Teacher: Mr. Caracciolo	Course: Algebra 3 / Trigonometry	Grade Level(s): 11, 12

	Month: September Topic(s): Factoring, Solving Equations, Exponents, Polynomials, Radicals
Content/Big Ideas	Factoring trinomials, basic operations with polynomials, simplifying radicals, rationalizing denominators with radicals, using conjugates to simplify radicals, evaluating expressions with positive and negative exponents, factoring difference of squares, factoring sum and difference of cubes.
Essential Questions	How do we use the "F.O.I.L." method? How do we simplify square roots of numbers vs. cube roots of numbers? Do we need an LCD when adding/subtracting rational expressions? Do we need an LCD when multiplying/dividing rational expressions? How do we execute negative exponents? How does a fractional exponent relate to a radical?
Concepts	Fractional/decimal equivalencies FOIL method Distributive property for multiplying polynomials Simplifying square roots Simplifying cube roots Exponents --- positive, negative and fractional Conjugates Formulas for factoring square and the sum/difference of cubes Combining similar terms
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra3 / Trigonometry	Grade Level(s): 11,12

	Month: October Topic(s): Polynomials, Systems of Equations, Binomial Theorem, Conjugates, Parallel and Perpendicular lines (writing equations for those)
Content/Big Ideas	Polynomial expressions. Simplifying polynomials in order to multiply/divide polynomials. Solving systems of equations. Substitution method and Elimination method. Binomial Theorem. Using conjugates to simplify radical expressions. Using the formula for slope. Writing equations of parallel and perpendicular lines.
Essential Questions	Is it necessary to simplify expressions before multiplying/dividing polynomials? How does the binomial theorem work? Is the formula easier to use? What is the difference between the substitution/elimination method? Do we need to check answers when we use the substitution/elimination method? What is the significance of conjugates? Do we need conjugates for the numerators or only denominators? What is the difference with the slope of parallel/perpendicular lines?
Concepts	Fractional/decimal equivalencies FOIL method Distributive property for multiplying polynomials Using substitution method to find values of variables Using elimination method to find values of variables Checking solutions for validity Formula for binomial theorem Comparing the binomial theorem formula with traditional method Slopes of parallel and perpendicular lines
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra3 / Trigonometry	Grade Level(s): 11,12
	Month: November **Topic(s):** Parallel/Perpendicular lines (more challenging), Complex Fractions, Graphing lines, Graphing inequalities, Solving systems of equations with 3 variables	
Content/Big Ideas	Slope of lines. Parallel slope and Perpendicular slope. Writing equations in standard form and general form. Simplifying complex fractions (LCD approach). Graphing lines --- using slope and y-intercept. Graphing inequalities (shading the correct region). Using Elimination and substitution to solve a system with 3 variables.	
Essential Questions	Is standard form of a line different than general form? Are there fractions in general form or only integers? Does the LCD simplify both the numerator and denominator of complex fractions? Is it necessary to use a test point when shading inequalities? Do you need to use both elimination/substitution when solving equations with 3 different variables?	
Concepts	Fractional/decimal equivalencies Slope of line using points Writing final answer of line in standard from then general form Understanding the difference between the two different forms Using LCD to simplify complex fractions y-intercept of a graph Understanding inequality symbols in order to generate a solid or dotted line Shading correctly using a test point Using elimination and substitution for 3 variable equations	
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.	
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9	

Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra 3 / Trigonometry	Grade Level(s): 11,12

	Month: December Topic(s): Imaginary Numbers, Complex Numbers, Binomial Theorem, Completing the square, Quadratic Formula, Graphing Parabolas
Content/Big Ideas	Imaginary numbers. Understanding the square root of -1. Simplifying square roots with negative numbers. Basic operations with complex numbers. Binomial Theorem with negative values. Understanding step-by-step procedure to complete the square. Using and applying the Quadratic formula. Graphing Parabolas using y-intercept, vertex, and direction of opening.
Essential Questions	Does the square root of a negative number exist? How do we eliminate imaginary numbers in the denominator of a fraction? Does a negative symbol impact your answer using the Binomial Theorem? Is completing the square used to solve quadratic equations? Does the Quadratic formula solve any quadratic equation? What significance does the discriminant have when using the formula? Do we need x,y tables to graph Parabolas? Can we use important ideas such as the vertex, y-int. and opening to sketch?
Concepts	Simplifying algebraic terms Collecting similar terms and simplifying expressions Writing answers for complex numbers in simplified and standard form Square roots, binomials, formulas, simplifying terms Memorize Quadratic formula, substituting into the formula, simplifying Discriminant (understanding concept of sign of number under radical) Vertex, y-intercept, direction of opening, symmetry in order to graph Parabola
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9 CC.2.1.HS.F.6 CC.2.1.HS.F.7
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra 3 / Trigonometry	Grade Level(s): 11,12

	Month: January Topic(s): Functions, Evaluating Functions, Difference Quotient, Introduction to sine, cosine, and tangent.
Content/Big Ideas	Functions, domain, range. Evaluating functions – adding, subtracting, multiplying and dividing functions. Composition of functions. Difference quotient, understanding notation, understanding the limit. Introduction to the sine, cosine, and tangent. Inverse functions and their appropriate notation.
Essential Questions	What is the domain and the range of a set of ordered pairs? What determines if a relation is a function? What notation is used when working with composition of functions? How can the difference quotient help us in doing the derivative for Calculus? What ratios do we use to find the sine, cosine, and tangent? Explain the significance of knowing the sides in a 30-60-90 triangle and a 45-45-90 triangle?
Concepts	Domain and Range. Relation vs. Function. Composition of functions. Difference Quotient. Limits. Sine, Cosine, and Tangent functions. Special case triangles: 30-60-90 and 45-45-90.
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra3 / Trigonometry	Grade Level(s): 11,12
	Month: February **Topic(s):** Converting degrees to radians, Evaluating trig. Expressions, Reciprocal trig. Functions, Inverse trig. Functions, domain restrictions.	
Content/Big Ideas	Converting degrees to radians, converting radians to degrees, evaluating trig. Expressions, evaluating reciprocal trig. Functions, inverse trig. Functions with domain restrictions.	
Essential Questions	How do we convert degrees to radians? How do we convert radians to degrees? Which quadrants are the trig. Functions positive or negative? What is a reference angle? What does a domain restriction mean with a trig. Function? How is a reciprocal trig. Function calculated? What is the importance of using reference angles when calculating trig. Expressions?	
Concepts	Degrees and Radians. Sine, cosine, and tangent functions. Cosecant, secant, and cotangent functions. (Reciprocal functions) Inverse trig. Functions. Domain restrictions. Reference angles. Quadrants of positive trigonometric functions. Quadrants of negative trigonometric functions.	
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.	
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9	
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)	

Teacher: Mr. Caracciolo	Course: Algebra3 / Trigonometry	Grade Level(s): 11,12

	Month: March Topic(s): Law of Sines, Law of Cosines, Graphs of basic trig. Functions, Trigonometric Identities. Review of previously learned material both Algebra and Trigonometry.
Content/Big Ideas	Law of Sines, Law of Cosines, Graphs of basic trig. Functions, Trig. Identities, review of previously learned material. Algebra topics and Trigonometry topics are included in the review.
Essential Questions	How do you solve for missing parts of triangles using Law of Sines? How do you solve for missing parts of triangles using Law of Cosines? How do the proportions work when using the Law of Sines? Is it necessary to memorize the Law of Cosines? Why do we use the quadrant values on the x-axis when graphing trig. Functions? Are the graphs of trig. Functions cyclical? Is it mandatory to memorize the most common trig. Identities?
Concepts	Law of Sines. Law of Cosines. Graphing sine, cosine, and tangent functions. Trig. Identities (memorize) Review of previously learned topics (both Algebra and Trigonometry).
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra3 / Trigonometry	Grade Level(s): 11,12

	Month: April Topic(s): Synthetic Division, long division, exponential equations, logarithmic equations, remainder theorem. Reviewing of previously learned topics in Algebra and Trigonometry.
Content/Big Ideas	Synthetic division, long division, exponential equations, logarithmic equations, remainder theorem.
Essential Questions	How does synthetic division differ compared to long division? What is the importance of "0" when using synthetic division? How does an exponential graph look when it is graphed? Is there an easy way to graph exponential functions without plotting points? What does "base e" mean? What does logarithm mean? How are these "logs" and "natural logs" entered into the calculator? When is it beneficial to use the remainder theorem?
Concepts	Synthetic division. Long division. Exponential equations. Logarithmic equations. Remainder theorem.
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)

Teacher: Mr. Caracciolo	Course: Algebra3 / Trigonometry	Grade Level(s): 11,12
	Month: May **Topic(s):** Properties of logarithms. Graphing of Parabolas, graphing ellipses, matrices. Reviewing of previously learned topics in Algebra and Trigonometry.	
Content/Big Ideas	Properties of Logarithms. Graphing of Parabolas. Graphing Ellipses. Matrices Cramer's Rule. Hyperbolas (if time permits).	
Essential Questions	Do the properties of "logs" have similarities with properties of exponents? What are important characteristics of a Parabola? What are the important characteristics of an ellipse? What are "Foci"? What is a major axis and a minor axis? Is Cramer's Rule an advanced way of using elimination and substitution? What is an asymptote (for Hyperbolas if we have time)?	
Concepts	Properties of logarithms. Parabolas. Axis of symmetry. Ellipses. Foci. Major axis and minor axis. Cramer's Rule. Elimination and Substitution. Hyperbolas and asymptotes (if time permits).	
Competencies	Students should be able to develop an understanding of this material. The understanding will lead to a mastery of the content as well as the concepts over a period of time. Repetition of the content is used throughout the course.	
Standards/Benchmarks	CC.2.1.HS.F.1 CC.2.1.HS.F.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 CC.2.2.HS.D.9	
Activities & Assessments	Lecture on a daily basis Problems given daily --- many times during class Homework assigned Constant review days every week prior to the test EXAM given once a week (usually on Thursday) Graded in-class assignment once a week (usually on Friday)	