monomial expressions with a common base, using the properties of exponents (*Note: Use integral exponents only*).			
A.PS.3	• Observe and explain patterns to formulate generalizations and conjectures.			
	2. Laws of Exponents Involving Quotients	2	Textbook, pgs. 495, 503 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator	Class Work Homework Questions on quizzes & tests
	• *Vocabulary* – power, base, exponent, quotient, reciprocal			
	• Apply positive, negative, and zero exponents to all of the below (*integral exponents only*).			
	• Power of a Quotient Property.			
	• Quotient of a Power Property.			
	• Define and apply zero and negative exponents.			
A.A.12	• Multiply and divide monomial expressions with a common base, using the properties of exponents (*Note: Use integral exponents only*).			
A.PS.3	• Observe and explain patterns to formulate			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies	Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
generalizations and conjectures.		SMART View	
3. Laws of Exponents – Mixed Review	2	Textbook, pg. 512 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Regentsprep.org JMAP.org Graphing Calculator SMART View	Class Work Homework Questions on Quizzes & Tests
4. Scientific Notation	2	Textbook, pg. 512 NYSED Math Glossary and Math Vocabulary List	Class Work Homework Questions on Quizzes & Tests
• *Vocabulary* – scientific notation, standard form of a number.			
• Define scientific notation.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Given a number in standard form, convert to scientific notation.		NYSED Sample Tasks McDougal Supplemental Materials Regentsprep.org JMAP.org Graphing Calculator SMART View	
	• Given a number in scientific notation, convert to standard form.			
	• Determine the product/quotient of numbers in scientific notation.			
	• Apply the graphing calculator to convert from one form to another.			
	• Apply the graphing calculator to add, subtract, multiply and divide in scientific notation.			
	• Include examples where students find the product or quotient of two numbers where one is in scientific notation and the other is not.			
A.N.4	• Understand and use scientific notation to compute products and quotients of numbers.			
	5. Applications of Exponential Functions	2	Textbook, pg. 520, 531 Activity, pg. 530 NYSED Math Glossary and	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – exponential function, exponential growth, exponential decay, initial amount			
	• Generalize $y = a^x$, where $a > 1$, as exponential growth.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	• Generalize $y = a^x$, where $0 < a < 1$, as exponential decay.		Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator SMART View	
	• Compare and contrast exponential growth and decay.			
	• Stress the difference in the exponential growth, $y = a(1+4)^x$, and exponential decay.			
	• Identify ***a*** as the initial amount, ***r*** as the rate expressed as a decimal, and ***x*** as the time.			
	• Problem solving applications.			
A.A9	• Analyze and solve verbal problems that involve exponential growth and decay.			
A.R.6	• Use mathematics to show and understand physical phenomena (e.g., find the height of a building if a ladder of a given length forms a given angle of elevation with the ground).			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
A.CN.6	• Recognize and apply mathematics to situations in the outside world.			
A.CN.7	• Recognize and apply mathematical ideas to problem			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	situations that develop outside of mathematics.			
A.CM.10	• Use correct mathematical language in developing mathematical questions that elicit, extend, or challenge other students' conjectures.			
	6. Graphs of Exponential Functions	2	Textbook, pgs. 520, 531 Activity, pg. 530 NYSED Math Glossary and Math Vocabulary List NYSED Sample Tasks McDougal Supplemental Materials Classzone.com Regentsprep.org JMAP.org Graphing Calculator	Class Work Homework Questions on Quizzes & Tests
	• *Vocabulary* – exponential function, exponential growth, exponential decay, initial amount, asymptote			
	• Define and graph $y = a^x$, where $a > 1$, with a graphing calculator.			
	• Define and graph $y = a^x$, where $0 < a < 1$, with a graphing calculator.			
	• Compare and contrast the graphs where $a > 1$ with the graphs where $0 < a < 1$.			
	• Generalize $y = a^x$, where $a > 1$, as exponential growth.			
	• Generalize $y = a^x$, where $0 < a < 1$, as exponential decay.			
	• Compare and contrast exponential growth and decay.			
	• Identify a graph as exponential growth or exponential decay.			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	• Identify and define the asymptote of the exponential function.		SMART View	
	• Compare graphs of exponential functions.			
	• Problem solving applications.			
A.A.9	• Analyze and solve verbal problems that involve exponential growth and decay.			
A.G.4	• Identify and graph linear, quadratic (parabolic), absolute value, and exponential functions.			
A.R.6	• Use mathematics to show and understand physical phenomena (e.g., find the height of a building if a ladder of a given length forms a given angle of elevation with the ground).			
A.R.7	• Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales).			
A.R.8	• Use mathematics to show and understand mathematical phenomena (e.g., compare the graphs of the functions represented by the equations $y = x^2$ and $y = -x^2$).			
A.CN.6	• Recognize and apply mathematics to situations in the outside world.			

Grade 9 / Quarters 1-4
Integrated Algebra MA 109

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
A.CN.7	• Recognize and apply mathematical ideas to problem situations that develop outside of mathematics.			
A.CM.10	• Use correct mathematical language in developing mathematical questions that elicit, extend, or challenge other students' conjectures.			
	7. Review	1		
	8. Test	1	Test Generator	Chapter Test
	Total Days	**13**		
	Cumulative Review			