SUBJECT MATTER: Mathematics   Grade: __8__

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
				FOR ALL UNITS: Prentice Hall: Mathematics Course 3 Prentice Hall: Teacher Resource Aids Practice Reteaching Enrichment Chapter Projects Problems Solving Cumulative Review Presentations Plus (Software) Word Wall & Charts Technology: http://illustrativemathematics.org/standards/k8 http://illuminations.nctm.org/Lessons.aspx?grade=3&grade=4&standard=3 http://www.ixl.com/ http://nsdl.org/commcore/math?id=8 http://www.thinkfinity.org/lesson-plans	

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
The Number System	**Rational and Irrational Numbers**	• Define irrational numbers • Show that the decimal expansion of rational numbers repeats eventually. • Convert a decimal expansion which repeats eventually into a rational number. • Show informally that every number has a decimal expansion. • Approximate irrational numbers as rational numbers. • Approximately locate irrational numbers on a number line. • Estimate the value of expressions involving irrational numbers using rational approximations. (For example, by truncating the decimal expansion of 2, show that 2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.) • Compare the size of irrational numbers using rational approximations.	•Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lessons: 1-1 pp. 5-11 1-3 pp.16-21 1-7 pp. 39-44 1-8 pp 45-51 4-1pp.189-189 4-2 pp.190-195 4-3 pp. 196-200 4-4 pp. 201-204 4-5 pp. 205-210	8.NS.1 8.NS.2

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Functions	**Input Output Relationships**	• Understand that a function is a rule that assigns to each input exactly one output. • Identify cases in which a system of two equations in two unknowns has no solution • Identify cases in which a system of two equations in two unknowns has an infinite number of solutions. • Solve a system of two equations (linear) in two unknowns algebraically. • Solve simple cases of systems of two linear equations in two variables by inspection. • Estimate the point(s) of intersection for a system of two equations in two unknowns by graphing the equations. • Identify functions algebraically including slope and y intercept. • Identify functions using graphs. • Identify functions using tables. • Identify functions using verbal descriptions. • Compare and Contrast 2 functions with different representations. • Draw conclusions based on different representations of functions.	Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lessons: 3-1 pp.117-121 3-2 pp. 122-126 12-1 pp. 637-641 12-2 pp. 643-647	8.F.1 8.F.2

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Functions	**Linear Functions**	• Recognize that a linear function is graphed as a straight line. • Recognize the equation y=mx+b is the equation of a function whose graph is a straight line where m is the slope and b is the y-intercept. • Provide examples of nonlinear functions using multiple representations. • Compare the characteristics of linear and nonlinear functions using various representations. • Recognize that slope is determined by the constant rate of change. • Recognize that the y-intercept is the initial value where x=0. • Determine the rate of change from two (x,y) values, a verbal description, values in a table, or graph. • Determine the initial value from two (x,y) values, a verbal description, values in a table, or graph. • Construct a function to model a linear relationship between two quantities. • Relate the rate of change and initial value to real world quantities in a linear function in terms of the situation modeled and in terms of its graph or a table of values. • Analyze a graph and describe the functional relationship between two quantities using the qualities of the graph.	Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lessons: 3-3 pp. 128-133 3-4 pp. 136-141 3-5 pp. 142-145 3-6 pp. 147-150 3-7 pp. 152-156 12-3 pp. 648-652 12-4 pp. 653-667 12-5 pp. 658-662 Other Resources: 8.EE.4 and EE.6 http://illuminations.nctm.org/LessonDetail.aspx?ID=L728	8.F.4 8.F.3 8.F.5 8.EE.5 8.EE.6

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
		• Sketch a graph given a verbal description of its qualitative features.			
		• Interpret the relationship between x and y values by analyzing a graph.			
		• Graph proportional relationships.			
		• Compare two different proportional relationships represented in different ways. (For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.)			
		• Interpret the unit rate of proportional relationships as the slope of the graph.			
		• Identify characteristics of similar triangles.			
		• Find the slope of a line.			
		• Determine the y-intercept of a line. (Interpreting unit rate as the slope of the graph is included in 8.EE.)			
		• Analyze patterns for points on a line through the origin. • Derive an equation of the form y = mx for a line through the origin.			
		• Analyze patterns for points on a line that do not pass through or include the origin. • Derive an equation of the form y=mx + b for a line intercepting the vertical axis at b (the y-intercept).			
		• Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.			

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Expressions and equations	**Working with Exponents**	• Explain the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. • Apply the properties of integer exponents to produce equivalent numerical expressions. • Use square root and cube root symbols to represent solutions to equations of the form $x2 = p$ and $x3 = p$, where p is a positive rational number. • Evaluate square roots of small perfect squares. • Evaluate cube roots of small perfect cubes. • Know that the square root of 2 is irrational. • Express numbers as a single digit times an integer power of 10. • Use scientific notation to estimate very large and/or very small quantities. • Compare quantities to express how much larger one is compared to the other. • Perform operations using numbers expressed in scientific notations. • Use scientific notation to express very large and very small quantities. • Interpret scientific notation that has been generated by technology. • Choose appropriate units of measure when using scientific notation.	Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lessons: 7-1 pp. 365-369 7-2 pp. 370-374 7-3 pp. 376-381 7-4 pp. 383-387 7-5 pp.388-391 7-6 pp. 392-395 (Need to go deeper into negative exponents) 4-8 pp. 221-225 Other resources: (Roots) http://illuminations.nctm.org/LessonDetail.aspx?id=L854 http://illuminations.nctm.org/LessonDetail.aspx?ID=L622	8.EE.1 8.EE.2 8.EE.3 8.EE.4

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Expressions and equations	**Linear equations**	• Give examples of linear equations in one variable with one solution and show that the given example equation has one solution by successively transforming the equation into an equivalent equation of the form x = a. • Give examples of linear equations in one variable with infinitely many solutions and show that the given example has infinitely many solutions by successively transforming the equation into an equivalent equation of the form a = a. • Give examples of linear equations in one variable with no solution and show that the given example has no solution by successively transforming the equation into an equivalent equation of the form b = a, where a and b are different numbers. • Solve linear equations with rational number coefficients. • Solve equations whose solutions require expanding expressions using the distributive property and/ or collecting like terms.	Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lesson: 2-1 pp. 61-66 2-2 pp. 69-72 2-3 pp. 73-77 2-4 pp. 78-83	8.EE.7.a 8.EE.7.b

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Expressions and equations	**Formulating and Solving systems Of linear equations**	• Identify the solution(s) to a system of two linear equations in two variables as the point(s) of intersection of their graphs. • Describe the point(s) of intersection between two lines as points that satisfy both equations simultaneously. • Define "inspection". • Identify cases in which a system of two equations in two unknowns has no solution • Identify cases in which a system of two equations in two unknowns has an infinite number of solutions. • Solve a system of two equations (linear) in two unknowns algebraically. • Solve simple cases of systems of two linear equations in two variables by inspection. • Estimate the point(s) of intersection for a system of two equations in two unknowns by graphing the equations.	•Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	No Text Resources Online Resources http://mdk12.org/instruction/clg/lesson_plans/algebra_data_analysis/LinearEquationsStandard_123.html http://digitalcommons.brockport.edu/cgi/viewcontent.cgi?article=1221&context=cmst_lessonplans http://www.geogebra.org/en/upload/files/english/nebsary/Multimedia2Assignment/LessonPlan.pdf http://illuminations.nctm.org/LessonDetail.aspx?id=L382 http://dnet01.ode.state.oh.us/IMS.ItemDetails/LessonDetail.aspx?id=0907f84c80532636 http://alex.state.al.us/lesson_view.php?id=24046 http://math.buffalostate.edu/~it/projects/rogers.pdf http://www.digitalwish.com/dw/digitalwish/view_lesson_plans?id=5360 http://www.ilovemath.org/index.php?option=com_docman&task=cat_view&gid=53	8.EE.8.a 8.EE.8b. 8.EE.8.c

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Geometry	**Pythagorean Theorem**	• Define key vocabulary: square root, Pythagorean Theorem, right triangle, legs a & b, hypotenuse, sides, right angle, converse, base, height, proof. • Be able to identify the legs and hypotenuse of a right triangle. • Explain a proof of the Pythagorean Theorem. • Explain a proof of the converse of the Pythagorean Theorem. • Recall the Pythagorean Theorem and its converse. • Solve basic mathematical Pythagorean Theorem problems and its converse to find missing lengths of sides of triangles in two and three-dimensions. • Apply Pythagorean theorem in solving real-world problems dealing with two and three-dimensional shapes. • Determine how to create a right triangle from two points on a coordinate graph. • Use the Pythagorean Theorem to solve for the distance between the two points.	•Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lesson: 4-6 pp 226-231 Extension pp.232 Extension: "Area and the Pythagorean Theorem," p. 232 Materials: Technology: http://illustrativemathematics.org/standards/k8 http://illuminations.nctm.org/LessonDetail.aspx?ID=L684 http://www.brainingcamp.com/resources/math/pythagorean-formula/lesson.php	8.G.6 8.G.7 8.G.8

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Geometry	**Volume**	• Identify and define vocabulary: cone, cylinder, sphere, radius, diameter, circumference, area, volume, pi, base, height • Know formulas for volume of cones, cylinders, and spheres. • Compare the volume of cones, cylinders, and spheres. • Determine and apply appropriate volume formulas in order to solve mathematical and real-world problems for the given shape. • Given the volume of a cone, cylinder, or sphere, find the radii, height, or approximate for π.	Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lesson: 9-6 pp. 500-505 9-7 pp.506-510 (cone, cylinders, prisms, & Pyraminds) Technology: http://illuminations.nctm.org/LessonDetail.aspx?ID=L639	8.G.9

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Geometry	**Understanding Congruence, Transformations, & Similarity**	• Define & identify rotations, reflections, and translations. • Identify corresponding sides & corresponding angles. • Understand prime notation to describe an image after a translation, reflection, or rotation. • Identify center of rotation., line of reflection, direction and degree of rotation. • Use physical models, transparencies, or geometry software to verify the properties of rotations, reflections, and translations (ie. Lines are taken to lines and line segments to line segments of the same length, angles are taken to angles of the same measure, & parallel lines are taken to parallel lines.) • Define congruency. • Identify symbols for congruency. • Apply the concept of congruency to write congruent statements. • Reason that a 2-D figure is congruent to another if the second can be obtained by a sequence of rotations, reflections, translation. • Describe the sequence of rotations, reflections, translations that exhibits the	•Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lessons: 3-8 pp. 157-162 3-9 pp. 163- 168 3-10 pp. 169-174 Other Resources: http://illuminations.nctm.org/LessonDetail.aspx?ID=L260 http://illuminations.nctm.org/LessonDetail.aspx?ID=L259	8.G.1.a.b.c 8.G.2 8.G.4 8.G.3

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
		congruence between 2-D figures using words.			
		• Define dilations as a reduction or enlargement of a figure.			
		• Identify scale factor of the dilation.			
		• Make sense of problems and persevere in solving them.			
		• Describe the effects of dilations, translations, rotations, & reflections on 2-D figures using coordinates.			
		• Define similar figures as corresponding angles are congruent and corresponding sides are proportional.			
		• Recognize symbol for similar.			
		• Use Angle-Angle Criterion to prove similarity among triangles. (Give an argument in terms of transversals why this is so.)			
		• Apply the concept of similarity to write similarity statements.			
		• Reason that a 2-D figure is similar to another if the second can be obtained by a sequence of rotations, reflections, translation, or dilation.			
		• Describe the sequence of rotations, reflections, translations, or dilations that exhibits the similarity between 2-D figures using words and/or symbols.			

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Geometry	**Relationships in Geometric Figures**	• Define similar triangles • Define and identify transversals • Identify angles created when parallel line is cut by transversal (alternate interior, alternate exterior, corresponding, vertical, adjacent, etc.) • Justify that the sum of interior angles equals 180. (For example, arrange three copies of the same triangle so that the three angles appear to form a line.) • Justify that the exterior angle of a triangle is equal to the sum of the two remote interior angles. • Use Angle-Angle Criterion to prove similarity among triangles. (Give an argument in terms of transversals why this is so.)	•Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lesson: 8-1 pp.407-412 8-2 pp. 413-418 Extension: "Parallel and Perpendicular Lines," p. 419 8-3 pp. 420- Materials: Technology:	8.EE.7.b 8.G.5 .

Unit	Content	Skills	Methods of Assessment	Teacher Resources	Common Core Standards
Statistics and probability	**Patterns in Bivariate Data**	• Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association • Construct scatter plots for bivariate measurement data Interpret scatter plots for bivariate (two different variables such as distance and time) measurement data to investigate patterns of association between two quantities • Know straight lines are used to model relationships between two quantitative variables. • Informally assess the model fit by judging the closeness of the data points to the line. • Fit a straight line within the plotted data. • Find the slope and intercept of a linear equation. • Interpret the meaning of the slope and intercept of a linear equation in terms of the situation. (For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.) • Solve problems using the equation of a linear model. • Recognize patterns shown in comparison of two sets of data. • Know how to construct a two-way table. • Interpret the data in the two-way table to recognize patterns. (For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?) • Use relative frequencies of the data to describe relationships (positive, negative, or no correlation)	Teacher Observations & Questioning •Class Participation •Daily Classwork •Problems of the Day/ Warm-Up Activities •Wrap-Up Activities •Cooperative Activities •Quick Quizzes •Unit Tests •Projects •Released MCAS sample questions	Text Lesson: 10-5 pp. 557-562 Other Resources: http://illuminations.nctm.org/LessonDetail.aspx?ID=U165	8.SP.1 8.SP.2 8.SP.3 8.SP.4

Note: All aspects of these standards are assessable in 2013.

*8.NS.1
*8.NS.2
*8.EE.1
*8.EE.2
*8.EE.3
*8.EE.4
*8.EE.5
*8.EE.7
8.EE.8
*8.F.1
8.F.2
*8.F.3
*8.F.4
*8.F.5
*8.G.1
*8.G.2
*8.G.3
*8.G.4
*8.G.7
*8.G.8
*8.G.9
*8.SP.1
8.SP.2
*8.SP.3

* Denotes standards from the 2011 MA Mathematics framework that connect to the 2000/2004 MA Mathematics framework.

Ware Public Schools
MATH CURRICULUM - Grades 8-12

SUBJECT MATTER: Basic Algebra   *(Semester 1)*   Grades: 9-12

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
Unit 1 **Number and Number Operations**	How do graphs and tables help to organize data? Why do we use variables? Is it more efficient to use variables or numbers?	The students will be able to: 1. Represent numbers and number operations. 2. Use grouping symbols. 3. Evaluate variable expressions. 4. Represent real-life quantities . 5. Evaluate expressions containing exponents . 6. Use order of operations to evaluate algebraic expressions . 7. Evaluate expressions with a calculator. 8. Check and solve equations. 9. Check solutions of inequalities . 10. Translate verbal phrases and sentences into algebraic equations and inequalities. 11. Use algebra to solve real-life problems. 12. Make an algebraic model for a real-life problem. 13. Use tables and graphs to organize data.	Create flash terms for vocabulary terms Find 5 graphs/tables from magazines or newspapers Alternate assessment chapter 1 math log MCAS multiple choice/short answer questions Quizzes and Tests Class work Homework	Extra practice workbook DOE website Alternate Assessment workbook Teacher created quizzes and tests Formal Assessments workbook	A-SSE 1 N-RN 1 N-Q 3A A-CED 2
Unit 2 **Rules of Algebra**	What is the difference between a ratio and a rate? Why is it better to	The students will be able to: 1. Graph and compare real numbers. 2. Find opposites and absolute values. 3. Add, subtract, multiply and divide real numbers.	Open response questions Go to the supermarket and	Extra Practice workbook DOE Website Alternate Assessment	A-SSE 1A,3A N-RN 1,3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
	buy things at a supermarket in large quantities?	4. Add, subtract, multiply and divide real numbers using a calculator. 5. Simplify the difference of two algebraic expressions. 6. Organize data in a matrix. 7. Add and subtract matrices. 8. Use the distributive property. 9. Simplify expressions by combining like terms. 10. Express division as multiplication. 11. Use rates and ratios to relate quantities.	copy unit prices for 2 items in different quantities MCAS open response, multiple choice and short answer questions Quizzes and tests Homework Class work	workbook Teacher created quizzes and tests Formal Assessments workbook Algebra tiles	
Unit 3 **Solving** **Linear** **Equations**	In what ways can equations of lines be graphed? In what ways can slope or rate of change be calculated, measured and graphed?	The students will be able to: 1. Solve equations systematically using addition, subtraction and division. 2. Use two or more transformations to solve an equation. 3. Collect variables on one side of an equation. 4. Use algebraic models in real-life situations. 5. Use a problem-solving plan for problems that fit a linear model. 6. Find exact and approximate solutions of equations with decimals. 7. Solve problems that use decimal measurements. 8. Solve literal equations for a specified variable. 9. Use a coordinate plane to match points with ordered pairs of numbers. 10. Use a scatterplot. 11. Draw scatterplots using a graphing calculator.	Plot ordered pairs in the coordinate plane to create a picture Ball Drop lab MCAS open response, short answer and multiple choice questions Graphing calculator activity Quizzes and tests Homework Class work	Cartesian Cartoons workbook by Mystery Media Algebra with Pizzazz Extra Practice workbook Teacher created quizzes and tests Formal Assessments workbook DOE website	A-CED 3,4 A-REI 1,3,3A,12 S-ID 1,2,3,4,6 S-IC 3,4 N-Q1

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
Unit 4 **Graphing Linear Equations**	How are the graphs of linear equations used to solve real-life problems? What is the relationship between parallel lines and between vertical and horizontal lines?	The students will be able to: 1. Graph horizontal and vertical lines. 2. Use equations of horizontal and vertical lines in real-life settings. 3. Graph a linear equation from a table of values. 4. Interpret graphs of linear equations. 5. Use a graphing calculator to sketch linear equations. 6. Find the intercepts of the graph of a linear equation. 7. Use intercepts to sketch a quick graph of a line. 8. Find the slope of a line using two of its points. 9. Interpret slope as a constant rate of change. 10. Find the slope and y-intercept of an equation. 11. Use the slope-intercept form to sketch a line and solve problems. 12. Approximate solutions of real-life problems by using a graph. 13. Graph an absolute value equation. 14. Model a real-life situation using graphs of absolute value equations. 15. Solve and check absolute value equations algebraically. 16. Use a graph to check solutions of absolute value equations.	Graphing calculator activity Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra practice workbook DOE website Formal Assessments workbook Teacher created quizzes and tests	A-REI 3,3A F-IF 6 A-CED 2 S-ID 7,8,9 G-GPE 5 N-Q 2,3

Ware Public Schools
MATH CURRICULUM - Grades 8-12

SUBJECT MATTER: Basic Algebra Semester 2   **Grades: 9-12**

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 1 **Writing Linear Equations**	How are different forms of the equation of a line written so that they help solve real-world problems?	The students will be able to: 1. Use the slope-intercept form to write an equation of a line. 2. Model a real-life situation with a linear equation. 3. Use the slope and any point on the line to write an equation of the line. 4. Write an equation of a line given two points on the line. 5. Find a linear equation that approximates a set of data points. 6. Use scatter plots to determine positive, negative, or no correlation. 7. Use a graphing calculator to find the best fitting line. 8. Transform a linear equation into standard form. 9. Use the point slope form to write a linear equation. 10. Create and use linear models to solve problems.	Charity Walk-a-thon Project Problem solving packet Have students create own word problems Graphing calculator activity Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Teacher generated project Teacher generated problem solving packet Extra Practice workbook Teacher created quizzes and tests Formal Assessments workbook DOE website	G-GPE 5 F-IF 6 A-CED 2,3 A-REI 3 F-LE 1
Unit 2 **Solving and Graphing**	How are linear inequalities and their graphs useful in solving problems?	The students will be able to: 1. Solve and graph linear inequalities in one variable. 2. Write and use a linear inequality as a	Have students create their own word problems on inequalities	Extra Practice workbook DOE website	A-REI 1,3,3A,6,7 A-CED 2,3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Inequalities		model for a real-life situation. 3. Solve and graph compound inequalities. 4. Model a real-life situation with inequalities. 5. Solve absolute value equations. 6. Graph a linear inequality in two variables. 7. Use a graphing calculator to sketch the graph of an inequality in two variables.	Find examples of time line, picture and circle graphs in magazines and newspapers Graphing calculator activity	Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	
Unit 3 **Solving Systems of Equations**	How can solving systems of equations help determine the proper mixture of chemical solutions? How can solving systems of linear inequalities help businesses find ways to maximize profit and minimize cost?	The students will be able to: 1. Solve a system of linear equations by graphing. 2. Model real-life situations using a system of linear inequalities. 3. Use a graphing calculator to graph a linear system. 4. Use substitution to solve a linear system. 5. Use linear combinations to solve a linear system. 6. Write and use a linear system as a real-life model. 7. Visualize the solution possibilities for linear systems. 8. Identify a linear system that has many solutions. 9. Solve a system of linear inequalities by graphing. 10. Solve a linear programming problem.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Teacher generated project Teacher generated problem solving packet Extra Practice workbook Teacher created quizzes and tests Formal Assessments workbook DOE website	A-CED 3 A-REI 5,6
Unit 4 **Powers and Exponents**	In what ways can powers and roots be used to solve real-life problems?	The students will be able to: 1. Use the multiplication properties of exponents to evaluate powers and simplify expressions. 2. Use the powers and the exponential change equation as models. 3. Use negative and zero exponents in algebraic expressions. 4. Use powers as models.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework	Teacher generated project Teacher generated problem solving packet Extra Practice workbook Teacher created quizzes and tests	N-RN 1,2 A-SSE 1B,3 F-IF 3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		5. Use the division properties of exponents to evaluate powers and simplify expressions. 6. Use scientific notation to express large and small numbers. 7. Perform operations with numbers in scientific notation, with and without a calculator. 8. Use scientific notation to solve real-life problems. 9. Use the compound interest formula. 10. Use models for exponential growth and decay to solve real- life problems. 11. Use a calculator to find a best-fitting exponential growth and decay model.	Class work Have the students create their own growth and decay problems to solve	Formal Assessments workbook DOE website	

Ware Public Schools
MATH CURRICULUM - Grades 8-12

SUBJECT MATTER: Algebra 1   *(Semester 1)*   **Grades: 8-12**

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
Unit 1 **Number and Number Operations** **Rules of Algebra**	How do graphs and tables help to organize data? Why do we use variables? Is it more efficient to use variables or Rules of Algebra numbers? What is the difference between a ratio and a rate? Why is it better to buy things at a supermarket in large quantities?	The students will be able to: 14. Evaluate variable expressions. 15. Represent real-life quantities . 16. Evaluate expressions containing exponents. 17. Use order of operations to evaluate algebraic expressions. 18. Evaluate expressions with a calculator . 19. Check and solve equations. 20. Make an algebraic model for a real-life problem. 21. Use tables and graphs to organize data. 22. Use the distributive property. 23. Simplify expressions by combining like terms. 24. Express division as multiplication. 25. Use rates and ratios to relate quantities .	Create flash terms for vocabulary terms Alternate assessment chapter 1 math log MCAS multiple choice/short answer questions Quizzes and Tests Class work Homework Open response questions Go to the supermarket and copy unit prices for 2 items in different	Extra practice workbook DOE website Alternate Assessment workbook Teacher created quizzes and tests Formal Assessments workbook	A-SSE 1 N-RN 1 N-Q3A A-CED 2

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
			quantities		
Unit 2 **Solving** **Linear** **Equations**	In what ways can equations of lines be graphed? In what ways can slope or rate of change be calculated, measured and graphed?	The students will be able to: 12. Collect variables on one side of an equation. 13. Use algebraic models in real-life situations. 14. Use a problem-solving plan for problems that fit a linear model. 15. Find exact and approximate solutions of equations with decimals. 16. Solve problems that use decimal measurements. 17. Solve literal equations for a specified variable. 18. Use a coordinate plane to match points with ordered pairs of numbers. 19. Use a scatterplot. 20. Draw scatterplots using a graphing calculator.	Plot ordered pairs in the coordinate plane to create a picture Ball Drop lab MCAS open response, short answer and multiple choice questions Graphing calculator activity Quizzes and tests Homework Class work	Cartesian Cartoons workbook by Mystery Media Algebra with Pizzazz Extra Practice workbook Teacher created quizzes and tests Formal Assessments workbook DOE website	A-SSE 1A,3A N-RN 1,3 A-CED 3,4 A-REI 1,3,3A,12 S-ID 1,2,3,4,6 S-IC 3,4 N-Q 1
Unit 3 **Graphing Linear Equations**	How are the graphs of linear equations used to solve real-life problems? What is the relationship between parallel lines and between vertical and horizontal lines?	The students will be able to: 17. Graph horizontal and vertical lines. 18. Use equations of horizontal and vertical lines in real-life settings. 19. Graph a linear equation from a table of values. 20. Interpret graphs of linear equations. 21. Use a graphing calculator to sketch linear equations. 22. Find the intercepts of the graph of a linear equation. 23. Use intercepts to sketch a quick graph of a line. 24. Find the slope of a line using two of its	Graphing calculator activity Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra practice workbook DOE website Formal Assessments workbook Teacher created quizzes and tests	A-REI 3,3A F-IF 6 A-CED 2 S-ID 7,8,9 G-GPE 5 N-Q 2,3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
		points. 25. Interpret slope as a constant rate of change. 26. Find the slope and y-intercept of an equation. 27. Use the slope-intercept form to sketch a line and solve problems. 28. Approximate solutions of real-life problems by using a graph. 29. Graph an absolute value equation. 30. Model a real-life situation using graphs of absolute value equations. 31. Solve and check absolute value equations algebraically. 32. Use a graph to check solutions of absolute value equations.			
Unit 4 **Writing Linear Equations**	How are different forms of the equation of a line written so that they help solve real-world problems?	The students will be able to: 11. Use the slope-intercept form to write an equation of a line. 12. Model a real-life situation with a linear equation. 13. Use the slope and any point on the line to write an equation of the line. 14. Write an equation of a line given two points on the line. 15. Find a linear equation that approximates a set of data points. 16. Use scatter plots to determine positive, negative, or no correlation. 17. Use a graphing calculator to find the best fitting line. 18. Transform a linear equation into standard form. 19. Use the point slope form to write a linear equation. 20. Create and use linear models to solve problems.	Charity Walk-a-thon Project Problem solving packet Have students create own word problems Graphing calculator activity Quizzes and tests MCAS open response, short answer and multiple choice questions Homework	Teacher generated project Teacher generated problem solving packet Extra Practice workbook Teacher created quizzes and tests Formal Assessments workbook DOE website	G-GPE 5 F-IF 6 A-CED 2,3 A-REI 3 F-LE 1

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
			Class work		
Unit 5 **Solving and Graphing Inequalities**	How are linear inequalities and their graphs useful in solving problems?	The students will be able to: 8. Solve and graph linear inequalities in one variable. 9. Write and use a linear inequality as a model for a real-life situation. 10. Solve and graph compound inequalities. 11. Model a real-life situation with inequalities. 12. Solve absolute value equations. 13. Graph a linear inequality in two variables. 14. Use a graphing calculator to sketch the graph of an inequality in two variables.	Have students create their own word problems on inequalities Find examples of time line, picture and circle graphs in magazines and newspapers Graphing calculator activity	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	A-REI 1,3,3A,6,7 A-CED 2,3
Unit 6 **Solving Systems of Equations**	How can solving systems of equations help determine the	The students will be able to: 1. Solve a system of linear equations by graphing. 2. Model real-life situations using a	Quizzes and tests	Extra Practice workbook DOE website	A-CED 3 A-REI 5,6

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
	proper mixture of chemical solutions? How can solving systems of linear inequalities help businesses find ways to maximize profit and minimize cost?	system of linear inequalities. 3. Use a graphing calculator to graph a linear system. 4. Use substitution to solve a linear system. 5. Use linear combinations to solve a linear system. 6. Write and use a linear system as a real-life model. 7. Visualize the solution possibilities for linear systems. 8. Identify a linear system that has many solutions. 9. Solve a system of linear inequalities by graphing. 10. Solve a linear programming problem.	MCAS open response, short answer and multiple choice questions Homework Class work	Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	

SUBJECT MATTER: Algebra 1   *(Semester 2)*   Grades: 9-12

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
Start of second semester **Unit 7** **Powers and Exponents**	In what ways can powers and roots be used to solve real-life problems?	The students will be able to: 12. Use the multiplication properties of exponents to evaluate powers and simplify expressions. 13. Use the powers and the exponential change equation as models. 14. Use negative and zero exponents in algebraic expressions. 15. Use powers as models. 16. Use the division properties of exponents to evaluate powers and simplify expressions. 17. Use scientific notation to express large and small numbers. 18. Perform operations with numbers in scientific notation, with and without a calculator. 19. Use scientific notation to solve real-life problems. 20. Use the compound interest formula. 21. Use models for exponential growth and decay to solve real- life problems. 11. Use a calculator to find a best-fitting exponential growth and decay model.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work Have the students create their own growth and decay problems to solve	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	N-RN 1,2 A-SSE 1B,3 F-IF 3
Unit 8 **Square Roots and The Pythagorean Theorem**	In what ways can we use the Pythagorean Theorem to solve real-life problems? How are quadratic	The students will be able to: 1. Evaluate and approximate square roots. 2. Use the Pythagorean Theorem. 3. Solve a quadratic equation by finding square roots. 4. Use quadratic models in real-life settings. 5. Sketch the graph of quadratic equations. 6. Use the quadratic formula to solve a quadratic equation. 7. Find the number of solutions of a	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	A-REI 4C,10,12 A-SSE 3 F-IF 8 A-CED 2,3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
	equations and their graphs useful for solving real-world problems?	quadratic equation by using the discriminant. 8. Use the discriminant to solve real-life models. 9. Sketch the graph of quadratic inequalities. 10. Use quadratic inequalities as real-life models. 22. Choose a model that best fits a collection of data.	Graphing calculator activity Perform ball drop experiment then calculate actual time		
Unit 9 **Polynomials and Factoring**	In what ways can factoring polynomials be used to solve real-life problems? How can the graphing calculator be used to interpret polynomials? Is solving quadratics by factoring more efficient than using the quadratic formula?	The students will be able to: 1. Add and subtract polynomials. 2. Use polynomials as models. 3. Multiply two polynomials using the distributive property and the FOIL method. 4. Use polynomials in real-life settings. 5. Use patterns for the product of a sum and difference and for the square of a binomial. 6. Factor polynomials, including the difference of two squares and perfect square trinomials. 7. Use factoring in real-life models. 8. Factor a quadratic trinomial or recognize that it can't be factored. 9. Use factoring to solve a quadratic equation. 10. Use a graphing calculator to obtain a graphic interpretation of polynomial addition and subtraction. 11. Solve quadratic equations by completing the square.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests Teacher generated factoring packet	A-SSE 1A,2,3A,3B A-REI 4A,4B,4C A-APR 1 A-CED 2,4
Unit 10	How can we use ratios and proportions to solve word problems?	The students will be able to: 1. Solve proportions. 2. Use proportions to solve real-life problems.	Quizzes and tests MCAS open response, short	Extra Practice workbook DOE website	A-APR 1 A-SSE 3 A-CED 3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
Using **Proportions** **and** **Rational** **Equations**	How can probability be used to predict future events?	3. Use direct and inverse variation. 4. Use direct and inverse variations in real-life settings. 5. Find the probability of an event. 6. Use probability in real-life events. 7. Simplify a rational expression. 8. Use rational expressions as real-life models. 9. Multiply and divide rational expressions. 10. Divide a polynomial by a monomial or a binomial. 11. Solve rational equations. 12. Use rational equations in real-life settings. 13. Use a graphing calculator to find a range in which two graphs resemble each other.	answer and multiple choice questions Homework Class work Probability Activity	Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	
Unit 11 **Functions**	In what ways do relations, functions and graphs of functions help us interpret real-world events or solve problems? In what ways can data be organized and presented so that the information is clear and concise?	The students will be able to: 1. Identify functions and use function notation. 2. Identify real-life relations that are functions. 3. Sketch the graph of quadratic functions. 4. Sketch the graph of rational functions. 5. Construct a stem and leaf plot. 6. Construct a box-and-whisker plot. 7. Find the mean, median and mode. 8. Use measures of central tendency in real-life situations.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	F-IF 1,2,3,4,5,6,7,9 A-FBF 4 A-SID 1,4,6
Unit 12 **Radicals and More Connection**	What is a square root? How can radicals be used to model real-	The students will be able to: 1. Find the distance between two points. 2. Find the midpoint between two	Quizzes and tests MCAS open response, short answer and	Extra Practice workbook DOE website Formal Assessments workbook	N-RN 2

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
to Geometry	life problems?	points. 3. Simplify radicals by applying their properties. 4. Use radicals in real life situations. 5. Add and subtract radical expressions.	multiple choice questions Homework Class work	Algebra with Pizzazz workbook Teacher generated quizzes and tests	

Ware Public Schools
MATH CURRICULUM - Grades 8-12

SUBJECT MATTER: **Geometry**   **Grade: 9-12**

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
Unit 1 **Basics of Geometry**	What are the basic terms used in Geometry and how is inductive reasoning used to make correct decisions?	The students will be able to: 1. Find and describe patterns. 2. Use inductive reasoning. 3. Understand basic defined and undefined terms. 4. Sketch the intersections of lines and planes. 5. Use segment and angle postulates. 6. Use the distance formula. 7. Classify angles. 8. Bisect a segment and an angle. 9. Identify vertical angles and linear pairs. 10. Identify complementary and supplementary angles. 11. Find perimeter and area of plane figures.	Homework, Quizzes and Tests Worksheets Puzzles Drawings	Geometry Text Application Lesson Openers Visual Approach Openers Activity Lesson Openers Chapter 1 Resource Book Teacher generated tests and quizzes Algebra with Pizzazz Cartesian Coordinate Workbook Calculator Protractor Compass	G-CO 1,12
Unit 2 **Parallel and Perpendicular Lines**	How do the properties of parallel and perpendicular lines help you understand the world around you and how	The students will be able to: 1. Identify relationships between lines. 2. Identify angles formed by transversals. 3. Write proofs and prove results about parallel lines. 4. Use properties of parallel lines to solve	Homework, Quizzes and Tests Worksheets	Geometry Text Application Lesson Openers Visual Approach Openers Activity Lesson Openers	G-GPE 5

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
	do they relate with Algebra?	real-life problems. 5. Be able to prove that two lines are parallel. 6. Find slopes of lines and use slope to identify parallel and perpendicular lines 7.Write equations of parallel and perpendicular lines.	Interdisciplinary Project Puzzles	Chapter 3 Resource Book Teacher generated tests and quizzes Algebra with Pizzazz Cartesian Coordinate Workbook Calculator Protractor Compass	
Unit 3 **Congruent** **Triangles**	What information is needed in order to prove that triangles are congruent? Will these aid your real life problems in fields such as art, architecture, and engineering?	The students will be able to: 1. Classify triangles by their sides and angles. 2. Find the measures in triangles. 3. Identify congruent figures and corresponding parts. 4. Prove triangle congruence by: SSS, SAS,ASA,AAS. 5. Use triangle congruence to plan and write proofs. 6. Employ the properties of isosceles, equilateral, and right triangles. 7. Place geometric figures in a coordinate plane and write a coordinate proof.	Homework, Quizzes and Tests Worksheets Puzzles Visual Congruence coloring	Geometry Text Application Lesson Openers Visual Approach Openers Activity Lesson Openers Chapter 4 Resource Book Teacher Generated Tests and Quizzes Algebra with Pizzazz Cartesian coordinate workbook Calculator Protractor Compass	G-CO 6,7,8,10
Unit 4 **Properties of Triangles**	As you study the properties of special segments of triangle will you be able to apply them to more complex figures?	The students will be able to: 1. Use properties of angle bisectors to identify equal distances. 2. Use the properties of angle bisectors in a triangle. 3. Identify and use the altitudes, medians,	Homework, Quizzes and Tests Worksheets	Geometry Text Application Lesson Openers Visual Approach Openers Activity Lesson Openers	G-CO 9

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
		and midsegments of a triangle. 4. Use triangle measurements to decide which side is longer or which angle is largest in a triangle. 5. Use triangle inequality.	Puzzles Drawings for circumcenter, and incenter, median altitude and midsegments Drawing Quiz	Chapter 5 Resource Book Teacher generated Tests and Quizzes Algebra with Pizzazz Cartesian coordinate workbook Calculator Protractor Compass	
Unit 5 Quadrilaterals	How do the properties of quadrilaterals differ from those learn with triangles? How do these non-rigid structures occur in real-life problems?	The students will be able to: 1. Identify, name, and describe polygons. 2. Find the sum of the measures of the interior angles of a quadrilateral. 3. Learn and use the properties of parallelograms. 4. Proving quadrilaterals are parallelogram. 5. Use the properties of a rhombus, square, and rectangle. 6. Use the properties of trapezoids and kites. 7. Identify special quadrilaterals based on limited information. 8. Find areas of all figures discussed in chapter. 6. Use a box and whisker graph.	Kite Project Quadrilateral tan gram activity Homework, Quizzes and Tests Worksheets Puzzles	Geometry Text Application Lesson Openers Visual Approach Openers Activity Lesson Openers Chapter 5 Resource Book Teacher generated Tests and Quizzes Algebra with Pizzazz Cartesian coordinate workbook Calculator Protractor Compass	G-CO 11,11A G-CPE 4,7
Unit 6 **Transformations**	How are the four rigid transformations used in real-life to create designs for applications such as stenciling, carpentry, surveying and architecture?	The students will be able to: 1. Identify the three basic rigid transformations. 2. Identify reflections and their relationships to the line of symmetry. 3. Use rotational symmetry in real-life situations such as logo designs. 4. Draw transformations, to include	MIRA Worksheets Paper folding and student drawings Homework Quizzes and	MIRAS and MIRA Worksheets Geometry Text Application Lesson Openers Visual Approach Openers	GCO 2,3,4,5,6

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core
		rotations glides and translations.	Tests	Activity Lesson Openers Chapter 5 Resource Book Teacher generated Tests and Quizzes Calculator Protractor Compass	

Unit 7
 	
Similarity
	How could you determine the width of a painting?
	
	How do you compare TV screen sizes
		The students will be able to:
		  1. Find and simplify the ratio of two numbers.
		  2. Use proportions to solve real life problems.
		  3. Identify similar polygons and similar triangles.
		  4. Use similarity to prove two triangles are similar.
		  5. Identify dialations and use dialations to create perspective drawings.
			Homework, Quizzes and Tests
			
			Worksheets
				Geometry Text
				
				Application Lesson Openers
				Visual Approach Openers
				Activity Lesson Openers
				
				Chapter 8 Resource Book
				
				Teacher generated Tests and Quizzes
					GSRT 1,2,3,5

SUBJECT MATTER: Geometry (Semester 2)   Grades: 9-12____

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Start of Semester Two **Unit 1** **Right Triangles and Trigonometry**	How do you find the height of a water slide? How do you determine the dimensions of a wheelchair ramp?	1. Solve problems involving similar right triangles found by the altitude drawn to the hypotenuse of a right triangle. 2. Use Pythagorean Theorem to solve real life problems. 3. Find the side lengths of special right triangles. 4. Use special right triangles to solve real life problems. 5. Find the sine, cosine, and tangent of an acute angle. 6. Use trigonometric ratios to solve real life problems. 7. Solve a right triangle.	Homework Quizzes and Tests Worksheets MCAS short answer, multiple choice and open response questions	Geometry Text Chapter 9 resource book Activity Lesson Openers Visual Approach Openers	GSRT 6,7,8
Unit 2 **Circles**	How far away can you see fireworks? How can you determine cell phone coverage? How many revolutions does a tire make to travel a given distance? How do you find the area of a boomerang?	1. Identify segments and lines related to circles. 2. Use properties of a tangent to a circle. 3. Use properties of arcs and chords of circles. 4. Use inscribed angles to solve problems. 5. Use properties of inscribed polygons. 6. Use angles formed by tangents and chords to solve problems. 7. Use angles formed by lines that intersect a circle to solve problems. 8. Find the lengths of segments of chords. 9. Write the equation of a circle. 10. Find the circumference of a circle and the length of a circular arc. 11. Find the area of a circle and a sector of a circle.	Homework Quizzes and Tests Worksheets MCAS short answer, multiple choice and open response questions	Geometry Text Chapter 10, 11 resource book Activity Lesson Openers Visual Approach Openers	GC 2,3,4,5 GGDE 1

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 3 **Surface Area and Volume**	How much water does it take to fill a fish tank? How do you find the volume of a volcano?	1. Use properties of polyhedral. 2. Find the surface area of a prism, cylinder, pyramid, cone, and sphere. 3. Use volume postulates to find the volume of prisms, cylinders, pyramids, cones, and spheres. 4. Use Cavalieri's Princliple.	Homework Quizzes and Tests Worksheets MCAS short answer, multiple choice and open response questions	Geometry Text Chapter 10, 11 resource book Activity Lesson Openers Visual Approach Openers	GGMD 1,2,3,4 GMG 1,2,3
Unit 4 **Probability and Statistics**	What is the probability an archer hits the center of a target? What is the probability that friends will be in the same college dorm? What is the probability that the Red Sox win 3 games in a row?	1. Use the Fundamental Counting Principle and permutations to count the number of ways an event can happen. 2. Use combinations to count the number of ways an event can happen. 3. Find theoretical, geometric and experimental probabilities. 4. Find probabilities of unions and intersections of two events. 5. Use complements to find the probability of an event. 6. Find the probability of dependent and independent events.	Homework Quizzes and Tests Worksheets MCAS short answer, multiple choice and open response questions	Algebra 2 Text Chapter 12 resource book Activity Lesson Openers Visual Approach Openers	SCP 1,2,3,4,5,6,7,8,9

SUBJECT MATTER: Algebra II   Grades: _9-12___

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 1 **Quadratic Functions**	How are quadratic equations used in real-life situations? What are the different ways to solve quadratic equations and when is each appropriate? What are the connections between the solutions (roots) of the quadratic equation, the zeros of their related functions and the horizontal intercepts of the graph of the function? How can you solve quadratic equations using concrete models, tables, graphs and algebraic methods?	Students will be able to: 1. Graph quadratic functions. 2. Use quadratic functions to solve real-life problems. 3. Factor quadratic expressions. 4. Solve quadratic equations by factoring. 5. Find zeros of a quadratic function. 6. Solve quadratic equations by finding square roots. 7. Solve quadratic equations with complex solutions and perform operations with complex numbers. 8. Apply complex numbers to fractal geometry. 9. Solve quadratic equations by completing the square. 10. Use completing the square to write quadratic functions in vertex form. 11. Use the quadratic formula to solve quadratic equations. 12. Graph quadratic inequalities in one and two variables. 13. Write quadratic functions given characteristics of their graph.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life applications Quizzes Ch. Review games and activities Alt. assessment Classwork Homework Open response questions	Algebra II Text Extra practice workbook DOE website Alt. Assess. Workbook Teacher generated worksheets, quizzes and tests Formal assessment	N-CN 1 N-CN 7 F-IF 7 F-IF 8 F-BF 1 F-BF 3 A-SSE 2
Unit 2	How can you use polynomial functions to model real-life problems and their solutions?	Students will be able to: 1. Use properties of exponents to evaluate and simplify expressions using powers. 2. Use exponents and scientific notation to solve real-life problems.	Warm up exercises Daily HW quiz	Algebra II Text Extra practice workbook	N-CN 7 N-CN 8

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Polynomials and Polynomial Functions	Why are complex numbers necessary? How are operations and properties of complex numbers related to the real numbers?	3. Evaluate and graph polynomial functions. 4. Add, subtract and multiply polynomials. 5. Factor polynomial expressions and use factoring to solve polynomial equations. 6. Divide polynomials relating the result to the remainder and factor theorems. 7. Find rational zeros of a polynomial function. 8. Use the Fundamental Theorem of Algebra to determine the number of zeros of a polynomial function. 9. Analyze and use the graphs of a polynomial function to answer questions about real-life situations. 10. Use finite differences to determine the degree of a polynomial function that will fit a set of data. 11. Use technology to find the polynomial models for real-life data.	Lesson opener Graphing calc. Activity Cooperative learning activities Real-life applications Quizzes Ch. Review games and activities Alt. assessment Classwork Homework Open response questions	DOE website Alt. Assess. Workbook Teacher generated worksheets, quizzes and tests Formal assessment	N-CN 9 F-IF 7c F-IF 8 F-BF 1 F-BF 3 A-APR 1 A-APR 2 A-APR3
Unit 3 **Powers, Roots and Radicals**	How do the properties of rational exponents assist when solving radical equations? What is the relationship between nth roots and rational exponents? How do you perform operations on functions?	Students will be able to: 1. Evaluate nth roots of real #'s using radical notation of rational exponent notation. 2. Use properties of rational exponents to evaluate and simplify expressions and solve real-life problems. 3. Perform operations with functions. 4. Use power functions and function operations to solve real-life problems. 5. Find inverses of linear and nonlinear functions.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities	Algebra II Text Extra practice workbook DOE website Alt. Assess. Workbook Teacher generated worksheets, quizzes and tests Formal assessment	F-IF 7b F-IF 8 F-BF 1 F-BF 3 A-REI 2 A-REI 11

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
	How do you solve problems involving functions and their inverses? How do you graph and interpret a radical function? What are the basics steps for solving a radical equation?	6. Graph square and cube root functions. 7. Solve equations that contain radicals or rational exponents. 8. Use measures of central tendency and dispersion to describe sets of data. 9. Use box and whiskers plots and histograms to represent data graphically.	Real-life applications Quizzes Ch. Review games and activities Alt. assessment Classwork Homework Open response questions		F-IF 71 F-BF 9
Unit 5 **Quadratic Relations and Conic Sections**	How do you identify asymptotes, foci and eccentricity? How do you identify characteristics of circles from equations? How do you find the equation of a line tangent to a circle? What methods are used to determine solutions of intersections of circles and lines and circles?	Students will be able to: 1. Find the distance between 2 pts. and the middle point of the line segment joining the 2 pts., use in real-life situation. 2. Graph and write equations of parabolas, use in real-life situations. 3. Graph and write equations of circles, use in real-life situations. 4. Graph and write equations of ellipses, use in real-life situations. 5. Graph and write equations of hyperbolas, use in real-life situations. 6. Graph and write an equation of a parabola with vertex at (h ,k) and an equation of a circle, ellipse or hyperbola with its center at (h, k). 7. Classify a conic by its equation. 8. Solve systems of quadratic equations, use in real-life situations.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life applications Quizzes Ch. Review games and activities	Algebra II Text Extra practice workbook DOE website Alt. Assess. Workbook Teacher generated worksheets, quizzes and tests Formal assessment	F-IF 7 F-IF 8 F-IF1 F-BF 3

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
	How are discriminants used to classify conic sections? How do you identify characteristics of parabolas ellipses, hyperbolas, graphically and algebraically? How do you graph a point in 3-space? What are the differences between the equations of a plane and a sphere? How do quadratic relations model real-life problems and their solutions?	9. Find the eccentricity of a conic section.	Alt. assessment Classwork Homework Open response questions		

SUBJECT MATTER: Intermediate Algebra   Grades: _10-12___

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 1 **Square Roots and The Pythagorean Theorem**	In what ways can we use the Pythagorean Theorem to solve real-life problems? How are quadratic equations and their graphs useful for solving real-world problems?	The students will be able to: 11. Evaluate and approximate square roots. 12. Use the Pythagorean Theorem. 13. Solve a quadratic equation by finding square roots. 14. Use quadratic models in real-life settings. 15. Sketch the graph of quadratic equations. 16. Use the quadratic formula to solve a quadratic equation. 17. Find the number of solutions of a quadratic equation by using the discriminant. 18. Use the discriminant to solve real-life models. 19. Sketch the graph of quadratic inequalities. 20. Use quadratic inequalities as real-life models. 21. Choose a model that best fits a collection of data.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work Graphing calculator activity Perform ball drop experiment then calculate actual time	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	A-REI 4C,10,12 A-SSE 3 F-IF 8 A-CED 2,3
Unit 2 **Polynomials** **and** **Factoring**	In what ways can factoring polynomials be used to solve real-life problems? How can the graphing calculator be used to interpret polynomials?	The students will be able to: 12. Add and subtract polynomials. 13. Use polynomials as models. 14. Multiply two polynomials using the distributive property and the FOIL method. 15. Use polynomials in real-life settings. 16. Use patterns for the product of a sum and difference and for the square of a binomial. 17. Factor polynomials, including the difference of two squares and perfect square trinomials. 18. Use factoring in real-life models.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests Teacher generated factoring packet	A-SSE 1A,2,3A,3B A-REI 4A,B,C A-APR 1 A-CED 2,4

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
	Is solving quadratics by factoring more efficient than using the quadratic formula?	19. Factor a quadratic trinomial or recognize that it can't be factored. 20. Use factoring to solve a quadratic equation. 21. Use a graphing calculator to obtain a graphic interpretation of polynomial addition and subtraction. 22. Solve quadratic equations by completing the square.			
Unit 3 **Using Proportions and Rational Equations**	How can we use ratios and proportions to solve word problems? How can probability be used to predict future events?	The students will be able to: 13. Solve proportions. 14. Use proportions to solve real-life problems. 15. Solve percent problems. 16. Use percents in real-life problems. 17. Use direct and inverse variation. 18. Use direct and inverse variations in real-life settings. 19. Find the probability of an event. 20. Use probability in real-life events. 21. Simplify a rational expression. 22. Use rational expressions as real-life models. 23. Multiply and divide rational expressions. 24. Divide a polynomial by a monomial or a binomial. 25. Solve rational equations. 26. Use rational equations in real-life settings. 27. Use a graphing calculator to find a range in which two graphs resemble each other.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work Probability Activity	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	A-APR 1 A-SSE 3 A-CED 3
Unit 4 **Functions**	In what ways do relations, functions and graphs of functions help us interpret real-world	The students will be able to: 8. Identify functions and use function notation. 9. Identify real-life relations that are functions.	Quizzes and tests MCAS open response, short answer and	Extra Practice workbook DOE website Formal Assessments workbook	F-IF 1,2,3,4,5,6,7,9 A-FBF 4 A-SIS 1,4,6

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
	events or solve problems? In what ways can data be organized and presented so that the information is clear and concise? What is a box and whisker plot and why is it important?	10. Sketch the graph of quadratic functions. 11. Sketch the graph of rational functions. 12. Construct a stem and leaf plot. 13. Construct a box-and-whisker plot. 14. Find the mean, median and mode. 15. Use measures of central tendency in real-life situations.	multiple choice questions Homework Class work	Algebra with Pizzazz workbook Teacher generated quizzes and tests	
Unit 5 **Radicals and More Connection to Geometry**	What is a square root? How can radicals be used to model real-life problems?	The students will be able to: 5. Find the distance between two points. 6. Find the midpoint between two points. 7. Simplify radicals by applying their properties. 8. Use radicals in real life situations. 9. Add and subtract radical expressions.	Quizzes and tests MCAS open response, short answer and multiple choice questions Homework Class work	Extra Practice workbook DOE website Formal Assessments workbook Algebra with Pizzazz workbook Teacher generated quizzes and tests	N-RN 2

SUBJECT MATTER: PRECALCULUS   Grades: 10-12 _____

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 1 **Functions and Their Graphs**	How can students more easily represent, analyze, and quantify the relationship between functions and their graphs? How can students use algebra and technology to identify important characteristics of functions?	1. Using x and y intercepts, axis of symmetry, slope, parallel, and perpendicular properties, students will graph and write equations. 2. Using the definition of a circle, students will graph and determine circular equations. 3. Using the definition of a function and its properties, students will determine whether relations between two variables are functions, evaluate functions, and determine their domain, range, and zero(s). 4. Using the parent graphs of simple polynomial, absolute value and step functions, students will describe and sketch the graphs of related functions. 5. Using vertical and horizontal shifts, reflections and non-rigid transformations, students will sketch graphs of functions. 6. Using the arithmetic properties of functions, students will find the sum, difference, product and quotient of two functions. 7. Using the corresponding definition, students will find the composition of one function with another function and use to model and solve real-life problems 8. Using the definition of inverse relations and the horizontal line test, students will determine the inverse of a function, if it exists and graph a function and its inverse. 9. Using mathematical models and graphing technology, students will approximate sets of data points, find the equation of a least squares regression line, and write mathematical models for direct, inverse,	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life Applications Homework Quizzes Reference to Study Tips and Review Exercises Open Ended Questions that require written explanation (Writing about Mathematics). Tests	Larson-Precalculus CD Learning Tools Larson-Complete Solutions Guide Larson-Test Item File Historical Notes Brown-Advance Mathematics DOE website Teacher generated worksheets, quizzes and tests	F-IF F-BF G-C

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		and joint variation.			
Unit 2 **Polynomial Functions**	What techniques are necessary to analyze, write, and solve quadratic functions*?* What strategies can be used to interpret polynomial functions?	1. Using the Leading Coefficient test, students will determine the end behavior of graphs of polynomial functions. 2. Using factoring techniques, graphing technology, and the Intermediate Value Theorem, students will locate the zeros of polynomial functions 3. Using graphing techniques, students will analyze graphs of quadratic functions and write quadratic equations that model and solve real-life problems.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life Applications Homework Quizzes Reference to Study Tips and Review Exercises Open Ended Questions that require written explanation (Writing about Mathematics).	Larson-Precalculus CD Learning Tools Larson-Complete Solutions Guide Larson-Test Item File Historical Notes Brown-Advance Mathematics DOE website Teacher generated worksheets, quizzes and tests	A-APR F-IF

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
			Tests		
Unit 3 **Exponential Functions**	How can the properties of exponential models be used to analyze situations?	1. Students will recognize and evaluate exponential functions. 2. Using the corresponding formulas, students will model and solve real-life problems of growth and decay. 3. Using the rules of transformation, students will graph exponential functions.	Warm up Real-life Applications Comparison of Investment opportunities Homework Quizzes Reference to Study Tips and Review Exercises Open Ended Questions that require written explanation (Writing about Mathematics). Tests	Larson-Precalculus CD Learning Tools Larson-Complete Solutions Guide Larson-Test Item File Historical Notes Brown-Advance Mathematics DOE website Teacher generated worksheets, quizzes and tests	F-BF

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 4 **Trig-onometry**	What are the standards regarding angles and their measure, and how are they used? How can the coordinate plane be used to accurately represent angles and their measure? What are the properties and identifying aspects of the graphs of trigonometric functions? What are the relationships between trigonometric functions and their inverses?	1. Using degree/radian conversion formulas and the reference angle rule, students will convert the measures of given angles and find coterminal and reference angles accuracy. 2. Using appropriate formulas, students will find arc length, linear and angular velocity of an object moving along a circle, and area of a sector of a circle. 3. Using the properties of the six trigonometric functions and even and odd functions, students will find the value of these functions of an angle in standard position. 4. Using the definitions of the trigonometric functions, students will solve right triangles. 5. Using relationships from geometry and without using a calculator, students will find exact values of the six trigonometric functions of special angles. 6. Using the fundamental trigonometric identities, students will find the values of the six trigonometric functions of an angle. 7. Using the corresponding definitions, reference angles, fundamental trigonometric identities and calculators, students will find the values of the six trigonometric functions of any angle. 8. Using the graphs of sine and cosines curves, students will identify the domain, range, and period of these functions.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life Applications Homework Quizzes Reference to Study Tips and Review Exercises Open Ended Questions that require written explanation (Wri-ting about Mathematics). Examine the trig bow tie" and its application for finding four angle functions	Larson-Precalculus CD Learning Tools Larson-Complete Solutions Guide Larson-Test Item File Historical Notes Brown-Advance Mathematics DOE website Alt. Assess. Workbook Teacher generated worksheets, quizzes and tests	F-TF

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		9. Using the definitions of inverse functions and graphing technology, students will evaluate and graph inverse trigonometric functions 10. Using the properties of the six trigonometric functions and the corresponding definitions, students will solve real-life problems.	Investigate the relationship between the Pythagorean Theorem and the Trig Functions Tests		
Unit 5 **Analytic Trigonom-etry**	How can trigonometric identities assist in solving trigonometric equations and verifying unknown identities? How can trigonometric values of angles that are not "special angles" be found analytically? How can trigonometric functions be used to analyze properties of triangles?	1. Using the reciprocal, quotient, and Pythagorean identities, students will find trigonometric values, express trigonometric function values in equivalent forms, and simplify trigonometric expressions. 2. Using the basic trigonometric identities, students will prove other trigonometric identities. 3. Using the basic trigonometric identities, algebra skills, and graphing, students will solve trigonometric equations. 4. Using the sum and difference identities for sine, cosine, and tangent, students will find the exact value of trigonometric expressions and solve trigonometric equations.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life Applications Homework Quizzes/Tests Reference to Study Tips and review exercises	Larson-Precalculus CD Learning Tools Larson-Complete Solutions Guide Larson-Test Item File Historical Notes Brown-Advance Mathematics DOE website Teacher generated worksheets, quizzes and tests	F-TF

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 6 **Additional Topics in Trigonom-etry**	How can trigonometric functions be used to analyze properties of triangles*?*	1. Using the Law of Sines, including the ambiguous case, students will solve oblique triangles. 2. Using the Law of Cosines, students will solve oblique triangles. 3. Using formulas for the area of a triangle, the definition of sine and Heron's formula, students will find the area of a triangle given 2 sides and the included angle.	Warm up exercises Daily HW quiz Lesson opener Graphing calc. Activity Cooperative learning activities Real-life Applications Homework Quizzes/Tests Reference to Study Tips and Review Exercises Open Ended Questions that require written explanation (Writing about Mathematics).	Larson-Precalculus CD Learning Tools Larson-Complete Solutions Guide Larson-Test Item File Historical Notes Brown-Advance Mathematics DOE website Teacher generated worksheets, quizzes and tests	G-SRT

SUBJECT MATTER: Calculus   Grades: 11-12___

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 1 **Prerequisites for Calculus**	How can you create a mathematical model to measure the carbon dioxide in the earth's atmosphere? Is there a correlation between the durations and intervals of Old Faithful?	Students will be able to: 1. Sketch the graph of an equation. 2. Find intercepts of a graph. 3. Test graphs for symmetry. 4. Find points of intersection of two graphs. 5. Find slope. 6. Write equations of lines. 7. Interpret slope as a ratio or as a rate of change. 8. Use function notation and evaluate functions. 9. Find domain and range. 10. Graph functions. 11. Transform functions. 12. Fit models to real-life data (linear, quadratic, trigonometric).	Lesson opener Real-life applications Quizzes P.1, P.3 Classwork Homework Open response questions	Activity 10-7 intersecting graphs and equations Activity P.3 Transformations of functions Activity P.4 Evaluating functions Assignment 2/3	
Unit 2 **Limits and Their Properties**	What is Calculus? How do you find the area of irregular shapes? Why do humans continue to run faster, jump higher and throw farther than ever before? What is a limit?	Students will be able to: 1. Compare the study of Calculus to the study of Pre-Calculus. 2. Understand the tangent line problem. 3. Understand the area problem. 4. Estimate a limit using a numerical or graphical approach. 5. Examine ways that limits fail to exist. 6. Evaluate a limit using the properties of a limit. 7. Develop strategies for finding limits. 8. Determine continuity at a point and on an open interval. 9. Determine one-sided limits and continuity on a closed interval. 10. Use properties of continuity. 11. Understand and use the Intermediate Value Theorem.	Lesson opener Real-life applications Quizzes 1.1-1.3 1.2-1.4 Classwork Homework Open response questions	Trig review Activity 1,2 Practice with limits of graphs 1.2 Assignment 1-3 Activity Finding limits (full sheet with graphs)	

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		12. Determine infinite limits from the left and the right. 13. Find and sketch asymptotes.			

Unit 3
 	
Differentiation
	How do you fit a model to data?
	
	What is a derivative?
	
	What is the relationship between continuity and differentiability?
	
	How can you use a derivative to determine slope?
		Students will be able to:
		1. Explore the tangent line problem.
		2. Use the limit process to find the derivative of a function.
		3. Connect the graph of f'(x) to the graph of f(x).
		4. Understand the relationship between differentiability and continuity.
		5. Differentiate using:
		   The Constant Rule
		   The Power Rule
		   The Constant Multiple Rule
		   The Sum and Difference Rules
		6. Differentiate sine and cosine.
		7. Find rates of change.
		8. Differentiate using:
		   The Product Rule
		   The Quotient Rule
		9. Differentiate trigonometric functions.
		10. Find higher order derivatives.
		11. Differentiate composite functions using the Chain Rule.
		12. Differentiate functions using the General Power Rule.
		13. Differentiate trigonometric functions Using the Chain Rule.
		14. Apply the derivative to position, velocity and acceleration functions.
			Lesson opener
			
			Real-life applications
			
			Quizzes 2.1, 2.2,2.3-2.4, 2.5, vertical motion
			
			Classwork
			
			Homework
			
			Open response questions
				Activity review using real number exponents
				
				Activity 7-2B, 7-2C
				
				Activity using negative and fractional exponents in GCFs
				
				Assignment 2.1
				
				Practice 2.2 (2 activities)
				
				Trig activity 2.4
				
				Chain Rule Activity 2.4
				
				First and second derivative activity 2.4
				
				Vertical motion activity
				
				Assignment 2.3-2.5
				
				Implicit Differentiation activity	

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		15. Differentiate implicitly. 16. Solve related rate problems.		Coffee Can Activity Problems Half sheet Related Rates Full Sheet Related Rates	
Unit 4 **Applications of Differntiation**	How do people decide how to package products sold in stores? How can you use derivatives to find extrema? How can you use calculus to determine maximum and minimum values?	Students will be able to: 1. Find extrema of a function on an interval. 2. Identify critical numbers and relative extrema. 3. Find extrema of a function on a closed interval. 4. Understand and use Rolle's Theorem. 5. Understand and use the Mean Value Theorem. 6. Determine intervals on which functions are increasing and decreasing. 7. Apply the first derivative test to find relative extrema of a function. 8. Determine concavity. 9. Find points of inflection. 10. Apply the second derivative test to find relative extrema of a function. 11. Determine finite limits at infinity. 12. Find horizontal and vertical asymptotes. 13. Apply curve sketching techniques. 14. Solve applied maximum and minimum problems (optimization). 15. Calculate differentials. 16. Find linear approximations. 17. Estimate propagated error using a differential.	Lesson opener Real-life applications Quizzes Alt. assessment Classwork Homework Open response questions	3.1 Extrema on an Interval packet Quiz 3.1 3.2 Rolle's Theorem and the Mean Value Theorem packet Quiz 3.2 Assignment 3.1-3.6 3.3-3.6 Problem sets	

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 5 **Integration**	How can you find the area of an irregular region? What is the Fundamental Theorem of Calculus?	Students will be able to: 1. Write the general solution of a differential equation. 2. Find antiderivatives. 3. Use indefinite integral notation for antiderivatives. 4. Find a particular solution of a differential equation. 5. Use sigma notation to write and evaluate a sum. 6. Understand the concept of area. 7. Approximate the area of a plane region. 8. Find upper and lower sums. 9. Use Riemann sums. 10. Evaluate definite integrals using limits. 11. Evaluate definite integrals using properties of definite integrals. 12. Understand and use the Fundamental Theorem of Calculus. 13. Understand and use the Mean Value Theorem for integrals. 14. Find the average value of a function over a closed interval. 15. Understand and use the Second Fundamental Theorem of Calculus. 16. Evaluate integrals by substitution. 17. Evaluate integrals through integration by parts. 18. Use a change of variables to find an indefinite integral. 19. Use the general power rule for integration. 20. Use a change of variables to evaluate a definite integral. 21. Evaluate definite integrals involving even and odd functions. 22. Approximate definite integrals using the Trapezoidal Rule. 23. Approximate definite integrals using	Quizzes Alt. assessment Classwork Homework Open response questions	4.1 Antiderivatives and Indefinite Integration packet 4.2 Sigma packet 4.2 Integration Summation Notation take home packet 4.2 Indefinite Integrals Activity Quiz 4.1-4.2 Practice with Definite Integrals Net Area vs Total Area Quiz on Definite Integrals	

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		Simpson's Rule. 24. Analyze approximate errors in the Trapezoidal and Simpson's Rules.			

SUBJECT MATTER: Senior Math   **Grades: _12___**

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 1 **Fractions**	How can I use fractions in real-life? How can models be used to compute fractions with like and unlike denominators? How many ways can we use models to determine and compare equivalent fractions? How would you compare and order whole numbers, fractions and decimals?	The students will be able to: 1. Write fractions in lowest terms. 2. Add and subtract fractions with common denominators. 3. Add and subtract fractions without common denominators. 4. Multiply and divide fractions. 5. Compare and order fractions.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	N-RN 3 A-APR 7
Unit 2 **Decimals**	How can decimals be rounded to the nearest whole number, tenth, hundredth,etc? How can models be useful in understanding addition and subtraction of decimals? How would you compare and order whole numbers,	The students will be able to: 1. Determine place value. 2. Convert between decimals and fractions. 3. Compare and order decimals. 4. Add, subtract, multiply and divide decimals (with and without a calculator). 5. Solve real-life word problems involving decimals. 6. Multiply and divide by powers of ten.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	N-Q 3 N-Q 3a

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
	fractions and decimals through hundredths?		Open response questions		
Unit 3 **Percents**	How are proportions and percentages related? Can you solve percent problems without proportions? How can you distinguish between situations that are proportional or not proportional?	The students will be able to: 1. Convert percentages to fractions. 2. Use more than one technique to convert percentages to decimals and fractions. 3. Solve percent problems using ratios, rates, proportions and percentages. 4. Solve real-life word problems involving discounts, interest, taxes, tips, and percent increase and decrease.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-CED 1
Unit 4 **Signed numbers**	How are integers useful? How are signed numbers useful in describing real-life situations? How can you recognize signed numbers and their opposites without a number line? How can a number line help in comparing integers?	The students will be able to: 1. Locate integers on a number line. 2. Order and compare integers. 3. Develop algorithms for addition, subtraction, multiplication and division of integers.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-SSE 1

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 5 **Algebraic expressions**	Why do we use variables? Why are "the order of operations" and other properties of mathematics important?	The students will be able to: 1. Write verbal expressions for algebraic expressions. 2. Write algebraic expressions for verbal expressions. 3. Evaluate numerical and algebraic expressions by using the order of operations. 4. Use the distributive property to simplify and evaluate expressions.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-SSE 1a A-SSE 1b
Unit 6 **Linear equations**	How do we use equations to model real-life situations? Why is it advantageous to use and solve equations algebraically for real-life situations? Why would we want to use the absolute value of numbers?	The students will be able to: 1. Translate sentences into equations. 2. Solve equations by using addition and subtraction. 3. Solve equations by using multiplication and division. 4. Solve equations using more than one operation. 5. Solve equations with the variable on each side. 6. Solve equations involving grouping symbols. 7. Evaluate absolute value symbols. 8. Solve absolute value equations. 9. Solve equations for given variables.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-CED 1 A-REI 1 A-REI 3 A-CED 4

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
Unit 7 **Linear Inequalities**	How are inequalities and equations alike? How are inequalities and equations different? How do the words "and" and "or" affect the outcomes of an inequality?	The students will be able to: 1. Solve linear inequalities by using addition, subtraction, multiplication and division. 2. Solve linear inequalities involving more than one operation. 3. Solve linear inequalities involving the distributive property. 4. Solve compound inequalities involving "and" and "or" and graph their solution set. 5. Solve real-life problems involving inequalities. 6. Graph inequalities on a number line. 7. Solve inequalities by graphing.	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-REI 3 A-REI 1 A-REI 2
Unit 8 **Linear Graphing**	What are the methods in graphing a line? How can slope and y-intercept help you graph a line? How does slope affect the graph of a line? What does slope-intercept form of a line tell you? Why should we know different forms of linear equations? How do we write equations of parallel and perpendicular	The students will be able to: 1. Identify linear equations and intercepts. 2. Graph linear equations. 3. Solve equations by graphing. 4. Estimate solutions to an equation by graphing. 5. Use rate of change to solve real-life word problems. 6. Find the slope of a line. 7. Write and graph linear equations in slope-intercept form. 8. Model real-life equations in slope-intercept form. 9. Write the equation of a line in slope-intercept form given the slope and one point. 10. Write an equation of a line in slope-intercept form given two points. 11. Write equations of lines in standard form. 12. Write equations of lines in point-slope	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-REI 10 A-CED 2

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
	lines? How can we use real-life data to write the equation of a line?	form. 13. Write equations of lines passing through a given point and either parallel or perpendicular to a given line. 14. Investigate relationships between quantities using points on scatter plots. 15. Use lines of best fit to make and evaluate predictions.			
UNIT 9 **Polynomials and Factoring**	How do we classify polynomials? How can we use the polynomial operations of addition, subtraction and multiplication in real-life? How do you find the greatest common factors in factoring polynomials? How do you factor polynomials? How can we find the difference of squares? When would it be best to use a different method for solving quadratic equations?	The students will be able to: 1. Identify the base and exponent of a monomial. 2. Multiply and divide monomial. 3. Simplify expressions containing negative and zero exponents. 4. Find the degree of a polynomial. 5. Write polynomials in standard form. 6. Identify "like terms". 7. Add and subtract polynomials. 8. Use the distributive property to multiply a monomial by a polynomial. 9. Use the distributive property to multiply a polynomial by another polynomial. 10. Find the squares of sums and differences. 11. Find the product of sums and differences. 12. Write a monomial in factored form. 13. Find the greatest common factor of monomials. 14. Divide out the greatest common factor of the terms. 15. Factor a polynomial by grouping. 16. Solve a quadratic equation by using the zero product property. 17. Factor quadratic equations in standard form. 18. Factor quadratic equations that are	Warm up exercises Lesson openers Cooperative learning activities Real-life applications Classwork Homework Open response questions	DOE website Algebra resource workbook Alt. Assessment workbook Teacher generated worksheets, tests and quizzes Formal assessment	A-APR 1 A-REI 2 A-REI 4b A-SSE 3a F-IF 7a F-IF 8a A-REI 4a

Unit/Theme	Content and Essential Questions	Skills	Methods of Assessment	Teacher Resources & Notes	Common Core Standards
		differences of squares. 19. Factor quadratic equations that are perfect squares. 20. Factor quadratic equations where the leading coefficient is not one. 21. Solve quadratic equations in the form of $x^2=n$. 22. Analyze the characteristics of the graphs of quadratic equations. 23. Estimate the solutions of quadratic equations by graphing. 24. Estimate solutions to quadratic equations by completing the square. 25. Use the discriminant to determine the number of solutions to a quadratic equation. 26. Solve quadratic equations by using the quadratic formula.			