

Clinton-Glen Gardner School District



Curriculum Management System

Mathematics
Grade 8 Algebra
July 2013

*** For adoption by all regular education programs as specified and for adoption or adaptation by all Special Education Programs in accordance with Board of Education Policy #2200.**

Board Approved: August 21, 2013

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CLINTON-GLEN GARDNER SCHOOL DISTRICT

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During the 2012-2013 school year, the Clinton-Glen Gardner School District continued working with the curriculum consortium we developed with seven other North-Voorhees sending districts, including Califon, Clinton Township, Hampton, High Bridge, Lebanon Borough, Lebanon Township, and Union Township. This consortium represents a collaborative effort that created an opportunity to bring together math expertise from each of the participating districts. The following individuals are acknowledged for their assistance in the preparation of this Curriculum Management System:

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Clinton-Glen Gardner School District

Mission

The mission of Clinton Public School is to inspire our students to become contributing members of society who are independent, innovative, life-time learners equipped with the necessary skills to meet the demands of our ever-changing world.

Philosophy

The economy in which graduates of our schools will seek employment is more competitive than ever and is rapidly changing in response to advances in technology. To compete in today's global, information-based economy, students must be able to solve real problems, reason effectively, and make logical connections. In this changing world those who have a good understanding of mathematics will have many opportunities and doors open to them throughout their lives. Today's workforce requires mathematical knowledge and skills in areas such as data analysis, problem-solving, pattern recognition, statistics and probability; therefore, our school's curriculum must prepare students for these expectations.

The Clinton-Glen Gardner School is committed to providing all students with the opportunity and the support necessary to learn significant mathematics with depth and understanding. To that end, students will engage in a wide variety of learning activities designed to develop their ability to reason and solve complex problems. Calculators, computers, manipulatives, technology, and the Internet will be used as tools to enhance learning and assist in problem solving. Group work, projects, literature, and interdisciplinary activities will make mathematics more meaningful and aid understanding. Classroom instruction will be designed to meet the learning needs of all children and will reflect a variety of learning styles.

The math curriculum fosters students who:

- Develop computational, conceptual, problem-solving and reasoning skills
- Demonstrate their understanding of mathematical concepts based on higher levels of mathematical thought
- Use technology and other tools as an integral part of solving mathematical problems

**New Jersey State Department of Education
Common Core State Standards**

A note about Common Core State Standards for Mathematics.

The Common Core State Standards for Mathematics were adopted in 2010. The standards referenced in this curriculum guide refer to the progress indicators in these newly adopted standards. A complete copy of the Common Core State Standards for Mathematics may be found at:

<http://www.corestandards.org/the-standards/mathematics> (by grade level)

<http://www.corestandards.org/the-standards> (in their entirety)

Mathematics: Standards for Mathematical Practice Interpreted for Kindergarten Through Second Grade

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with long standing importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately) and productive disposition (habitual inclination to see mathematics as sensible, useful and worthwhile, coupled with a belief in diligence and one’s own efficacy).

The Standards for Mathematical Practice are:

1. MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM.

As you look at or read a mathematical problem, think about what it means and what it is asking you to do. Also think about what would be a good way to start solving it. Ask yourself:

- What does the problem tell me?
 - What information is given?
 - What are the relationships among parts of the problem?
 - What is the goal of solving the problem?
 - Have I seen other problems similar to this one?
- What does the problem ask me to find out (solve)?
- How should I start solving the problem?
- Can pictures or a drawing help me to figure out how to solve the problem?
- Does how I'm answering the problem make sense with what the problem is asking?
- What are some other ways to solve the problem?
- Can I use another way to check if my answer is correct?
- Does my answer make sense?

2. REASON ABSTRACTLY AND QUANTITATIVELY.

Understand the relationship of numbers and number problems and represent them using pictures, drawings or symbols. Talk about the parts of number problems using pictures, drawings or symbols as well as how the pictures, drawings or symbols represent and help explain the problem. Show how using different numbers or operations in the same problem changes it.

3. CONSTRUCT VIABLE ARGUMENTS AND CRITIQUE THE REASONING OF OTHERS.

Use objects, drawings, diagrams or actions to construct arguments about math problems with understanding and using appropriate vocabulary to explain the reasoning process. Build a local argument, communicate it with others, justify your reasoning process and respond to the reasoning process someone else uses. Express agreement if both arguments are correct and explain why an argument is flawed if it is.

4. MODEL WITH MATHEMATICS.

Apply mathematical skills to everyday life, society, the workplace and other situations; identify important quantities in practical situations; write an equation to describe a situation; revise solutions; use tools such as diagrams, two-way tables, graphs, flowcharts and formulas to show relationships; analyze relationships to draw conclusions, interpret results in context and reflect on whether the results make sense.

5. USE APPROPRIATE TOOLS STRATEGICALLY.

Identify and make decisions regarding which tool, such as paper and pencil, models, rulers, spreadsheets, etc., to use to help solve mathematical problems as well as know when a tool is not the right one to use. Use technological and other tools to deepen understanding.

6. ATTEND TO PRECISION.

Communicate precisely when discussing math incorporating the following:

- Use clear definitions.

- Choose, use and explain symbols correctly, consistently and appropriately.
- Specify units of measure and labels correctly.
- Avoid careless errors.
- Follow formulas to explain thinking to others.

7. LOOK FOR AND MAKE USE OF STRUCTURE.

Look for and identify structure and patterns in mathematics (for example, three and seven more is the same amount as seven and three more, or sort shapes according to their number of sides) and see if the pattern or structure changes.

8. LOOK FOR AND EXPRESS REGULARITY IN REPEATED REASONING.

Look for repetition in calculations and numeric thinking, such as skip counting. Pay attention to the whole problem and the details and continuously evaluate the accuracy and reasonableness of both intermediate and final answers.

CONNECTING THE STANDARDS FOR MATHEMATICAL PRACTICE TO THE STANDARDS FOR MATHEMATICS CONTENT

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematical instruction. The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging the mathematical practices. In this respect those content standards, which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit time, resources, innovative energies and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development and student achievement in mathematics.

**Grade 8
Mathematics – Algebra**

Scope and Sequence

Quarter I	
<p>Topic: Seeing Structure in Expressions</p> <ul style="list-style-type: none">I. Numbers, Variables and Expressions<ul style="list-style-type: none">a. Real numbers<ul style="list-style-type: none">i. Classifyingii. Comparingiii. Graphingb. Numeric expressions<ul style="list-style-type: none">i. Simplifyingc. Algebraic expressions<ul style="list-style-type: none">i. Simplifyingii. Exponents	<p>Topic: Creating and Reasoning with Equations</p> <ul style="list-style-type: none">II. Equations<ul style="list-style-type: none">a. Simple equations<ul style="list-style-type: none">i. Infinite solutionsii. No solutioniii. Real world applicationsb. Multi-step equations<ul style="list-style-type: none">i. Infinite solutionsii. No solutioniii. Real world applications
<p>Topic: Ratios and Proportional Relationships</p> <ul style="list-style-type: none">III. Ratios, Proportions and Percents<ul style="list-style-type: none">a. Rates and ratiosb. Unit conversion<ul style="list-style-type: none">i. Dimensional analysisc. Proportions<ul style="list-style-type: none">i. Similar figuresii. Percentsd. Percent<ul style="list-style-type: none">i. Translation to equationse. Simple interest	<p>Topic: Creating and Reasoning with Inequalities</p> <ul style="list-style-type: none">IV. Inequalities<ul style="list-style-type: none">a. Simple inequalities<ul style="list-style-type: none">i. Solveii. Graphb. Multi-step inequalities<ul style="list-style-type: none">i. Solveii. Graphc. Compound inequalities<ul style="list-style-type: none">i. Graphii. Intersectionsiii. Unionsd. Absolute value equations<ul style="list-style-type: none">i. Solveii. Graph

Quarter II

Topic: Interpreting Functions

- V. Introductions to Functions
 - a. Mathematical representations
 - i. Graph
 - ii. Tables
 - iii. Expressions
 - b. Linear and non-linear functions
 - i. Identification
 - ii. Function notation
 - iii. Domain
 - c. Patterns in sequence
 - i. Identification
 - ii. Extension

Topic: Interpreting and Building Functions

- VI. Linear Relationships
 - a. Linear functions
 - i. Characteristics
 - ii. Multiple representations
 - iii. Graph
 - Slope intercept form
 - Point slope form
 - Standard form
 - b. Rates of change
 - i. Tables
 - ii. Graphs
 - c. Domain
 - d. Equations of direct variation
 - i. Construct
 - ii. Graph
 - e. Lines
 - i. Parallel
 - ii. Perpendicular
 - iii. Equations
 - f. Explicit expressions
 - g. Recursive processes
 - h. Steps for calculation

Topic: Creating and Reasoning with Equations & Inequalities

- VII. Systems of Equations and Inequalities
 - a. Systems of equations
 - i. Graphing
 - ii. Substitution
 - iii. Linear combinations
 - iv. Infinite solutions
 - v. No solution
 - b. Systems or linear inequalities
 - i. Graphing
 - ii. Viable/nonviable options

Quarter III

Topic: Linear, Quadratic and Exponential Models

VIII. Exponents and Exponential Functions

- a. Exponents
 - i. Multiplication and division
 - ii. Power to a power
 - iii. Product/quotient to a power
- b. Exponential functions
 - i. Graph
 - ii. Comparisons to linear functions
 - iii. Growth and decay
 - iv. Construction from graphs, descriptions, input/output pairs

Topic: Arithmetic with Polynomials and Expressions

IX. Polynomials and Factoring

- a. Polynomials
 - i. Classification
 - ii. Addition and subtraction
 - iii. Multiplication
- b. Factoring
 - i. Monomial from polynomial
 - ii. Trinomials
 - perfect square
 - iii. Graphing

Topic: Interpreting Functions

X. Quadratic Functions and Equations

- a. Quadratic equations
 - i. Transformation
 - ii. Complete the square
 - iii. Quadratic formula
- b. Quadratic functions
 - i. Solve
 - Graphing
 - Factoring
 - Square roots
 - Zeros, extreme values and symmetry

Quarter IV

Topic: Interpreting Categorical and Quantitative Data

- XI. Data Analysis and Probability
 - a. Matrices
 - i. Data organization
 - ii. Addition, subtraction and multiplication
 - b. Data set comparisons
 - i. Shape
 - ii. Center
 - iii. Spread
 - iv. Mean
 - v. Standard deviation
 - c. Measures of central tendency
 - d. Probability
 - i. Theoretical and experimental
 - ii. Events
 - Independent/dependent
 - Exclusive/overlapping

Topic: Reasoning with Equations

- XII. Radical Expressions and Equations
 - a. Pythagorean Theorem
 - b. Radicals
 - i. Standard form
 - ii. Simplifying
 - iii. Addition, subtraction, multiplication and division

Topic: Arithmetic with Polynomials and Radical Expressions

- XIII. Rational Expressions and Equations
 - a. Rational expressions
 - i. Simplify
 - ii. Addition and subtraction
 - iii. Multiplication and division

Topic: Financial Literacy

- XIV. Credit and Debt Management
 - a. Credit cards
 - b. Savings strategies
 - c. Identity protection
 - d. Financial products and services
 - e. Interest rates
 - f. Bankruptcy

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 8 Mathematics - Algebra	Topic: Numbers, Variables and Expressions	
		Goal 1: The student will explore the basic language of algebra. Topics include writing and simplifying numeric and algebraic expressions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>Review prerequisite concepts including, but not limited to:</p> <ul style="list-style-type: none"> -classifying, graphing and comparing real numbers -identifying and using properties of operations and relationships -simplifying numeric expressions using all four operations <p>(A-SSE.1.a, A-SSE.2)</p> <p>1.1. Write algebraic expressions. (A-SSE.1.a)</p> <p>1.2. Simplify expressions including expressions with exponents. (A-SSE.2)</p> <p>1.3. Make sense of problems and persevere in solving them. (MP.1)</p> <p>1.4. Reason abstractly and quantitatively. (MP.2)</p>	<p>Essential Questions:</p> <p>How does recognizing, understanding and applying standard rules of math ensure consistent results?</p> <p>How do complex, real-life scenarios require the language of math?</p> <p>What does the language of math look like?</p> <p>Conceptual Understandings:</p> <p>Mathematics is a language of carefully designed terms and symbols.</p> <p>Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, <i>it must be of equal or better quality and at the same or higher cognitive levels.</i></p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models:</p> <ul style="list-style-type: none"> Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects <p>Opportunities for Differentiation:</p> <ul style="list-style-type: none"> Cooperative group work Assignments and assessments differentiated for ability and/or interest <p>Additional Resources:</p> <ul style="list-style-type: none"> Textbook Related resources Blackline masters

Suggested days of Instruction	Curriculum Management System	Topic: Numbers, Variables and Expressions	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 1: The student will explore the basic language of algebra. Topics include writing and simplifying numeric and algebraic expressions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	1.5. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 8 Mathematics - Algebra	Topic: Equations	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 2: The student will explore techniques for solving and applying equations in one variable.	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	2.1. Solve simple and multi-step equations in one variable. (A-REI.1, A-REI.3) 2.2. Solve equations with variables on both sides in one variable. (A-REI.1, A-REI.3) 2.3. Identify and solve equations that have an infinite number of solutions or no solutions. (A-REI.1, A-REI.3) 2.4. Rewrite and use literal equations. (A-CED.4) 2.5. Apply and solve equations related to real-world situations. (A-CED.1) 2.6. Make sense of problems and persevere in solving them. (MP.1) 2.7. Reason abstractly and	Essential Questions: What is the mathematical language of balance? How are equations used to find something you don't know from something you don't know? How are equations related to symmetry? Conceptual Understandings: Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.	NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher. Unit Vocabulary: Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest Additional Resources: Textbook Related resources Blackline masters

Suggested days of Instruction	Curriculum Management System	Topic: Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 2: The student will explore techniques for solving and applying equations in one variable.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	quantitatively. (MP.2) 2.8. Determine an individual's responsibility for personal actions ad contributions to group activities. (9.1.8.C.1)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 8 Mathematics - Algebra	Topic: Ratios, Proportions and Percents	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	3.1. Find rates and ratios. (7.RP.1) 3.2. Convert units and rates including unit or dimensional analysis. (7.RP.1) 3.3. Solve and apply proportions including similar figures and percents. (7.RP.2, 7.RP.2.c, 7.RP.3) 3.4. Solve percent problems by translating to an equation. (7.RP.2, 7.RP.2.c, 7.RP.3) 3.5. Calculate simple interest (in this unit or other applicable unit). (7.RP.3) 3.6. Use appropriate tools strategically. (MP.5) 3.7. Attend to precision. (MP.6)	Essential Questions: How is comparison used to gain knowledge? What does it mean to be equivalent? Conceptual Understandings: Analogies can be quantified. Mathematics is used to make informed decisions about problems in every day life.	NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher. Unit Vocabulary: Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest Additional Resources: Textbook Related resources Blackline masters

Suggested days of Instruction	Curriculum Management System	Topic: Ratios, Proportions and Percents	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 3: The student will explore comparing numbers and expressions using ratios, proportions and percents. Apply the concepts of proportion and similarity to real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
			Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System	Topic: Inequalities	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 4: The student will explore techniques for solving and applying inequalities and compound inequalities in one variable. Illustrate the solution set graphically.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>4.1. Write, graph and identify solutions to inequalities in one variable. (A-REI.3)</p> <p>4.2. Solve simple and multi-step inequalities in one variable. (A-REI.3)</p> <p>4.3. Solve and graph compound inequalities in one variable. (A-REI.3)</p> <p>4.4. Solve and graph absolute value equations and inequalities in one variable. (A-REI.3)</p> <p>4.5. Use intersections and unions of sets when solving compound inequalities. (A-REI.3)</p> <p>4.6. Apply and solve equations related to real-world situations. (A-CED.1)</p> <p>4.7. Construct viable arguments</p>	<p>Essential Questions: How can we communicate situations that are not exact? What is the language of imbalance? How can you communicate that something is between two values?</p> <p>Conceptual Understandings: Things in life are rarely exact. Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Inequalities	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 4: The student will explore techniques for solving and applying inequalities and compound inequalities in one variable. Illustrate the solution set graphically.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	and critique the reasoning of others. (MP.3) 4.8. Attend to precision. (MP.6)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 8 Mathematics - Algebra	Topic: Introduction to Functions	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 5: The student will explore mathematical relationships between two variables or attributes using graphs, tables, expressions, and equations with emphasis on functional relationships.	Essential Questions, Conceptual Understandings
	5.1. Represent mathematical relationships using graphs, tables, and expressions. (F-IF.1, F-IF.2, F-IF.4) 5.2. Identify and represent patterns that describe linear and non-linear functions. (F-IF.1, F-IF.2) 5.3. Determine if a relation is a function. (F-IF.1, F-IF.2) 5.4. Find domain and range and use function notation. (F-IF.1, F-IF.2) 5.5. Identify and extend patterns in sequences. (F-IF.3, F-BF.2) 5.6. Represent arithmetic sequences using function notation. (F-IF.3, F-BF.2) 5.7. Look for and make use of structure.	Essential Questions: How do humans explain their world through quantitative representations? How would your life be affected if the machines around you behaved unpredictably? Conceptual Understandings: Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.	NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher. Unit Vocabulary: Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest Additional Resources: Textbook Related resources Blackline masters

Suggested days of Instruction	Curriculum Management System	Topic: Introduction to Functions	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 5: The student will explore mathematical relationships between two variables or attributes using graphs, tables, expressions, and equations with emphasis on functional relationships.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	(MP.7) 5.8. Look for and express regularity in repeated reasoning. (MP.8)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System	Topic: Linear Relationships	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 6: The student will explore and model linear relationships using graphs, tables and equations. Compare, analyze, interpret the characteristics of linear relationships when applied to real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>6.1. Represent relationships through equations in two or more variables and create graph of the equations (A-CED.2)</p> <p>6.2. Find rates of change from a table. (F-IF.6)</p> <p>6.3. Estimate rate of change from a graph. (F-IF.6)</p> <p>6.4. Find slope.</p> <p>6.5. Compare and analyze characteristics of linear functions represented in different ways. (F-IF.9)</p> <p>6.6. Relate a function's domain to its graph and to the relationship it describes. (F-IF.5)</p> <p>6.7. Write and graph an equation of direct variation.</p>	<p>Essential Questions: Is life a straight line? What types of relationships can be modeled by a straight line? What is the language of linear models? How can real-life situations be represented by linear functions?</p> <p>Conceptual Understandings: Linear models allow us to understand the present and communicate predictions about the future. Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels.</p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Linear Relationships	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 6: The student will explore and model linear relationships using graphs, tables and equations. Compare, analyze, interpret the characteristics of linear relationships when applied to real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>A-REI.10, F-IF.4)</p> <p>6.8. Write and graph linear equations using slope-intercept form, point-slope form, and standard form. (F-IF.4, F-IF.7.a)</p> <p>6.9. Write functions defined by an expression in equivalent forms. (F-IF.8)</p> <p>6.10. Graph functions expressed symbolically. (F-IF.7)</p> <p>6.11. Interpret key features of graphs and tables. (F-IF.4)</p> <p>6.12. Determine whether lines are parallel, perpendicular or neither.</p> <p>6.13. Write equations of parallel and perpendicular lines. (F-BF.1)</p> <p>6.14. Use context to determine</p>		<p>Manipulatives</p> <p>Textbook website</p> <p>Calculators (graphing/scientific)</p>

Suggested days of Instruction	Curriculum Management System	Topic: Linear Relationships	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 6: The student will explore and model linear relationships using graphs, tables and equations. Compare, analyze, interpret the characteristics of linear relationships when applied to real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>explicit expressions, recursive processes and steps for calculation. (F-BF.1.a)</p> <p>6.15. Model real-world scenarios with linear functions. (F-BF.1.a)</p> <p>6.16. Model with mathematics. (MP.4)</p> <p>6.17. Use appropriate tools strategically. (MP.5)</p>		

Suggested days of Instruction	Curriculum Management System	Topic: Systems of Equations and Inequalities	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 7: The student will explore techniques for solving and applying systems of equations and inequalities. Apply these techniques to solve real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>7.1. Solve systems of equations by graphing. (A-REI.6)</p> <p>7.2. Analyze special cases of systems that result in no solution and infinite number of solutions. (A-REI.5)</p> <p>7.3. Solve systems of equations algebraically using substitution and linear combination (adding, subtracting and/or multiplying to eliminate a variable). (A-REI.6)</p> <p>7.4. Model real-world situations using systems of linear equations. (A-CED.3)</p> <p>7.5. Explain why the x-coordinates of the points where the graphs of the equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$.</p>	<p>Essential Questions: How do you communicate choice? What are some of the factors that go into selecting one solution over another? When do real-world problems have many answers?</p> <p>Conceptual Understandings: The best solution to many problems requires analysis of multiple possibilities. Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels.</p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Systems of Equations and Inequalities	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 7: The student will explore techniques for solving and applying systems of equations and inequalities. Apply these techniques to solve real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	(A-REI.11) 7.6. Graph linear inequalities in two variables. (A-REI.12) 7.7. Graph solutions to linear inequalities as a half-plane and the solution set as the intersection of the corresponding half-planes. (A-REI.12) 7.8. Solve systems in inequalities by graphing. (A-REI.6) 7.9. Model real-world situations using systems of linear inequalities. (A-CED.3) 7.10. Determine if solutions are viable or nonviable options within the context. (A-CED.3) 7.11. Model with mathematics. (MP.4)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System	Topic: Systems of Equations and Inequalities	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 7: The student will explore techniques for solving and applying systems of equations and inequalities. Apply these techniques to solve real-world problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	7.12. Use appropriate tools strategically. (MP.5)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 8 Mathematics - Algebra	Topic: Exponents and Exponential Functions	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	Note: Ensure that students understand scientific notation. 8.1. Simplify expressions involving zero and negative exponents. (8.EE.1) 8.2. Multiply and divide powers with the same base. (8.EE.1) 8.3. Raise a power to a power. (8.EE.1) 8.4. Raise a product or quotient to a power. (8.EE.1) 8.5. Write a function in equivalent forms to explain different properties of the function. (F-IF.8) 8.6. Evaluate and graph exponential functions. (F-IF.8.b) 8.7. Distinguish situations that	Essential Questions: How can you communicate ideas that involve very large and very small numbers? Why is it necessary to have so many ways of representing a single number? How do we communicate growth? Conceptual Understandings: Mathematics is a language of carefully designed terms and symbols.	NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher. Unit Vocabulary: Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest Additional Resources: Textbook Related resources Blackline masters

Suggested days of Instruction	Curriculum Management System	Topic: Exponents and Exponential Functions	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 8: The student will explore and model exponential functions using graphs, tables and equations and by applying the rules for operations with exponents. Construct, compare, and analyze exponential functions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>can be models with linear functions from those using exponential functions. (F-LE.1)</p> <p>8.8. Model exponential growth and decay. (F-LE.1.a, F-LE.1.c)</p> <p>8.9. Construct linear and exponential functions from graphs, relationship descriptions or two input-output pairs. (F-LE.2)</p> <p>8.10. Determine that exponential growth exceeds a quantity increasing linearly, quadratically, or as a polynomial function. (F-LE.3)</p> <p>8.11. Reason abstractly and quantitatively. (MP.2)</p> <p>8.12. Construct viable arguments and critique the reasoning of others. (MP.3)</p>		<p>Manipulatives Textbook website Calculators (graphing/scientific)</p>

Suggested days of Instruction	Curriculum Management System	Topic: Polynomials and Factoring	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 9: The student will explore the techniques to add, subtract, multiply and factor polynomials.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>9.1. Classify polynomials. (A-APR.1)</p> <p>9.2. Add and subtract polynomials. (A-APR.1)</p> <p>9.3. Multiply polynomials including the square of a binomial and sum and difference of the same two terms. (A-APR.1)</p> <p>9.4. Factor a monomial from a polynomial. (A-SSE.1, A-SSE.1.a, A-SSE.1.b, A-SSE.2)</p> <p>9.5. Factor trinomials in the form $x^2 + bx + c$. (A-SSE.1, A-SSE.1.a, A-SSE.1.b, A-SSE.2)</p> <p>9.6. Factor trinomials in the form $ax^2 + bx + c$. (A-SSE.1, A-SSE.1.a, A-SSE.1.b, A-SSE.2)</p>	<p>Essential Questions: What does it mean to simplify in the language of algebra? How can patterns be used to simplify mathematical expressions?</p> <p>Conceptual Understandings: Many real-world complex problems require simplification to solve. Mathematics is a language of carefully designed terms and symbols.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels.</p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Polynomials and Factoring	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 9: The student will explore the techniques to add, subtract, multiply and factor polynomials.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>9.7. Factor perfect square trinomials and the difference of two squares. (A-SSE.1, A-SSE.1.a, A-SSE.1.b, A-SSE.2)</p> <p>9.8. Factor higher degree polynomials by grouping. (A-SSE.1, A-SSE.1.a, A-SSE.1.b, A-SSE.2)</p> <p>9.9. Look for and make use of structure. (MP.7)</p> <p>9.10. Look for and express regularity in repeated reasoning. (MP.8)</p>		<p>Manipulatives Textbook website Calculators (graphing/scientific)</p>

Suggested days of Instruction	Curriculum Management System	Topic: Quadratic Functions and Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 10: The student will explore techniques for representing and solving quadratic functions and equations. Construct, compare, and analyze quadratic functions and apply to real-world situations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>10.1. Create equations and inequalities in one variable and use to solve problems. (A-CED.1)</p> <p>10.2. Use complete the square method to transform quadratic equation (x) into form $(x-p)^2 = q$ having the same solutions. (A-REI.4.a)</p> <p>10.3. Graph quadratic functions of the form $y = ax^2$, $y = ax^2 + c$, and $y = ax^2 + bx + c$. (F-IF.7, F-IF.7.a)</p> <p>10.4. Solve quadratic equations by graphing and using square roots. (A-REI.4.b)</p> <p>10.5. Solve quadratic equations by factoring. (A-REI.4.b)</p> <p>10.6. Solve quadratic equations by completing the square. (A-REI.4.b)</p>	<p>Essential Questions: Where are curves found in real-world situations? What types of relationships can be modeled by a curved line? What is the language of quadratic models? How can real-life situations be represented by quadratic functions?</p> <p>Conceptual Understandings: Quadratic models allow us to understand the present and communicate predictions about the future. Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels.</p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Quadratic Functions and Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 10: The student will explore techniques for representing and solving quadratic functions and equations. Construct, compare, and analyze quadratic functions and apply to real-world situations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>10.7. Solve quadratic equations using the quadratic formula. (A-REI.4.b)</p> <p>10.8. Find the number of solutions to a quadratic equation (use discriminant).</p> <p>10.9. Graph polynomial, square root, cube root, step, and absolute functions. (F-IF.7.b, F-IF.7.c)</p> <p>10.10. Factor and complete the square in quadratic functions to show zeros, extreme values and symmetry. (F-IF.8.a)</p> <p>10.11. Identify linear, quadratic and exponential models for data. (F-IF.9)</p> <p>10.12. Look for and make use of structure. (MP.7)</p>		<p>Manipulatives</p> <p>Textbook website</p> <p>Calculators (graphing/scientific)</p>

Suggested days of Instruction	Curriculum Management System	Topic: Data Analysis and Probability	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 11: The student will explore techniques for organizing and analyzing data. Apply the concepts of probability to interpret data.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>11.1. Organize data in a matrix. (N-VM.6)</p> <p>11.2. Add and subtract matrices and multiply a matrix by a scalar. (N-VM.7, N-VM.8)</p> <p>11.3. Use statistics appropriate for the shape of the data to compare center and spread for two or more data sets. (S-ID.2)</p> <p>11.4. Interpret differences in shape, center and spread of data sets. (S-ID.3)</p> <p>11.5. Use mean and standard deviation of a data set to fit a normal distribution and to estimate population percentages. (S-ID.4)</p> <p>11.6. Represent data on two quantitative variables on a scatterplot.</p>	<p>Essential Questions: How can collecting and analyzing data help you make decisions or predictions? In what situations can incorrectly presented data be deceiving or even dangerous? What are the different ways that humans deal with chance?</p> <p>Conceptual Understandings: Raw data becomes useful information after analysis and through appropriate presentation. Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Data Analysis and Probability	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 11: The student will explore techniques for organizing and analyzing data. Apply the concepts of probability to interpret data.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	(S-ID.6, S-ID.6.c) 11.7. Assess the fit of a function by plotting and analyzing residuals. (S-ID.6.a, S-ID.6.b) 11.8. Find mean, median, mode, and range. 11.9. Make and interpret box-and-whisker plots. (S-ID.1) 11.10. Find quartiles and percentiles. 11.11. Classify data and analyze samples and surveys. (S-CP.1) 11.12. Develop a probability distribution for a random variable. (S-MD.3) 11.13. Find permutations and combinations. (S-MD.3)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System	Topic: Data Analysis and Probability	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 11: The student will explore techniques for organizing and analyzing data. Apply the concepts of probability to interpret data.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>11.14. Find theoretical and experimental probabilities. (7.SP.7.a, 7.SP.7.b)</p> <p>11.15. Find probabilities of mutually exclusive and overlapping events. (7.SP.7)</p> <p>11.16. Find probabilities of independent and dependent events. (S-CP.2, S-CP.3)</p> <p>11.17. Describe events as subsets of a sample space using characteristics of the outcomes. (S-CP.1)</p> <p>11.18. Look for and express regularity in repeated reasoning. (MP.8)</p>		

Suggested days of Instruction	Curriculum Management System	Topic: Radical Expressions and Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 12: The student will explore how to simplify radical expressions, solve radical equations and apply these techniques to real-world situations involving the pythagorean theorem.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>12.1. Solve problems using the Pythagorean Theorem. (8.G.7)</p> <p>12.2. A-REI.A.2: Solve equations containing radicals. (A-REI.2)</p> <p>12.3. Simplify radicals to standard radical form.</p> <p>12.4. Simplify radical expressions involving adding/ subtracting, multiplying and dividing.</p> <p>12.5. Model with mathematics. (MP.4)</p>	<p>Essential Questions: How are right triangles used to understand and model our physical world? What does triangulation mean? Why is it necessary to have so many ways of representing a single number?</p> <p>Conceptual Understandings: Mathematics is a language of carefully designed terms and symbols. Mathematics is used to make informed decisions about problems in every day life.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels.</p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Unit Vocabulary:</p> <p>Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects</p> <p>Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest</p> <p>Additional Resources: Textbook Related resources Blackline masters</p>

Suggested days of Instruction	Curriculum Management System	Topic: Radical Expressions and Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 12: The student will explore how to simplify radical expressions, solve radical equations and apply these techniques to real-world situations involving the pythagorean theorem.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
			Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System	Topic: Rational Expressions and Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 13: The student will explore operations with rational expressions and how to solve rational equations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	13.1. Simplify rational expressions. 13.2. Multiply and divide rational expressions. (A-APR.7) 13.3. Simplify complex fractions. (A-APR.1) 13.4. Divide polynomials by a monomial. (A-APR.1) 13.5. Add and subtract rational expressions. (A-APR.7) 13.6. Solve rational equations and proportions. (A-REI.2) 13.7. Make sense of problems and persevere in solving them. (MP.1) 13.8. Reason abstractly and	Essential Questions: How do we quantify things that can't be counted? What does it mean to simplify in the language of algebra? How can patterns be used to simplify mathematical expressions? Conceptual Understandings: Mathematics is a language of carefully designed terms and symbols. Many real-world complex problems require simplification to solve.	NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels. Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher. Unit Vocabulary: Assessment Models: Homework Checkpoints Observation Questioning strategies Quizzes Tests Projects Opportunities for Differentiation: Cooperative group work Assignments and assessments differentiated for ability and/or interest Additional Resources: Textbook Related resources Blackline masters

Suggested days of Instruction	Curriculum Management System	Topic: Rational Expressions and Equations	
	Subject/Grade Level: Grade 8 Mathematics - Algebra	Goal 13: The student will explore operations with rational expressions and how to solve rational equations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	quantitatively. (MP.2)		Manipulatives Textbook website Calculators (graphing/scientific)

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade: 8 Mathematics – Algebra (Personal Financial Literacy)	Topic: Credit and Debt Management	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
14	<p>14.1. Understand the basics of credit and debt management. (9.2.8.B.10, 9.2.8.C.2)</p> <p>14.2. Identify and understand the benefits, responsibilities, and challenges of credit card use. (9.2.8.C.8, 9.2.8.C.9)</p> <p>14.3. Know that having a credit card is a responsibility and requires you to exercise control. When used responsibly, it is a very valuable and helpful financial tool. (9.2.8.C.6, 9.2.8.C.7, 9.2.8.C.10)</p> <p>14.4. Work collaboratively using technology to perform various tasks associated with credit and debt while developing an understanding of legal and ethical behaviors/responsibilities. (9.2.8.F.2)</p>	<p>Essential Questions: Why is it important to understand your personal finances? What are my responsibilities regarding credit and debt? How can you learn to be more financially successful?</p> <p>Conceptual Understandings: Understanding your finances is essential to prepare for the future. Learning about finances is a personal responsibility with many benefits.</p>	<p>NOTE: The assessment models provided in this document are suggestions for the teacher. If the teacher chooses to develop his/her own model, it must be of equal or better quality and at the same or higher cognitive levels.</p> <p>Depending upon the needs of the class, the assessment questions may be answered in the form of essays, quizzes, mobiles, PowerPoint, oral reports, booklets, or other formats of measurement used by the teacher.</p> <p>Learning Activities: Lesson 1: Learning about Credit (7 days) Lesson 2: Understanding Credit Card terms (7 days) Glossary of credit terms Class discussions Articles/news stories Current events</p> <p>Assessment Models: Completion of Activity Sheets on each Module (3+4) - see links below Daily Partner Progress response sheet Final presentation (Prezi, PowerPoint, Photostory, advertisement, newsletter, or brochure) Partner progress worksheet</p> <p>Additional Resources:</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade: 8 Mathematics – Algebra (Personal Financial Literacy)	Topic: Credit and Debt Management	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>14.5. Justify the concept of “paying yourself first” as a financial savings strategy. (9.2.8.B.2)</p> <p>14.6. Evaluate the relationship of cultural traditions and historical influences on financial practice. (9.2.8.B.5)</p> <p>14.7. Determine the most appropriate use of various financial products and services (e.g., ATM, debit cards, credit cards, checkbooks). (9.2.8.B.10)</p> <p>14.8. Justify safeguarding personal information when using credit cards, banking electronically, or filing forms. (9.2.8.B.11)</p> <p>14.9. Evaluate the appropriate financial institutions to assist with meeting various personal financial needs and goals.</p>		<p>Module resources</p> <p>https://credited.usecreditwisely.com/workshop/mainmenu.php</p> <p>Module 3 - https://credited.usecreditwisely.com/workshop/module3.php</p> <p>Module 4 - https://credited.usecreditwisely.com/workshop/module4.php</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade: 8 Mathematics – Algebra (Personal Financial Literacy)	Topic: Credit and Debt Management	
		Goal 14: The student will be able to use technology and Internet resources to learn about credit and debt. The student will develop an understanding of various financial tools, their benefits, and credit and debt responsibilities.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	(9.2.8.B.12) 14.10. Compare and contrast the financial products and services offered by different types of financial institutions. (9.2.8.C.1) 14.11. Compare and contrast debt and credit management strategies. (9.2.8.C.2) 14.12. Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages) and compare the interest rates associated with each. (9.2.8.C.3) 14.13. Calculate the cost of borrowing various amounts of money using different types of credit (e.g., credit cards, installment loans, mortgages). (9.2.8.C.4)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade: 8 Mathematics – Algebra (Personal Financial Literacy)	Topic: Credit and Debt Management	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 14: The student will be able to use technology and Internet resources to learn about credit and debt. The student will develop an understanding of various financial tools, their benefits, and credit and debt responsibilities.	Essential Questions, Conceptual Understandings
	14.14. Determine ways to leverage debt beneficially. (9.2.8.C.5) 14.15. Determine potential consequences of using “easy access” credit (e.g., using a line of credit vs. obtaining a loan for a specific purpose). (9.2.8.C.6) 14.16. Explain the meaning and possible consequences of “predatory lending practices.” (9.2.8.C.7) 14.17. Explain the purpose of a credit score and credit record, and summarize borrowers’ credit report rights. (9.2.8.C.8) 14.18. Summarize the causes and consequences of personal bankruptcy. (9.2.8.C.9)		

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	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 14: The student will be able to use technology and Internet resources to learn about credit and debt. The student will develop an understanding of various financial tools, their benefits, and credit and debt responsibilities.	Essential Questions, Conceptual Understandings
	<p>14.19. Determine when there is a need to seek credit counseling and appropriate times to utilize it. (9.2.8.C.10)</p> <p>14.20. Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards. (9.2.8.E.2)</p> <p>14.21. Evaluate the appropriateness of different types of monetary transactions (e.g., electronic transfer, check, certified check, money order, gift card, barter) for various situations. (9.2.8.E.3)</p> <p>14.22. Compare the value of goods or services from different sellers when purchasing large quantities and small quantities. (9.2.8.E.4)</p>		

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	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>14.23. Identify the components of written and verbal contracts and inherent responsibilities of contracting parties. (9.2.8.E.5)</p> <p>14.24. Evaluate the fraudulent activities impact consumers and justify the creation of consumer protection laws. (9.2.8.E.6)</p> <p>14.25. Examine the implications of legal and ethical behaviors when making financial decisions. (9.2.8.F.2)</p> <p>14.26. Compare the impact of losses associated with different types of financial risk. (9.2.8.G.1)</p>		