Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number:	5012020
Course Title:	Mathematics - Grade Kindergarten
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	1
Course Status:	State Board Approved

RELATED BENCHMARKS (11) :

Scheme	Descriptor	Cognitive Complexity
MA.K.A.1.1	Represent quantities with numbers up to 20, verbally, in writing, and with manipulatives.	Moderate
MA.K.A.1.2	Solve problems including those involving sets by counting, by using cardinal and ordinal numbers, by comparing, by ordering, and by creating sets up to 20.	Moderate
MA.K.A.1.3	Solve word problems involving simple joining and separating situations.	High
MA.K.A.4.1	Identify and duplicate simple number and non-numeric repeating and growing patterns.	Moderate
MA.K.G.2.1	Describe, sort and re-sort objects using a variety of attributes such as shape, size, and position.	Moderate
MA.K.G.2.2	Identify, name, describe and sort basic two-dimensional shapes such as squares, triangles, circles, rectangles, hexagons, and trapezoids.	Moderate

MA.K.G.2.3	Identify, name, describe, and sort three-dimensional shapes such as spheres, cubes and cylinders.	Moderate
MA.K.G.2.4	Interpret the physical world with geometric shapes, and describe it with corresponding vocabulary.	Moderate
MA.K.G.2.5	Use basic shapes, spatial reasoning, and manipulatives to model objects in the environment and to construct more complex shapes.	High
MA.K.G.3.1	Compare and order objects indirectly or directly using measurable attributes such as length, height, and weight.	Moderate
MA.K.G.5.1	Demonstrate an understanding of the concept of time using identifiers such as morning, afternoon, day, week, month, year, before/after, shorter/longer.	Moderate

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COURSE DESCRIPTION GRADES PreK-5

Course Number:	5012030
Course Title:	Mathematics - Grade One
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	1
Course Status:	State Board Approved

RELATED BENCHMARKS (14) :

Scheme	Descriptor	Cognitive Complexity
MA.1.A.1.1	Model addition and subtraction situations using the concepts of "part-whole," "adding to," "taking away from," "comparing," and missing addend."	Moderate
MA.1.A.1.2	Identify, describe, and apply addition and subtraction as inverse operations.	Moderate
MA.1.A.1.3	Create and use increasingly sophisticated strategies, and use properties such as Commutative, Associative and Additive Identity, to add whole numbers.	Moderate
MA.1.A.1.4	Use counting strategies, number patterns, and models as a means for solving basic addition and subtraction fact problems.	High
MA.1.A.2.1	Compare and order whole numbers at least to 100.	Moderate
MA.1.A.2.2	Represent two digit numbers in terms of tens and ones.	Low
MA.1.A.2.3	Order counting numbers, compare their relative	Moderate

	magnitudes, and represent numbers on a number line.	
MA.1.A.4.1	Extend repeating and growing patterns, fill in missing terms, and justify reasoning.	High
MA.1.A.6.1	Use mathematical reasoning and beginning understanding of tens and ones, including the use of invented strategies, to solve two-digit addition and subtraction problems.	High
MA.1.A.6.2	Solve routine and non-routine problems by acting them out, using manipulatives, and drawing diagrams.	High
MA.1.G.3.1	Use appropriate vocabulary to compare shapes according to attributes and properties such as number and lengths of sides and number of vertices.	Moderate
MA.1.G.3.2	Compose and decompose plane and solid figures, including making predictions about them, to build an understanding of part-whole relationships and properties of shapes.	High
MA.1.G.5.1	Measure by using iterations of a unit, and count the unit measures by grouping units.	Moderate
MA.1.G.5.2	Compare and order objects according to descriptors of length, weight, and capacity.	Moderate

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COURSE DESCRIPTION GRADES PreK-5

Course Number:	5012040
Course Title:	Mathematics - Grade Two
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	1
Course Status:	State Board Approved

RELATED BENCHMARKS (21) :

Scheme	Descriptor	Cognitive Complexity
MA.2.A.1.1	Identify relationships between the digits and their place values through the thousands, including counting by tens and hundreds.	Moderate
MA.2.A.1.2	Identify and name numbers through thousands in terms of place value, and apply this knowledge to expanded notation.	Low
MA.2.A.1.3	Compare and order multi-digit numbers through the thousands.	Moderate
MA.2.A.2.1	Recall basic addition and related subtraction facts.	Low
MA.2.A.2.2	Add and subtract multi-digit whole numbers through three digits with fluency by using a variety of strategies, including invented and standard algorithms and explanations of those procedures.	Moderate
MA.2.A.2.3	Estimate solutions to multi-digit addition and subtraction problems through three digits.	Moderate

MA.2.A.2.4	Solve addition and subtraction problems that involve measurement and geometry.	High
MA.2.A.4.1	Extend number patterns to build a foundation for understanding multiples and factors – for example, skip counting by 2's, 5's, 10's.	Moderate
MA.2.A.4.2	Classify numbers as odd or even and explain why.	Moderate
MA.2.A.4.3	Generalize numeric and non-numeric patterns using words and tables.	High
MA.2.A.4.4	Describe and apply equality to solve problems, such as in balancing situations.	High
MA.2.A.4.5	Recognize and state rules for functions that use addition and subtraction.	High
MA.2.A.6.1	Solve problems that involve repeated addition.	Moderate
MA.2.G.3.1	Estimate and use standard units, including inches and centimeters, to partition and measure lengths of objects.	Moderate
MA.2.G.3.2	Describe the inverse relationship between the size of a unit and number of units needed to measure a given object.	Moderate
MA.2.G.3.3	Apply the Transitive Property when comparing lengths of objects.	Moderate
MA.2.G.3.4	Estimate, select an appropriate tool, measure, and/or compute lengths to solve problems.	High
MA.2.G.5.1	Use geometric models to demonstrate the relationships between wholes and their parts as a foundation to fractions.	Moderate
MA.2.G.5.2	Identify time to the nearest hour and half hour.	Low
MA.2.G.5.3	Identify, combine, and compare values of money in cents up	Moderate

	to $1 and in dollars up to $100, working with a single unit of currency.	
MA.2.G.5.4	Measure weight/mass and capacity/volume of objects. Include the use of the appropriate unit of measure and their abbreviations including cups, pints, quarts, gallons, ounces (oz), pounds (lbs), grams (g), kilograms (kg), milliliters (mL) and liters (L).	Low

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number:	5012050
Course Title:	Mathematics - Grade Three
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	1
Course Status:	State Board Approved

RELATED BENCHMARKS (17) :

Scheme	Descriptor	Cognitive Complexity
MA.3.A.1.1	Model multiplication and division including problems presented in context: repeated addition, multiplicative comparison, array, how many combinations, measurement, and partitioning.	Moderate
MA.3.A.1.2	Solve multiplication and division fact problems by using strategies that result from applying number properties.	High
MA.3.A.1.3	Identify, describe, and apply division and multiplication as inverse operations.	Moderate
MA.3.A.2.1	Represent fractions, including fractions greater than one, using area, set, and linear models.	Moderate
MA.3.A.2.2	Describe how the size of the fractional part is related to the number of equal sized pieces in the whole.	Moderate
MA.3.A.2.3	Compare and order fractions, including fractions greater than one, using models and strategies.	Moderate

MA.3.A.2.4	Use models to represent equivalent fractions, including fractions greater than 1, and identify representations of equivalence.	Moderate
MA.3.A.4.1	Create, analyze, and represent patterns and relationships using words, variables, tables, and graphs.	High
MA.3.A.6.1	Represent, compute, estimate, and solve problems using numbers through hundred thousands.	High
MA.3.A.6.2	Solve non-routine problems by making a table, chart ,or list and searching for patterns.	High
MA.3.G.3.1	Describe, analyze, compare, and classify two-dimensional shapes using sides and angles - including acute, obtuse, and right angles - and connect these ideas to the definition of shapes.	Moderate
MA.3.G.3.2	Compose, decompose, and transform polygons to make other polygons, including concave and convex polygons with three, four, five, six, eight, or ten sides.	High
MA.3.G.3.3	Build, draw, and analyze two-dimensional shapes from several orientations in order to examine and apply congruence and symmetry.	Moderate
MA.3.G.5.1	Select appropriate units, strategies, and tools to solve problems involving perimeter.	High
MA.3.G.5.2	Measure objects using fractional parts of linear units such as 1/2, 1/4, and 1/10.	Low
MA.3.G.5.3	Tell time to the nearest minute and to the nearest quarter hour, and determine the amount of time elapsed.	Moderate
MA.3.S.7.1	Construct and analyze frequency tables, bar graphs, pictographs, and line plots from data, including data collected through observations, surveys, and experiments.	High

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COURSE DESCRIPTION GRADES PreK-5

Course Number:	5012060
Course Title:	Mathematics - Grade Four
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	1
Course Status:	State Board Approved

RELATED BENCHMARKS (21) :

Scheme	Descriptor	Cognitive Complexity
MA.4.A.1.1	Use and describe various models for multiplication in problem-solving situations, and demonstrate recall of basic multiplication and related division facts with ease.	Moderate
MA.4.A.1.2	Multiply multi-digit whole numbers through four digits fluently, demonstrating understanding of the standard algorithm, and checking for reasonableness of results, including solving real-world problems.	High
MA.4.A.2.1	Use decimals through the thousandths place to name numbers between whole numbers.	Low
MA.4.A.2.2	Describe decimals as an extension of the base-ten number system.	High
MA.4.A.2.3	Relate equivalent fractions and decimals with and without models, including locations on a number line.	Moderate
MA.4.A.2.4	Compare and order decimals, and estimate fraction and decimal amounts in real-world problems.	Moderate

MA.4.A.4.1	Generate algebraic rules and use all four operations to describe patterns, including nonnumeric growing or repeating patterns.	High
MA.4.A.4.2	Describe mathematics relationships using expressions, equations, and visual representations.	High
MA.4.A.4.3	Recognize and write algebraic expressions for functions with two operations.	High
MA.4.A.6.1	Use and represent numbers through millions in various contexts, including estimation of relative sizes of amounts or distances.	Moderate
MA.4.A.6.2	Use models to represent division as: • the inverse of multiplication • as partitioning • as successive subtraction	Moderate
MA.4.A.6.3	Generate equivalent fractions and simplify fractions.	Moderate
MA.4.A.6.4	Determine factors and multiples for specified whole numbers.	Moderate
MA.4.A.6.5	Relate halves, fourths, tenths, and hundredths to decimals and percents.	Moderate
MA.4.A.6.6	Estimate and describe reasonableness of estimates; determine the appropriateness of an estimate versus an exact answer.	High
MA.4.G.3.1	Describe and determine area as the number of same-sized units that cover a region in the plane, recognizing that a unit square is the standard unit for measuring area.	Moderate
MA.4.G.3.2	Justify the formula for the area of the rectangle "area = base x height".	Moderate

MA.4.G.3.3	Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world area problems.	Moderate
MA.4.G.5.1	Classify angles of two-dimensional shapes using benchmark angles (45°, 90°, 180°, and 360°)	Low
MA.4.G.5.2	Identify and describe the results of translations, reflections, and rotations of 45, 90, 180, 270, and 360 degrees, including figures with line and rotational symmetry.	Moderate
MA.4.G.5.3	Identify and build a three-dimensional object from a two-dimensional representation of that object and vice versa.	Moderate

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COURSE DESCRIPTION GRADES PreK-5

Course Number:	5012070
Course Title:	Mathematics - Grade Five
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	1
Course Status:	State Board Approved

RELATED BENCHMARKS (23) :

Scheme	Descriptor	Cognitive Complexity
MA.5.A.1.1	Describe the process of finding quotients involving multi-digit dividends using models, place value, properties, and the relationship of division to multiplication.	Moderate
MA.5.A.1.2	Estimate quotients or calculate them mentally depending on the context and numbers involved.	Moderate
MA.5.A.1.3	Interpret solutions to division situations including those with remainders depending on the context of the problem.	High
MA.5.A.1.4	Divide multi-digit whole numbers fluently, including solving real-world problems, demonstrating understanding of the standard algorithm and checking the reasonableness of results.	High
MA.5.A.2.1	Represent addition and subtraction of decimals and fractions with like and unlike denominators using models, place value, or properties.	Moderate

MA.5.A.2.2	Add and subtract fractions and decimals fluently, and verify the reasonableness of results, including in problem situations.	Moderate
MA.5.A.2.3	Make reasonable estimates of fraction and decimal sums and differences, and use techniques for rounding.	Moderate
MA.5.A.2.4	Determine the prime factorization of numbers.	Moderate
MA.5.A.4.1	Use the properties of equality to solve numerical and real world situations.	Moderate
MA.5.A.4.2	Construct and describe a graph showing continuous data, such as a graph of a quantity that changes over time.	High
MA.5.A.6.1	Identify and relate prime and composite numbers, factors, and multiples within the context of fractions.	Moderate
MA.5.A.6.2	Use the order of operations to simplify expressions which include exponents and parentheses.	Moderate
MA.5.A.6.3	Describe real-world situations using positive and negative numbers.	Moderate
MA.5.A.6.4	Compare, order, and graph integers, including integers shown on a number line.	Moderate
MA.5.A.6.5	Solve non-routine problems using various strategies including “solving a simpler problem” and “guess, check, and revise”.	High
MA.5.G.3.1	Analyze and compare the properties of two-dimensional figures and three-dimensional solids (polyhedra), including the number of edges, faces, vertices, and types of faces.	High
MA.5.G.3.2	Describe, define, and determine surface area and volume of prisms by using appropriate units and selecting strategies and tools.	High

MA.5.G.5.1	Identify and plot ordered pairs on the first quadrant of the coordinate plane.	Low
MA.5.G.5.2	Compare, contrast, and convert units of measure within the same dimension (length, mass, or time) to solve problems.	Moderate
MA.5.G.5.3	Solve problems requiring attention to approximation, selection of appropriate measuring tools, and precision of measurement.	High
MA.5.G.5.4	Derive and apply formulas for areas of parallelograms, triangles, and trapezoids from the area of a rectangle.	High
MA.5.S.7.1	Construct and analyze line graphs and double bar graphs.	High
MA.5.S.7.2	Differentiate between continuous and discrete data, and determine ways to represent those using graphs and diagrams.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1200220
Course Title:	M/J Mathematics Transfer
Course Length:	Year
Course Level:	2
Course Status:	State Board Approved

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number: 1204000
Course Title: M/J Intensive Mathematics (MC)
Course Length: Year
Course Status: State Board Approved

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205010
Course Title:	M/J Mathematics 1
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	2
Course Status:	State Board Approved

RELATED BENCHMARKS (21) :

Scheme	Descriptor	Cognitive Complexity
LA.6.1.6.5	The student will relate new vocabulary to familiar words;	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.1.1	Explain and justify procedures for multiplying and dividing fractions and decimals.	Moderate
MA.6.A.1.2	Multiply and divide fractions and decimals efficiently.	Low
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals.	High
MA.6.A.2.1	Use reasoning about multiplication and division to solve ratio and rate problems.	High
MA.6.A.2.2	Interpret and compare ratios and rates.	Moderate

MA.6.A.3.1	Write and evaluate mathematical expressions that correspond to given situations.	Moderate
MA.6.A.3.2	Write, solve, and graph one- and two- step linear equations and inequalities.	Moderate
MA.6.A.3.3	Work backward with two-step function rules to undo expressions.	Moderate
MA.6.A.3.4	Solve problems given a formula.	Moderate
MA.6.A.3.5	Apply the Commutative, Associative, and Distributive Properties to show that two expressions are equivalent.	Moderate
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.A.5.1	Use equivalent forms of fractions, decimals, and percents to solve problems.	Moderate
MA.6.A.5.2	Compare and order fractions, decimals, and percents, including finding their approximate location on a number line.	Moderate
MA.6.A.5.3	Estimate the results of computations with fractions, decimals, and percents, and judge the reasonableness of the results.	Moderate
MA.6.G.4.1	Understand the concept of Pi, know common estimates of Pi (3.14; 22/7) and use these values to estimate and calculate the circumference and the area of circles.	Moderate
MA.6.G.4.2	Find the perimeters and areas of composite two-dimensional figures, including non-rectangular figures (such as semicircles) using various strategies.	Moderate
MA.6.G.4.3	Determine a missing dimension of a plane figure or prism given its area or volume and some of the dimensions, or determine the area or volume given the dimensions.	Moderate

MA.6.S.6.1	Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.	Low
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205020
Course Title:	M/J Mathematics 1 Advance
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved

RELATED BENCHMARKS (31) :

Scheme	Descriptor	Cognitive Complexity
LA.6.1.6.5	The student will relate new vocabulary to familiar words;	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.1.1	Explain and justify procedures for multiplying and dividing fractions and decimals.	Moderate
MA.6.A.1.2	Multiply and divide fractions and decimals efficiently.	Low
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals.	High
MA.6.A.2.1	Use reasoning about multiplication and division to solve ratio and rate problems.	High
MA.6.A.2.2	Interpret and compare ratios and rates.	Moderate

MA.6.A.3.1	Write and evaluate mathematical expressions that correspond to given situations.	Moderate
MA.6.A.3.2	Write, solve, and graph one- and two- step linear equations and inequalities.	Moderate
MA.6.A.3.3	Work backward with two-step function rules to undo expressions.	Moderate
MA.6.A.3.4	Solve problems given a formula.	Moderate
MA.6.A.3.5	Apply the Commutative, Associative, and Distributive Properties to show that two expressions are equivalent.	Moderate
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.A.5.1	Use equivalent forms of fractions, decimals, and percents to solve problems.	Moderate
MA.6.A.5.2	Compare and order fractions, decimals, and percents, including finding their approximate location on a number line.	Moderate
MA.6.A.5.3	Estimate the results of computations with fractions, decimals, and percents, and judge the reasonableness of the results.	Moderate
MA.6.G.4.1	Understand the concept of Pi, know common estimates of Pi (3.14; 22/7) and use these values to estimate and calculate the circumference and the area of circles.	Moderate
MA.6.G.4.2	Find the perimeters and areas of composite two-dimensional figures, including non-rectangular figures (such as semicircles) using various strategies.	Moderate
MA.6.G.4.3	Determine a missing dimension of a plane figure or prism given its area or volume and some of the dimensions, or determine the area or volume given the dimensions.	Moderate

MA.6.S.6.1	Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.	Low
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High
MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.	High
MA.7.A.3.1	Use and justify the rules for adding, subtracting, multiplying, dividing, and finding the absolute value of integers.	Moderate
MA.7.A.3.2	Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts.	Moderate
MA.7.A.3.3	Formulate and use different strategies to solve one-step and two-step linear equations, including equations with rational coefficients.	Moderate
MA.7.A.3.4	Use the properties of equality to represent an equation in a different way and to show that two equations are equivalent in a given context.	Moderate
MA.7.A.5.1	Express rational numbers as terminating or repeating decimals.	Low
MA.7.A.5.2	Solve non-routine problems by working backwards.	High
MA.7.G.2.1	Justify and apply formulas for surface area and volume of pyramids, prisms, cylinders, and cones.	Moderate
MA.7.G.2.2	Use formulas to find surface areas and volume of three-dimensional composite shapes.	Moderate

MA.7.G.4.3	Identify and plot ordered pairs in all four quadrants of the coordinate plane.	Low

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205040
Course Title:	M/J Mathematics 2
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	2
Course Status:	State Board Approved

RELATED BENCHMARKS (24) :

Scheme	Descriptor	Cognitive Complexity
LA.7.1.6.5	The student will relate new vocabulary to familiar words;	
LA.7.3.2.2	The student will draft writing by organizing information into a logical sequence and combining or deleting sentences to enhance clarity; and	
MA.7.A.1.1	Distinguish between situations that are proportional or not proportional, and use proportions to solve problems.	High
MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.	High
MA.7.A.1.3	Solve problems involving similar figures.	High
MA.7.A.1.4	Graph proportional relationships and identify the unit rate as the slope of the related linear function.	Moderate

MA.7.A.1.5	Distinguish direct variation from other relationships, including inverse variation.	Moderate
MA.7.A.1.6	Apply proportionality to measurement in multiple contexts, including scale drawings and constant speed.	Moderate
MA.7.A.3.1	Use and justify the rules for adding, subtracting, multiplying, dividing, and finding the absolute value of integers.	Moderate
MA.7.A.3.2	Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts.	Moderate
MA.7.A.3.3	Formulate and use different strategies to solve one-step and two-step linear equations, including equations with rational coefficients.	Moderate
MA.7.A.3.4	Use the properties of equality to represent an equation in a different way and to show that two equations are equivalent in a given context.	Moderate
MA.7.A.5.1	Express rational numbers as terminating or repeating decimals.	Low
MA.7.A.5.2	Solve non-routine problems by working backwards.	High
MA.7.G.2.1	Justify and apply formulas for surface area and volume of pyramids, prisms, cylinders, and cones.	Moderate
MA.7.G.2.2	Use formulas to find surface areas and volume of three-dimensional composite shapes.	Moderate
MA.7.G.4.1	Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures, and apply these relationships to solve problems.	High
MA.7.G.4.2	Predict the results of transformations, and draw transformed figures with and without the coordinate plane.	Moderate

MA.7.G.4.3	Identify and plot ordered pairs in all four quadrants of the coordinate plane.	Low
MA.7.G.4.4	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)), dimensions, and derived units to solve problems.	High
MA.7.P.7.1	Determine the outcome of an experiment and predict which events are likely or unlikely, and if the experiment is fair or unfair.	Moderate
MA.7.P.7.2	Determine, compare, and make predictions based on experimental or theoretical probability of independent or dependent events,	High
MA.7.S.6.1	Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population.	High
MA.7.S.6.2	Construct and analyze histograms, stem-and-leaf plots, and circle graphs.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205050
Course Title:	M/J Mathematics 2 Advance
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved

RELATED BENCHMARKS (31) :

Scheme	Descriptor	Cognitive Complexity
LA.7.1.6.5	The student will relate new vocabulary to familiar words;	
LA.7.3.2.2	The student will draft writing by organizing information into a logical sequence and combining or deleting sentences to enhance clarity; and	
MA.7.A.1.1	Distinguish between situations that are proportional or not proportional, and use proportions to solve problems.	High
MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.	High
MA.7.A.1.3	Solve problems involving similar figures.	High
MA.7.A.1.4	Graph proportional relationships and identify the unit rate as the slope of the related linear function.	Moderate

MA.7.A.1.5	Distinguish direct variation from other relationships, including inverse variation.	Moderate
MA.7.A.1.6	Apply proportionality to measurement in multiple contexts, including scale drawings and constant speed.	Moderate
MA.7.A.5.1	Express rational numbers as terminating or repeating decimals.	Low
MA.7.G.2.1	Justify and apply formulas for surface area and volume of pyramids, prisms, cylinders, and cones.	Moderate
MA.7.G.4.1	Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures, and apply these relationships to solve problems.	High
MA.7.G.4.2	Predict the results of transformations, and draw transformed figures with and without the coordinate plane.	Moderate
MA.7.G.4.3	Identify and plot ordered pairs in all four quadrants of the coordinate plane.	Low
MA.7.P.7.1	Determine the outcome of an experiment and predict which events are likely or unlikely, and if the experiment is fair or unfair.	Moderate
MA.7.P.7.2	Determine, compare, and make predictions based on experimental or theoretical probability of independent or dependent events,	High
MA.7.S.6.1	Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population.	High
MA.7.S.6.2	Construct and analyze histograms, stem-and-leaf plots, and circle graphs.	Moderate
MA.8.A.1.1	Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range, and the difference between discrete and continuous data.	High

MA.8.A.1.2	Interpret the slope and the x- and y-intercepts when graphing a linear equation for a real-world problem.	Moderate
MA.8.A.1.6	Compare the graphs of linear and non-linear functions for real-world situations.	Moderate
MA.8.A.4.2	Solve and graph one- and two-step inequalities in one variable.	Moderate
MA.8.A.6.1	Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.	Low
MA.8.A.6.2	Make reasonable approximations of square roots and mathematical expressions that include square roots, and use them to estimate solutions to problems and to compare mathematical expressions involving real numbers and radical expressions.	Moderate
MA.8.A.6.3	Simplify real number expressions using the laws of exponents.	Moderate
MA.8.A.6.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real world problems.	High
MA.8.G.2.2	Classify and determine the measure of angles, including angles created when parallel lines are cut by transversals.	Low
MA.8.G.2.3	Demonstrate that the sum of the angles in a triangle is 180-degrees and apply this fact to find unknown measure of angles and the sum of angles in polygons.	Moderate
MA.8.G.2.4	Validate and apply Pythagorean Theorem to find distances in real world situations or between points in the coordinate plane.	Moderate
MA.8.G.5.1	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)) and dimensions including temperature, area, volume, and derived units to solve problems.	High

MA.8.S.3.1	Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.	Moderate
MA.8.S.3.2	Determine and describe how changes in data values impact measures of central tendency.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205070
Course Title:	M/J Mathematics 3
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	2
Course Status:	State Board Approved

RELATED BENCHMARKS (22) :

Scheme	Descriptor	Cognitive Complexity
LA.8.1.6.5	The student will relate new vocabulary to familiar words;	
LA.8.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.8.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, main idea, logical sequence, and time frame for completion; and	
MA.8.A.1.1	Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range, and the difference between discrete and continuous data.	High
MA.8.A.1.2	Interpret the slope and the x- and y-intercepts when graphing a linear equation for a real-world problem.	Moderate

MA.8.A.1.3	Use tables, graphs, and models to represent, analyze, and solve real-world problems related to systems of linear equations.	High
MA.8.A.1.4	Identify the solution to a system of linear equations using graphs.	Moderate
MA.8.A.1.5	Translate among verbal, tabular, graphical, and algebraic representations of linear functions.	Moderate
MA.8.A.1.6	Compare the graphs of linear and non-linear functions for real-world situations.	Moderate
MA.8.A.4.1	Solve literal equations for a specified variable.	Low
MA.8.A.4.2	Solve and graph one- and two-step inequalities in one variable.	Moderate
MA.8.A.6.1	Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.	Low
MA.8.A.6.2	Make reasonable approximations of square roots and mathematical expressions that include square roots, and use them to estimate solutions to problems and to compare mathematical expressions involving real numbers and radical expressions.	Moderate
MA.8.A.6.3	Simplify real number expressions using the laws of exponents.	Moderate
MA.8.A.6.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real world problems.	High
MA.8.G.2.1	Use similar triangles to solve problems that include height and distances.	High
MA.8.G.2.2	Classify and determine the measure of angles, including angles created when parallel lines are cut by transversals.	Low

MA.8.G.2.3	Demonstrate that the sum of the angles in a triangle is 180-degrees and apply this fact to find unknown measure of angles and the sum of angles in polygons.	Moderate
MA.8.G.2.4	Validate and apply Pythagorean Theorem to find distances in real world situations or between points in the coordinate plane.	Moderate
MA.8.G.5.1	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)) and dimensions including temperature, area, volume, and derived units to solve problems.	High
MA.8.S.3.1	Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.	Moderate
MA.8.S.3.2	Determine and describe how changes in data values impact measures of central tendency.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205080
Course Title:	M/J Mathematics 3 Advance
Number of Credits:	NA
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved

RELATED BENCHMARKS (29) :

Scheme	Descriptor	Cognitive Complexity
LA.8.1.6.5	The student will relate new vocabulary to familiar words;	
LA.8.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.8.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, main idea, logical sequence, and time frame for completion; and	
MA.8.A.1.1	Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range, and the difference between discrete and continuous data.	High
MA.8.A.1.2	Interpret the slope and the x- and y-intercepts when graphing a linear equation for a real-world problem.	Moderate
MA.8.A.1.3	Use tables, graphs, and models to represent, analyze, and	High

	solve real-world problems related to systems of linear equations.	
MA.8.A.1.4	Identify the solution to a system of linear equations using graphs.	Moderate
MA.8.A.1.5	Translate among verbal, tabular, graphical, and algebraic representations of linear functions.	Moderate
MA.8.A.1.6	Compare the graphs of linear and non-linear functions for real-world situations.	Moderate
MA.8.A.4.1	Solve literal equations for a specified variable.	Low
MA.8.A.4.2	Solve and graph one- and two-step inequalities in one variable.	Moderate
MA.8.A.6.1	Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.	Low
MA.8.A.6.2	Make reasonable approximations of square roots and mathematical expressions that include square roots, and use them to estimate solutions to problems and to compare mathematical expressions involving real numbers and radical expressions.	Moderate
MA.8.A.6.3	Simplify real number expressions using the laws of exponents.	Moderate
MA.8.A.6.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real world problems.	High
MA.8.G.2.1	Use similar triangles to solve problems that include height and distances.	High
MA.8.G.2.2	Classify and determine the measure of angles, including angles created when parallel lines are cut by transversals.	Low

MA.8.G.2.3	Demonstrate that the sum of the angles in a triangle is 180-degrees and apply this fact to find unknown measure of angles and the sum of angles in polygons.	Moderate
MA.8.G.2.4	Validate and apply Pythagorean Theorem to find distances in real world situations or between points in the coordinate plane.	Moderate
MA.8.G.5.1	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)) and dimensions including temperature, area, volume, and derived units to solve problems.	High
MA.8.S.3.1	Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.	Moderate
MA.8.S.3.2	Determine and describe how changes in data values impact measures of central tendency.	Moderate
MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).	Low
MA.912.A.1.2	Compare real number expressions.	Moderate
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205090
Course Title:	M/J Mathematics 1 International Baccalaureate
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number:	1205100
Course Title:	M/J Pre-Algebra International Baccalaureate
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200300
Course Title:	Pre-Algebra
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (31) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
MA.6.S.6.1	Determine the measures of central tendency (mean,	Low

	median, mode) and variability (range) for a given set of data.	
MA.7.A.1.1	Distinguish between situations that are proportional or not proportional, and use proportions to solve problems.	High
MA.8.A.1.1	Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range, and the difference between discrete and continuous data.	High
MA.8.A.1.2	Interpret the slope and the x- and y-intercepts when graphing a linear equation for a real-world problem.	Moderate
MA.8.A.1.5	Translate among verbal, tabular, graphical, and algebraic representations of linear functions.	Moderate
MA.8.A.4.1	Solve literal equations for a specified variable.	Low
MA.8.A.6.1	Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.	Low
MA.8.A.6.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real world problems.	High
MA.8.G.2.1	Use similar triangles to solve problems that include height and distances.	High
MA.8.G.2.2	Classify and determine the measure of angles, including angles created when parallel lines are cut by transversals.	Low
MA.8.G.2.3	Demonstrate that the sum of the angles in a triangle is 180-degrees and apply this fact to find unknown measure of angles and the sum of angles in polygons.	Moderate
MA.8.G.2.4	Validate and apply Pythagorean Theorem to find distances in real world situations or between points in the coordinate plane.	Moderate

MA.8.G.5.1	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)) and dimensions including temperature, area, volume, and derived units to solve problems.	High
MA.8.S.3.1	Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.	Moderate
MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).	Low
MA.912.A.1.2	Compare real number expressions.	Moderate
MA.912.A.1.3	Simplify real number expressions using the laws of exponents.	Low
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers) using multi-step and real-world problems.	Moderate
MA.912.A.1.5	Use dimensional (unit) analysis to perform conversions between units of measure, including rates.	Moderate
MA.912.A.2.1	Create a graph to represent a real-world situation.	Moderate
MA.912.A.2.2	Interpret a graph representing a real-world situation.	Moderate
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	Moderate
MA.912.A.4.1	Simplify monomials and monomial expressions using the	Low

	laws of integral exponents.	
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.4	Use counterexamples to show that statements are false.	High
MA.912.P.1.1	Use counting principles, including the addition and the multiplication principles, to determine size of finite sample spaces and probabilities of events in those spaces.	High
MA.912.P.2.2	Determine probabilities of independent events.	Moderate
MA.912.S.2.2	Apply the definition of random sample and basic types of sampling, including representative samples, stratified samples, censuses.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200310
Course Title:	Algebra 1
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	Algebra 1 End of Course Assessment and Item Types by Benchmark (PDF) The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (40) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	

LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
MA.912.A.1.8	Use the zero product property of real numbers in a variety of contexts to identify solutions to equations.	Moderate
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	Moderate
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	Low
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-	Moderate

	intercept form, standard form, or point-slope form .	
MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	High
MA.912.A.3.12	Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	Moderate
MA.912.A.3.13	Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate

MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.4	Solve algebraic proportions.	Low
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.7.1	Graph quadratic equations with and without graphing technology.	Moderate
MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.	Moderate
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	Moderate
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.D.7.1	Perform set operations such as union and intersection, complement, and cross product.	Low
MA.912.D.7.2	Use Venn diagrams to explore relationships and patterns and to make arguments about relationships between sets.	Moderate
MA.912.G.1.4	Use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200320
Course Title:	Algebra 1 Honors
Course Length:	Year
Course Status:	State Board Approved
Honors?	Yes

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (46) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline,	

	chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
MA.912.A.1.8	Use the zero product property of real numbers in a variety of contexts to identify solutions to equations.	Moderate
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	Moderate
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.6	Solve and graph the solutions of absolute value equations and inequalities with one variable.	Moderate
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	Low
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .	Moderate

MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	High
MA.912.A.3.12	Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	Moderate
MA.912.A.3.13	Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate

MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	Moderate
MA.912.A.5.3	Simplify complex fractions.	Moderate
MA.912.A.5.4	Solve algebraic proportions.	Low
MA.912.A.5.5	Solve rational equations.	Moderate
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	High
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.7.1	Graph quadratic equations with and without graphing technology.	Moderate
MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.	Moderate
MA.912.A.7.6	Identify the axis of symmetry, vertex, domain, range and intercept(s) for a given parabola.	Low
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	Moderate
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate

MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.D.7.1	Perform set operations such as union and intersection, complement, and cross product.	Low
MA.912.D.7.2	Use Venn diagrams to explore relationships and patterns and to make arguments about relationships between sets.	Moderate
MA.912.G.1.4	Use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200330
Course Title:	Algebra 2
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (43) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.4.2.1	The student will write in a variety of	

	informational/expository forms, including a variety of technical documents (e.g., how-to-manuals, procedures, assembly directions);	
MA.912.A.1.6	Identify the real and imaginary parts of complex numbers and perform basic operations.	Moderate
MA.912.A.2.5	Graph absolute value equations and inequalities in two variables.	Moderate
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.7	Perform operations (addition, subtraction, division, and multiplication) of functions algebraically, numerically, and graphically.	Moderate
MA.912.A.2.8	Determine the composition of functions.	Low
MA.912.A.2.10	Describe and graph transformations of functions	Moderate
MA.912.A.2.11	Solve problems involving functions and their inverses.	High
MA.912.A.2.12	Solve problems using direct, inverse, and joint variations.	High
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.6	Solve and graph the solutions of absolute value equations and inequalities with one variable.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate

MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	Low
MA.912.A.4.10	Use polynomial equations to solve real-world problems.	Moderate
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	Moderate
MA.912.A.5.3	Simplify complex fractions.	Moderate
MA.912.A.5.5	Solve rational equations.	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate

MA.912.A.6.3	Simplify expressions using properties of rational exponents.	Low
MA.912.A.6.4	Convert between rational exponent and radical forms of expressions.	Low
MA.912.A.6.5	Solve equations that contain radical expressions.	Moderate
MA.912.A.7.3	Solve quadratic equations over the real numbers by completing the square.	Moderate
MA.912.A.7.4	Use the discriminant to determine the nature of the roots of a quadratic equation.	Low
MA.912.A.7.5	Solve quadratic equations over the complex number system.	Moderate
MA.912.A.7.6	Identify the axis of symmetry, vertex, domain, range and intercept(s) for a given parabola.	Low
MA.912.A.8.1	Define exponential and logarithmic functions and determine their relationship	Moderate
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	Low
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.A.8.5	Solve logarithmic and exponential equations.	Moderate
MA.912.A.8.6	Use the change of base formula.	Low
MA.912.A.8.7	Solve applications of exponential growth and decay.	High
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High

MA.912.D.11.1	Define arithmetic and geometric sequences and series.	Low
MA.912.D.11.3	Find specified terms of arithmetic and geometric sequences.	Low

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200340
Course Title:	Algebra 2 Honors
Course Length:	Year
Course Status:	State Board Approved
Honors?	Yes

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (49) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	

LA.910.4.2.1	The student will write in a variety of informational/expository forms, including a variety of technical documents (e.g., how-to-manuals, procedures, assembly directions);	
MA.912.A.1.6	Identify the real and imaginary parts of complex numbers and perform basic operations.	Moderate
MA.912.A.2.5	Graph absolute value equations and inequalities in two variables.	Moderate
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.7	Perform operations (addition, subtraction, division, and multiplication) of functions algebraically, numerically, and graphically.	Moderate
MA.912.A.2.8	Determine the composition of functions.	Low
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise with and without technology.	Moderate
MA.912.A.2.10	Describe and graph transformations of functions	Moderate
MA.912.A.2.11	Solve problems involving functions and their inverses.	High
MA.912.A.2.12	Solve problems using direct, inverse, and joint variations.	High
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate

MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	Low
MA.912.A.4.10	Use polynomial equations to solve real-world problems.	Moderate
MA.912.A.4.11	Solve a polynomial inequality by examining the graph with and without the use of technology.	Moderate
MA.912.A.4.12	Apply the Binomial Theorem.	Moderate
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.6.3	Simplify expressions using properties of rational exponents.	Low
MA.912.A.6.4	Convert between rational exponent and radical forms of expressions.	Low

MA.912.A.6.5	Solve equations that contain radical expressions.	Moderate
MA.912.A.7.3	Solve quadratic equations over the real numbers by completing the square.	Moderate
MA.912.A.7.4	Use the discriminant to determine the nature of the roots of a quadratic equation.	Low
MA.912.A.7.5	Solve quadratic equations over the complex number system.	Moderate
MA.912.A.7.6	Identify the axis of symmetry, vertex, domain, range and intercept(s) for a given parabola.	Low
MA.912.A.7.7	Solve non-linear systems of equations with and without using technology.	High
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.8.1	Define exponential and logarithmic functions and determine their relationship	Moderate
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	Low
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.A.8.5	Solve logarithmic and exponential equations.	Moderate
MA.912.A.8.6	Use the change of base formula.	Low
MA.912.A.8.7	Solve applications of exponential growth and decay.	High
MA.912.A.9.1	Write the equations of conic sections in standard form and general form, in order to identify the conic section and to find its geometric properties (foci, asymptotes, eccentricity, etc.).	Moderate

MA.912.A.9.2	Graph conic sections with and without using graphing technology.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.D.11.1	Define arithmetic and geometric sequences and series.	Low
MA.912.D.11.2	Use sigma notation to describe series.	Low
MA.912.D.11.3	Find specified terms of arithmetic and geometric sequences.	Low
MA.912.D.11.4	Find partial sums of arithmetic and geometric series, and find sums of infinite convergent geometric series. Use Sigma notation where applicable.	Moderate
MA.912.G.6.6	Given the center and the radius, find the equation of a circle in the coordinate plane or given the equation of a circle in center-radius form, state the center and the radius of the circle.	Moderate
MA.912.G.6.7	Given the equation of a circle in center-radius form or given the center and the radius of a circle, sketch the graph of the circle.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200370
Course Title:	Algebra 1-A
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (31) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	

LA.910.1.6.3	The student will use context clues to determine meanings of unfamiliar words;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).	Low
MA.912.A.1.2	Compare real number expressions.	Moderate
MA.912.A.1.3	Simplify real number expressions using the laws of exponents.	Low
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers) using multi-step and real-world problems.	Moderate
MA.912.A.1.5	Use dimensional (unit) analysis to perform conversions between units of measure, including rates.	Moderate
MA.912.A.2.1	Create a graph to represent a real-world situation.	Moderate
MA.912.A.2.2	Interpret a graph representing a real-world situation.	Moderate
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and	Moderate

	commutative properties of real numbers and the properties of equality.	
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	Low
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .	Moderate
MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	High
MA.912.A.3.12	Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	Moderate
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High

MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.D.7.1	Perform set operations such as union and intersection, complement, and cross product.	Low
MA.912.D.7.2	Use Venn diagrams to explore relationships and patterns and to make arguments about relationships between sets.	Moderate
MA.912.G.1.4	Use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200380
Course Title:	Algebra 1-B
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (23) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline,	

	chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
MA.912.A.1.8	Use the zero product property of real numbers in a variety of contexts to identify solutions to equations.	Moderate
MA.912.A.3.13	Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.4	Solve algebraic proportions.	Low
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.7.1	Graph quadratic equations with and without graphing technology.	Moderate

MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.	Moderate
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	Moderate
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200400
Course Title:	Intensive Mathematics
Course Length:	/M
Course Status:	State Board Approved

RELATED BENCHMARKS (2) :

Scheme	Descriptor	Cognitive Complexity
MA.912.T.5.1	Use a variety of problem-solving strategies, such as drawing a diagram, guess-and-check, solving a simpler problem, examining simpler problems, and working backwards, using technology when appropriate.	High
MA.912.T.5.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200410
Course Title:	Mathematics for College Success
Course Length:	Semester
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (31) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	

MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).	Low
MA.912.A.1.2	Compare real number expressions.	Moderate
MA.912.A.1.3	Simplify real number expressions using the laws of exponents.	Low
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers) using multi-step and real-world problems.	Moderate
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	Moderate
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .	Moderate
MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new	Moderate

	line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	
MA.912.A.3.12	Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	Moderate
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	Moderate
MA.912.A.5.4	Solve algebraic proportions.	Low
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	High
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or	High

	never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	
MA.912.D.7.1	Perform set operations such as union and intersection, complement, and cross product.	Low
MA.912.D.7.2	Use Venn diagrams to explore relationships and patterns and to make arguments about relationships between sets.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200500
Course Title:	Advanced Algebra with Financial Applications
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (45) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
MA.912.A.2.1	Create a graph to represent a real-world situation.	Moderate
MA.912.A.2.2	Interpret a graph representing a real-world situation.	Moderate

MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.8.7	Solve applications of exponential growth and decay.	High
MA.912.D.1.1	Use recursive and iterative thinking to solve problems, including identification of patterns, population growth and decline, and compound interest.	Moderate
MA.912.F.1.1	Explain the difference between simple and compound interest.	Moderate
MA.912.F.1.2	Solve problems involving compound interest.	High
MA.912.F.1.3	Demonstrate the relationship between simple interest and linear growth.	Moderate
MA.912.F.1.4	Demonstrate the relationship between compound interest and exponential growth.	Moderate
MA.912.F.2.1	Calculate the future value of a given amount of money with and without technology.	Moderate
MA.912.F.2.2	Calculate the present value of a certain amount of money for a given length of time in the future with and without technology.	Moderate
MA.912.F.3.1	Compare the advantages and disadvantages of using cash versus a credit card.	High
MA.912.F.3.2	Analyze credit scores and reports.	Moderate
MA.912.F.3.3	Calculate the finance charges and total amount due on a credit card bill.	Low

MA.912.F.3.4	Compare the advantages and disadvantages of deferred payments.	High
MA.912.F.3.5	Calculate deferred payments.	Moderate
MA.912.F.3.6	Calculate total cost of purchasing consumer durables over time given different down payments, financing options, and fees.	Moderate
MA.912.F.3.7	Calculate the following fees associated with a mortgage: • discount points • origination fee • maximum brokerage fee on a net or gross loan • documentary stamps • prorated expenses (interest, county and/or city property taxes, and mortgage on an assumed mortgage)	Low
MA.912.F.3.9	Calculate the total amount to be paid over the life of a fixed rate loan.	Moderate
MA.912.F.3.10	Calculate the effects on the monthly payment in the change of interest rate based on an adjustable rate mortgage.	Moderate
MA.912.F.3.11	Calculate the final pay out amount for a balloon mortgage.	Moderate
MA.912.F.3.12	Compare the cost of paying a higher interest rate and lower points versus a lower interest rate and more points.	Moderate
MA.912.F.3.13	Calculate the total amount paid for the life of a loan for a house including the down payment, points, fees, and interest.	Moderate
MA.912.F.3.14	Compare the total cost for a set purchase price using a fixed rate, adjustable rate, and a balloon mortgage.	Moderate
MA.912.F.3.17	Compare interest rate calculations and annual percentage rate calculations to distinguish between the two rates.	High

MA.912.F.4.1	Develop personal budgets that fit within various income brackets.	Moderate
MA.912.F.4.2	Explain cash management strategies including debit accounts, checking accounts, and savings accounts.	Moderate
MA.912.F.4.3	Calculate net worth.	Low
MA.912.F.4.4	Establish a plan to pay off debt.	High
MA.912.F.4.5	Develop and apply a variety of strategies to use tax tables, and to determine, calculate, and complete yearly federal income tax.	Moderate
MA.912.F.4.6	Compare different insurance options and fees.	High
MA.912.F.4.7	Compare and contrast the role of insurance as a device to mitigate risk and calculate expenses of various options.	Moderate
MA.912.F.4.8	Collect, organize, and interpret data to determine an effective retirement savings plan to meet personal financial goals.	Moderate
MA.912.F.4.9	Calculate, compare, and contrast different types of retirement plans, including IRAs, ROTH accounts, and annuities.	High
MA.912.F.4.10	Analyze diversification in investments.	High
MA.912.F.4.11	Purchase stock with a set amount of money, and follow the process through gains, losses, and selling.	Moderate
MA.912.F.4.12	Compare and contrast income from purchase of common stock, preferred stock, and bonds.	Moderate
MA.912.F.4.13	Given current exchange rates be able to convert from one form of currency to another.	Low
MA.912.S.3.1	Read and interpret data presented in various formats. Determine whether data is presented in appropriate	Moderate

	format, and identify possible corrections. Formats to include: • bar graphs • line graphs • stem and leaf plots • circle graphs • histograms • box and whiskers plots • scatter plots • cumulative frequency (ogive) graphs	
MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate
MA.912.T.5.1	Use a variety of problem-solving strategies, such as drawing a diagram, guess-and-check, solving a simpler problem, examining simpler problems, and working backwards, using technology when appropriate.	High
MA.912.T.5.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200700
Course Title:	Mathematics for College Readiness
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (47) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	
LA.1112.3.4.1	The student will edit for correct use of spelling, using	

	spelling rules, orthographic patterns, generalizations, knowledge of root words, prefixes, suffixes, knowledge of Greek, Latin, and Anglo-Saxon root words, and knowledge of foreign words commonly used in English (laissez faire, croissant);	
LA.1112.3.4.2	The student will edit for correct use of capitalization, including names of academic courses and proper adjectives;	
LA.1112.3.4.3	The student will edit for correct use of punctuation, including commas, colons, semicolons, apostrophes, dashes, quotation marks, parentheses, ellipses, brackets, and underlining or italics;	
LA.1112.3.4.4	The student will edit for correct use of grammar and usage, including but not limited to parts of speech, verb tense, noun/pronoun agreement, subject/verb agreement, pronoun/antecedent agreement, parallel structure, modifier placement, comparative and superlative adjectives and adverbs, and unintended shift in person or tense; and	
LA.1112.3.4.5	The student will edit for correct use of varied sentence structure, including the elimination of dangling or misplaced modifiers, run-on or fused sentences, and unintended sentence fragments.	
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.5	Graph absolute value equations and inequalities in two variables.	Moderate
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.8	Determine the composition of functions.	Low
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise with and without technology.	Moderate
MA.912.A.2.10	Describe and graph transformations of functions	Moderate

MA.912.A.2.11	Solve problems involving functions and their inverses.	High
MA.912.A.2.12	Solve problems using direct, inverse, and joint variations.	High
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	Moderate
MA.912.A.5.3	Simplify complex fractions.	Moderate
MA.912.A.5.5	Solve rational equations.	Moderate
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	High
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions	Moderate

	(square roots and higher).	
MA.912.A.6.3	Simplify expressions using properties of rational exponents.	Low
MA.912.A.6.4	Convert between rational exponent and radical forms of expressions.	Low
MA.912.A.6.5	Solve equations that contain radical expressions.	Moderate
MA.912.A.7.5	Solve quadratic equations over the complex number system.	Moderate
MA.912.A.7.7	Solve non-linear systems of equations with and without using technology.	High
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	Moderate
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	Low
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.A.8.5	Solve logarithmic and exponential equations.	Moderate
MA.912.A.8.6	Use the change of base formula.	Low
MA.912.D.8.1	Use matrices to organize and store data. Perform matrix operations (addition, subtraction, scalar multiplication, multiplication)	Low
MA.912.D.8.2	Use matrix operations to solve problems.	Moderate
MA.912.D.8.4	Find the inverse of a matrix, and use the inverse to solve problems with and without the use of technology.	High

MA.912.F.1.1	Explain the difference between simple and compound interest.	Moderate
MA.912.F.1.2	Solve problems involving compound interest.	High
MA.912.F.1.3	Demonstrate the relationship between simple interest and linear growth.	Moderate
MA.912.F.1.4	Demonstrate the relationship between compound interest and exponential growth.	Moderate
MA.912.F.2.1	Calculate the future value of a given amount of money with and without technology.	Moderate
MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1200990
Course Title:	Mathematics Transfer
Course Length:	/Z
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1201300
Course Title:	Mathematical Analysis
Number of Credits:	One credit (1)
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved

RELATED BENCHMARKS (46) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	
LA.1112.1.7.4	The student will identify cause-and-effect relationships in text;	
LA.1112.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, a controlling idea, logical sequence, and time frame for completion; and	
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	

LA.1112.3.2.2	The student will draft writing by establishing a logical organizational pattern with supporting details that are substantial, specific, and relevant; and	
MA.912.A.2.1	Create a graph to represent a real-world situation.	Moderate
MA.912.A.2.2	Interpret a graph representing a real-world situation.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise with and without technology.	Moderate
MA.912.A.2.10	Describe and graph transformations of functions	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a	Moderate

	graph, and the factors of a polynomial expression with and without technology.	
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	Low
MA.912.A.4.10	Use polynomial equations to solve real-world problems.	Moderate
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	High
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.C.1.1	Understand the concept of limit and estimate limits from graphs and tables of values.	Moderate
MA.912.C.1.2	Find limits by substitution.	Low
MA.912.C.1.3	Find limits of sums, differences, products, and quotients.	Low
MA.912.C.1.4	Find limits of rational functions that are undefined at a point.	Low
MA.912.C.1.9	Understand continuity in terms of limits.	High
MA.912.C.1.10	Decide if a function is continuous at a point.	High
MA.912.C.1.11	Find the types of discontinuities of a function.	Moderate
MA.912.D.1.3	Use mathematical induction to prove various concepts in number theory (such as sums of infinite integer series, divisibility statements, and parity statements), recurrence relations, and other applications.	High

MA.912.D.6.6	Construct logical arguments using laws of detachment (modus ponens), syllogism, tautology, and contradiction; judge the validity of arguments, and give counterexamples to disprove statements.	High
MA.912.D.8.2	Use matrix operations to solve problems.	Moderate
MA.912.D.8.3	Use row-reduction techniques to solve problems.	Moderate
MA.912.D.8.4	Find the inverse of a matrix, and use the inverse to solve problems with and without the use of technology.	High
MA.912.D.8.6	Use matrices to solve Markov chain problems that link present events to future events using probabilities.	High
MA.912.D.11.4	Find partial sums of arithmetic and geometric series, and find sums of infinite convergent geometric series. Use Sigma notation where applicable.	Moderate
MA.912.P.1.1	Use counting principles, including the addition and the multiplication principles, to determine size of finite sample spaces and probabilities of events in those spaces.	High
MA.912.P.1.2	Use formulas for permutations and combinations to count outcomes and determine probabilities of events.	Moderate
MA.912.P.2.3	Understand and use the concept of conditional probability, including: understanding how conditioning affects the probability of events and finding conditional probabilities from a two-way frequency table.	High
MA.912.P.3.3	Apply the properties of the normal distribution.	Moderate
MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.4	Calculate and interpret measures of variance and standard deviation. Use these measures to make comparisons among sets of data.	Moderate

MA.912.S.3.6	Use empirical rules such as the 68-95-99.7 rule to estimate spread of distributions and to make comparisons among sets of data.	Moderate
MA.912.S.3.8	Determine whether a data distribution is symmetric or skewed based on an appropriate graphical presentation of the data.	Low
MA.912.S.3.9	Identify outliers in a set of data based on an appropriate graphical presentation of the data, and describe the effect of outliers on the mean, median, and range of the data.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1201310
Course Title:	Analysis of Functions
Number of Credits:	One credit (1)
Course Length:	Year
Course Type:	Core
Course Level:	3
Course Status:	State Board Approved

RELATED BENCHMARKS (30) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	
LA.1112.1.7.4	The student will identify cause-and-effect relationships in text;	
LA.1112.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, a controlling idea, logical sequence, and time frame for completion; and	
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	

LA.1112.3.2.2	The student will draft writing by establishing a logical organizational pattern with supporting details that are substantial, specific, and relevant; and	
MA.912.A.2.1	Create a graph to represent a real-world situation.	Moderate
MA.912.A.2.2	Interpret a graph representing a real-world situation.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise with and without technology.	Moderate
MA.912.A.2.10	Describe and graph transformations of functions	Moderate
MA.912.A.2.11	Solve problems involving functions and their inverses.	High
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate

MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	Low
MA.912.A.4.10	Use polynomial equations to solve real-world problems.	Moderate
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	High
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.A.8.7	Solve applications of exponential growth and decay.	High
MA.912.T.1.1	Convert between degree and radian measures.	Moderate
MA.912.T.1.4	Find approximate values of trigonometric and inverse trigonometric functions using appropriate technology.	Low
MA.912.T.1.6	Define and graph trigonometric functions using domain, range, intercepts, period, amplitude, phase shift, vertical shift, and asymptotes with and without the use of graphing technology.	High
MA.912.T.1.7	Define and graph inverse trigonometric relations and functions.	Moderate
MA.912.T.1.8	Solve real-world problems involving applications of trigonometric functions using graphing technology when appropriate.	High
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1201320
Course Title:	International Baccalaureate Math Analysis
Number of Credits:	One credit (1)
Course Length:	Year
Course Status:	State Board Approved
IB? **International Baccalaureate**	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202300
Course Title:	Calculus
Number of Credits:	One credit (1)
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (40) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.6.9	The student will determine the correct meaning of words with multiple meanings in context;	
LA.1112.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, outlining);	
MA.912.C.1.6	Find limits at infinity.	Moderate
MA.912.C.1.7	Decide when a limit is infinite and use limits involving infinity to describe asymptotic behavior.	Moderate
MA.912.C.1.8	Find special limits such as $\lim_{x \to 0} \frac{sinx}{x}$	Moderate
MA.912.C.2.1	Understand the concept of derivative geometrically, numerically, and analytically, and interpret the derivative as an instantaneous rate of change or as the slope of the tangent line.	High

MA.912.C.2.2	State, understand, and apply the definition of derivative.	Moderate
MA.912.C.2.3	Find the derivatives of functions, including algebraic, trigonometric, logarithmic, and exponential functions.	Low
MA.912.C.2.4	Find the derivatives of sums, products, and quotients.	Low
MA.912.C.2.5	Find the derivatives of composite functions using the Chain Rule.	Moderate
MA.912.C.2.6	Find the derivatives of implicitly-defined functions.	Moderate
MA.912.C.2.7	Find derivatives of inverse functions.	Moderate
MA.912.C.2.8	Find second derivatives and derivatives of higher order.	Low
MA.912.C.2.9	Find derivatives using logarithmic differentiation.	Moderate
MA.912.C.2.10	Understand and use the relationship between differentiability and continuity.	Moderate
MA.912.C.2.11	Understand and apply the Mean Value Theorem.	Moderate
MA.912.C.3.1	Find the slope of a curve at a point, including points at which there are vertical tangent lines and no tangent lines.	Moderate
MA.912.C.3.2	Find an equation for the tangent line to a curve at a point and a local linear approximation.	Moderate
MA.912.C.3.3	Decide where functions are decreasing and increasing. Understand the relationship between the increasing and decreasing behavior of f and the sign of f'.	Moderate
MA.912.C.3.4	Find local and absolute maximum and minimum points.	Moderate
MA.912.C.3.5	Find points of inflection of functions. Understand the relationship between the concavity of f and the sign of f". Understand points of inflection as places where concavity changes.	Moderate

MA.912.C.3.6	Use first and second derivatives to help sketch graphs. Compare the corresponding characteristics of the graphs of f, f', and f''.	High
MA.912.C.3.7	Use implicit differentiation to find the derivative of an inverse function.	Moderate
MA.912.C.3.8	Solve optimization problems.	Moderate
MA.912.C.3.9	Find average and instantaneous rates of change. Understand the instantaneous rate of change as the limit of the average rate of change. Interpret a derivative as a rate of change in applications, including velocity, speed, and acceleration.	Moderate
MA.912.C.3.10	Find the velocity and acceleration of a particle moving in a straight line.	Moderate
MA.912.C.3.11	Model rates of change, including related rates problems.	High
MA.912.C.4.1	Use rectangle approximations to find approximate values of integrals.	Low
MA.912.C.4.2	Calculate the values of Riemann Sums over equal subdivisions using left, right, and midpoint evaluation points.	Low
MA.912.C.4.3	Interpret a definite integral as a limit of Riemann sums.	Moderate
MA.912.C.4.4	Interpret a definite integral of the rate of change of a quantity over an interval as the change of the quantity over the interval. That is, $\int_a^b f'(x)dx = f(b) - f(a)$ (Fundamental Theorem of Calculus).	High
MA.912.C.4.5	Use the Fundamental Theorem of Calculus to evaluate definite and indefinite integrals and to represent particular antiderivatives. Perform analytical and graphical analysis of functions so defined.	Moderate

MA.912.C.4.6	Use these properties of definite integrals: • $\int_a^b [f(x) + g(x)]dx = \int_a^b f(x)dx + \int_a^b g(x)dx$ • $\int_a^b k \bullet f(x)dx = k\int_a^b f(x)dx$ • $\int_a^a f(x)dx = 0$ • $\int_a^b f(x)dx = -\int_b^a f(x)dx$ • $\int_a^b f(x)dx + \int_b^c f(x)dx = \int_a^c f(x)dx$ • If $f(x) \leq g(x)$ on [a, b], then $\int_a^b f(x)dx \leq \int_a^b g(x)dx$	Low
MA.912.C.4.7	Use integration by substitution (or change of variable) to find values of integrals.	Moderate
MA.912.C.4.8	Use Riemann Sums, the Trapezoidal Rule, and technology to approximate definite integrals of functions represented algebraically, geometrically, and by tables of values.	Moderate
MA.912.C.5.1	Find specific antiderivatives using initial conditions, including finding velocity functions from acceleration functions, finding position functions from velocity functions, and solving applications related to motion along a line.	Moderate
MA.912.C.5.5	Use definite integrals to find the area between a curve and the x-axis or between two curves.	Moderate
MA.912.C.5.7	Use definite integrals to find the volume of a solid with known cross-sectional area, including solids of revolution.	High
MA.912.C.5.8	Apply integration to model, and solve problems in physical, biological, and social sciences.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202310
Course Title:	Advanced Placement Calculus AB
Course Length:	Year
Course Status:	State Board Approved
AP? Advanced Placement	Yes
General Notes:	The course descriptions for Advanced Placement courses are located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/descriptions/index.html

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202320
Course Title:	Advanced Placement Calculus BC
Course Length:	Year
Course Status:	State Board Approved
AP? Advanced Placement	Yes
General Notes:	The course descriptions for Advanced Placement courses are located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/descriptions/index.html

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202320
Course Title:	Advanced Placement Calculus BC
Course Length:	Year
Course Status:	State Board Approved
AP? Advanced Placement	Yes
General Notes:	The course descriptions for Advanced Placement courses are located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/descriptions/index.html

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202340
Course Title:	Pre-Calculus
Number of Credits:	One credit (1)
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (53) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	
LA.1112.1.7.4	The student will identify cause-and-effect relationships in text;	
LA.1112.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, a controlling idea, logical sequence, and time frame for completion; and	
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.1112.3.2.2	The student will draft writing by establishing a logical organizational pattern with supporting details that are substantial, specific, and relevant; and	

MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.9.1	Write the equations of conic sections in standard form and general form, in order to identify the conic section and to find its geometric properties (foci, asymptotes, eccentricity, etc.).	Moderate
MA.912.A.9.2	Graph conic sections with and without using graphing technology.	Moderate
MA.912.A.9.3	Solve real-world problems involving conic sections	High
MA.912.C.1.1	Understand the concept of limit and estimate limits from graphs and tables of values.	Moderate
MA.912.C.1.2	Find limits by substitution.	Low
MA.912.C.1.3	Find limits of sums, differences, products, and quotients.	Low

MA.912.C.1.4	Find limits of rational functions that are undefined at a point.	Low
MA.912.C.1.5	Find one-sided limits.	Low
MA.912.C.1.9	Understand continuity in terms of limits.	High
MA.912.C.1.10	Decide if a function is continuous at a point.	High
MA.912.C.1.11	Find the types of discontinuities of a function.	Moderate
MA.912.C.1.12	Understand and use the Intermediate Value Theorem on a function over a closed interval.	Moderate
MA.912.C.1.13	Understand and apply the Extreme Value Theorem: If f(x) is continuous over a closed interval, then f has a maximum and a minimum on the interval.	Moderate
MA.912.D.1.3	Use mathematical induction to prove various concepts in number theory (such as sums of infinite integer series, divisibility statements, and parity statements), recurrence relations, and other applications.	High
MA.912.D.9.1	Demonstrate an understanding of the geometric interpretation of vectors and vector operations including addition, scalar multiplication, dot product, and cross product in the plane and in three-dimensional space.	Moderate
MA.912.D.9.2	Demonstrate an understanding of the algebraic interpretation of vectors and vector operations including addition, scalar multiplication, dot product, and cross product in the plane and in three-dimensional space.	Moderate
MA.912.D.9.3	Use vectors to model and solve application problems.	High
MA.912.D.10.1	Sketch the graph of a curve in the plane represented parametrically, indicating the direction of motion.	Moderate
MA.912.D.10.2	Convert from a parametric representation of a plane curve to a rectangular equation and vice-versa.	Low

MA.912.D.10.3	Use parametric equations to model applications of motion in the plane.	Moderate
MA.912.D.11.4	Find partial sums of arithmetic and geometric series, and find sums of infinite convergent geometric series. Use Sigma notation where applicable.	Moderate
MA.912.T.1.1	Convert between degree and radian measures.	Moderate
MA.912.T.1.2	Define and determine sine and cosine using the unit circle.	Moderate
MA.912.T.1.3	State and use exact values of trigonometric functions for special angles: multiples of $\frac{\pi}{6}$ and $\frac{\pi}{4}$ (degree and radian measures).	Low
MA.912.T.1.4	Find approximate values of trigonometric and inverse trigonometric functions using appropriate technology.	Low
MA.912.T.1.5	Make connections between right triangle ratios, trigonometric functions, and circular functions.	Moderate
MA.912.T.1.6	Define and graph trigonometric functions using domain, range, intercepts, period, amplitude, phase shift, vertical shift, and asymptotes with and without the use of graphing technology.	High
MA.912.T.1.7	Define and graph inverse trigonometric relations and functions.	Moderate
MA.912.T.1.8	Solve real-world problems involving applications of trigonometric functions using graphing technology when appropriate.	High
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate
MA.912.T.2.2	Solve real-world problems involving right triangles using technology when appropriate.	High

MA.912.T.2.3	Apply the laws of sines and cosines to solve real-world problems using technology.	High
MA.912.T.2.4	Use the area of triangles given two sides and an angle or three sides to solve real-world problems.	Moderate
MA.912.T.3.1	Verify the basic Pythagorean identities, such as $sin^2x + cos^2x = 1$, and show they are equivalent to the Pythagorean Theorem.	Moderate
MA.912.T.3.2	Use basic trigonometric identities to verify other identities and simplify expressions.	Moderate
MA.912.T.3.3	Use the sum and difference, half-angle and double-angle formulas for sine, cosine, and tangent, when formulas are provided.	Moderate
MA.912.T.3.4	Solve trigonometric equations and real-world problems involving applications of trigonometric equations using technology when appropriate.	High
MA.912.T.4.1	Define polar coordinates and relate polar coordinates to Cartesian coordinates with and without the use of technology.	Moderate
MA.912.T.4.2	Represent equations given in rectangular coordinates in terms of polar coordinates.	Moderate
MA.912.T.4.3	Graph equations in the polar coordinate plane with and without the use of graphing technology.	Moderate
MA.912.T.4.4	Define the trigonometric form of complex numbers, convert complex numbers to trigonometric form, and multiply complex numbers in trigonometric form.	Moderate
MA.912.T.4.5	Apply DeMoivre's Theorem to perform operations with complex numbers.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202352
Course Title:	AICE Mathematics 1
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202354
Course Title:	AICE Mathematics & Mechanics 1
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202356
Course Title:	AICE Mathematics & Mechanics 2
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202362
Course Title:	AICE Mathematics&Probability & Statistic 1
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202364
Course Title:	AICE Mathematics&Probability & Statistic 2
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202366
Course Title:	AICE Mathematics&Mechanics & Probability&Statistics 2
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202370
Course Title:	AICE Further Mathematics
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=756

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202371
Course Title:	Pre-AICE Additional Mathematics 3
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202375
Course Title:	International Baccalaureate Pre-Calculus
Course Length:	Year
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202800
Course Title:	Calculus-International Baccalaureate
Course Length:	Year
Course Status:	State Board Approved
IB? **International Baccalaureate**	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202810
Course Title:	International Baccalaureate Calculus and Descriptive
Course Length:	Year
Course Status:	State Board Approved
IB? **International Baccalaureate**	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202820
Course Title:	International Baccalaureate Further Mathematics
Course Length:	Year
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1202830
Course Title:	International Baccalaureate Advanced Calculus
Course Length:	Year
Course Status:	State Board Approved
IB? **International Baccalaureate**	Yes

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205370
Course Title:	Consumer Mathematics
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (23) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals.	High
MA.6.A.3.1	Write and evaluate mathematical expressions that correspond to given situations.	Moderate
MA.6.A.3.4	Solve problems given a formula.	Moderate
MA.6.A.5.1	Use equivalent forms of fractions, decimals, and percents to solve problems.	Moderate
MA.6.A.5.3	Estimate the results of computations with fractions, decimals, and percents, and judge the reasonableness of the results.	Moderate
MA.6.S.6.1	Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.	Low

MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.	High
MA.7.G.4.4	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)), dimensions, and derived units to solve problems.	High
MA.8.A.6.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real world problems.	High
MA.912.F.1.1	Explain the difference between simple and compound interest.	Moderate
MA.912.F.1.2	Solve problems involving compound interest.	High
MA.912.F.2.1	Calculate the future value of a given amount of money with and without technology.	Moderate
MA.912.F.3.1	Compare the advantages and disadvantages of using cash versus a credit card.	High
MA.912.F.3.3	Calculate the finance charges and total amount due on a credit card bill.	Low
MA.912.F.3.9	Calculate the total amount to be paid over the life of a fixed rate loan.	Moderate
MA.912.F.3.13	Calculate the total amount paid for the life of a loan for a house including the down payment, points, fees, and interest.	Moderate
MA.912.F.3.17	Compare interest rate calculations and annual percentage rate calculations to distinguish between the two rates.	High
MA.912.F.4.1	Develop personal budgets that fit within various income brackets.	Moderate

MA.912.F.4.2	Explain cash management strategies including debit accounts, checking accounts, and savings accounts.	Moderate
MA.912.T.5.1	Use a variety of problem-solving strategies, such as drawing a diagram, guess-and-check, solving a simpler problem, examining simpler problems, and working backwards, using technology when appropriate.	High
MA.912.T.5.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205400
Course Title:	Applied Mathematics 1
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (29) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and	Moderate

	commutative properties of real numbers and the properties of equality.	
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	Low
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .	Moderate
MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	High
MA.912.A.3.12	Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	Moderate
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High

MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.D.7.1	Perform set operations such as union and intersection, complement, and cross product.	Low
MA.912.D.7.2	Use Venn diagrams to explore relationships and patterns and to make arguments about relationships between sets.	Moderate
MA.912.G.1.1	Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	Moderate
MA.912.G.1.4	Use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines.	Moderate
MA.912.G.2.3	Use properties of congruent and similar polygons to solve mathematical or real-world problems.	High
MA.912.G.2.4	Apply transformations (translations, reflections, rotations, dilations, and scale factors) to polygons. to determine congruence, similarity, and symmetry. Know that images formed by translations, reflections, and rotations are congruent to the original shape. Create and verify tessellations of the plane using polygons.	High
MA.912.G.3.1	Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite.	Moderate
MA.912.G.4.4	Use properties of congruent and similar triangles to solve problems involving lengths and areas.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205410
Course Title:	Applied Mathematics 2
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II.

The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (33) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	

LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
MA.912.A.1.8	Use the zero product property of real numbers in a variety of contexts to identify solutions to equations.	Moderate
MA.912.A.3.13	Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.4	Solve algebraic proportions.	Low
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.7.1	Graph quadratic equations with and without graphing technology.	Moderate

MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.	Moderate
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	Moderate
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.G.2.5	Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.).	Moderate
MA.912.G.5.3	Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	Moderate
MA.912.G.5.4	Solve real-world problems involving right triangles.	High
MA.912.G.6.5	Solve real-world problems using measures of circumference, arc length, and areas of circles and sectors.	High
MA.912.G.7.5	Explain and use formulas for lateral area, surface area, and volume of solids.	Moderate
MA.912.G.7.7	Determine how changes in dimensions affect the surface area and volume of common geometric solids.	Moderate
MA.912.S.2.1	Compare the difference between surveys, experiments,	High

	and observational studies and what types of questions can and cannot be answered by a particular design.	
MA.912.S.2.2	Apply the definition of random sample and basic types of sampling, including representative samples, stratified samples, censuses.	Moderate
MA.912.S.2.3	Identify sources of bias, including sampling and nonsampling errors.	Moderate
MA.912.S.3.9	Identify outliers in a set of data based on an appropriate graphical presentation of the data, and describe the effect of outliers on the mean, median, and range of the data.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205420
Course Title:	Applied Mathematics 3
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205500
Course Title:	Explorations in Mathematics 1
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (20) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
MA.4.G.5.2	Identify and describe the results of translations, reflections, and rotations of 45, 90, 180, 270, and 360 degrees, including figures with line and rotational symmetry.	Moderate
MA.6.A.1.1	Explain and justify procedures for multiplying and dividing fractions and decimals.	Moderate
MA.6.A.1.2	Multiply and divide fractions and decimals efficiently.	Low
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals.	High
MA.6.A.2.1	Use reasoning about multiplication and division to solve ratio and rate problems.	High
MA.6.A.2.2	Interpret and compare ratios and rates.	Moderate

MA.6.A.3.3	Work backward with two-step function rules to undo expressions.	Moderate
MA.6.A.3.4	Solve problems given a formula.	Moderate
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.1	Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.	Low
MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.	High
MA.7.A.3.2	Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts.	Moderate
MA.7.A.5.1	Express rational numbers as terminating or repeating decimals.	Low
MA.7.G.4.3	Identify and plot ordered pairs in all four quadrants of the coordinate plane.	Low
MA.912.G.2.1	Identify and describe convex, concave, regular, and irregular polygons.	High
MA.912.G.4.1	Classify, construct, and describe triangles that are right, acute, obtuse, scalene, isosceles, equilateral, and equiangular.	Moderate
MA.912.T.5.1	Use a variety of problem-solving strategies, such as drawing a diagram, guess-and-check, solving a simpler problem, examining simpler problems, and working backwards, using technology when appropriate.	High

MA.912.T.5.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205510
Course Title:	Explorations in Mathematics 2
Course Length:	Year
Course Status:	State Board Approved

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1205540
Course Title:	Business Mathematics
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (26) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals.	High
MA.6.A.3.1	Write and evaluate mathematical expressions that correspond to given situations.	Moderate
MA.6.A.3.4	Solve problems given a formula.	Moderate
MA.6.A.5.1	Use equivalent forms of fractions, decimals, and percents to solve problems.	Moderate
MA.6.A.5.3	Estimate the results of computations with fractions, decimals, and percents, and judge the reasonableness of the results.	Moderate
MA.6.S.6.1	Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.	Low

MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips, and percents of increase or decrease.	High
MA.7.G.4.1	Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures, and apply these relationships to solve problems.	High
MA.7.G.4.4	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)), dimensions, and derived units to solve problems.	High
MA.8.A.6.1	Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.	Low
MA.8.A.6.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real world problems.	High
MA.8.S.3.1	Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.	Moderate
MA.912.F.1.1	Explain the difference between simple and compound interest.	Moderate
MA.912.F.1.2	Solve problems involving compound interest.	High
MA.912.F.2.1	Calculate the future value of a given amount of money with and without technology.	Moderate
MA.912.F.2.2	Calculate the present value of a certain amount of money for a given length of time in the future with and without technology.	Moderate
MA.912.F.3.1	Compare the advantages and disadvantages of using cash versus a credit card.	High

MA.912.F.3.3	Calculate the finance charges and total amount due on a credit card bill.	Low
MA.912.F.3.6	Calculate total cost of purchasing consumer durables over time given different down payments, financing options, and fees.	Moderate
MA.912.F.4.2	Explain cash management strategies including debit accounts, checking accounts, and savings accounts.	Moderate
MA.912.F.4.5	Develop and apply a variety of strategies to use tax tables, and to determine, calculate, and complete yearly federal income tax.	Moderate
MA.912.F.4.11	Purchase stock with a set amount of money, and follow the process through gains, losses, and selling.	Moderate
MA.912.F.4.13	Given current exchange rates be able to convert from one form of currency to another.	Low
MA.912.F.5.1	Demonstrate how price and quantity demanded relate, how price and quantity supplied relate, and how price changes or price controls affect distribution and allocation in the economy.	High

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1206300
Course Title:	Informal Geometry
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II.

The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (37) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.1112.1.6.5	The student will relate new vocabulary to familiar words;	

LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
MA.912.D.6.2	Find the converse, inverse, and contrapositive of a statement	Moderate
MA.912.G.1.1	Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	Moderate
MA.912.G.1.3	Identify and use the relationships between special pairs of angles formed by parallel lines and transversals.	Moderate
MA.912.G.2.1	Identify and describe convex, concave, regular, and irregular polygons.	High
MA.912.G.2.2	Determine the measures of interior and exterior angles of polygons, justifying the method used.	Moderate
MA.912.G.2.3	Use properties of congruent and similar polygons to solve mathematical or real-world problems.	High
MA.912.G.2.5	Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.).	Moderate
MA.912.G.3.1	Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite.	Moderate
MA.912.G.3.2	Compare and contrast special quadrilaterals on the basis of their properties.	Moderate
MA.912.G.4.1	Classify, construct, and describe triangles that are right, acute, obtuse, scalene, isosceles, equilateral, and equiangular.	Moderate

MA.912.G.4.2	Define, identify, and construct altitudes, medians, angle bisectors, perpendicular bisectors,orthocenter, centroid, incenter, and circumcenter.	Moderate
MA.912.G.4.3	Construct triangles congruent to given triangles.	High
MA.912.G.4.4	Use properties of congruent and similar triangles to solve problems involving lengths and areas.	Moderate
MA.912.G.4.5	Apply theorems involving segments divided proportionally.	Moderate
MA.912.G.4.6	Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles.	High
MA.912.G.4.7	Apply the inequality theorems: triangle inequality, inequality in one triangle, and the Hinge Theorem.	Moderate
MA.912.G.5.1	Prove and apply the Pythagorean Theorem and its converse.	High
MA.912.G.5.3	Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	Moderate
MA.912.G.5.4	Solve real-world problems involving right triangles.	High
MA.912.G.6.2	Define and identify: circumference, radius, diameter, arc, arc length, chord, secant, tangent and concentric circles.	Low
MA.912.G.6.4	Determine and use measures of arcs and related angles (central, inscribed, and intersections of secants and tangents).	Moderate
MA.912.G.6.5	Solve real-world problems using measures of circumference, arc length, and areas of circles and sectors.	High
MA.912.G.7.1	Describe and make regular, non-regular, and oblique polyhedra, and sketch the net for a given polyhedron and vice versa.	Moderate

MA.912.G.7.2	Describe the relationships between the faces, edges, and vertices of polyhedra.	Moderate
MA.912.G.7.4	Identify chords, tangents, radii, and great circles of spheres	Low
MA.912.G.7.5	Explain and use formulas for lateral area, surface area, and volume of solids.	Moderate
MA.912.G.7.7	Determine how changes in dimensions affect the surface area and volume of common geometric solids.	Moderate
MA.912.G.8.1	Analyze the structure of Euclidean geometry as an axiomatic system. Distinguish between undefined terms, definitions, postulates, and theorems.	High
MA.912.G.8.2	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Moderate
MA.912.G.8.3	Determine whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.G.8.4	Make conjectures with justifications about geometric ideas. Distinguish between information that supports a conjecture and the proof of a conjecture.	High

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1206310
Course Title:	Geometry
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II.

The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (51) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.1112.1.6.5	The student will relate new vocabulary to familiar words;	

LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
MA.912.D.6.2	Find the converse, inverse, and contrapositive of a statement	Moderate
MA.912.D.6.3	Determine whether two propositions are logically equivalent.	Moderate
MA.912.D.6.4	Use methods of direct and indirect proof and determine whether a short proof is logically valid.	Moderate
MA.912.G.1.1	Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	Moderate
MA.912.G.1.2	Construct congruent segments and angles, angle bisectors, and parallel and perpendicular lines using a straight edge and compass or a drawing program, explaining and justifying the process used.	Moderate
MA.912.G.1.3	Identify and use the relationships between special pairs of angles formed by parallel lines and transversals.	Moderate
MA.912.G.2.1	Identify and describe convex, concave, regular, and irregular polygons.	High
MA.912.G.2.2	Determine the measures of interior and exterior angles of polygons, justifying the method used.	Moderate
MA.912.G.2.3	Use properties of congruent and similar polygons to solve mathematical or real-world problems.	High
MA.912.G.2.4	Apply transformations (translations, reflections, rotations, dilations, and scale factors) to polygons. to determine congruence, similarity, and symmetry. Know that images formed by translations, reflections, and rotations are	High

	congruent to the original shape. Create and verify tessellations of the plane using polygons.	
MA.912.G.2.5	Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.).	Moderate
MA.912.G.2.7	Determine how changes in dimensions affect the perimeter and area of common geometric figures.	Moderate
MA.912.G.3.1	Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite.	Moderate
MA.912.G.3.2	Compare and contrast special quadrilaterals on the basis of their properties.	Moderate
MA.912.G.3.3	Use coordinate geometry to prove properties of congruent, regular, and similar quadrilaterals.	High
MA.912.G.3.4	Prove theorems involving quadrilaterals.	High
MA.912.G.4.1	Classify, construct, and describe triangles that are right, acute, obtuse, scalene, isosceles, equilateral, and equiangular.	Moderate
MA.912.G.4.2	Define, identify, and construct altitudes, medians, angle bisectors, perpendicular bisectors,orthocenter, centroid, incenter, and circumcenter.	Moderate
MA.912.G.4.3	Construct triangles congruent to given triangles.	High
MA.912.G.4.4	Use properties of congruent and similar triangles to solve problems involving lengths and areas.	Moderate
MA.912.G.4.5	Apply theorems involving segments divided proportionally.	Moderate
MA.912.G.4.6	Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles.	High
MA.912.G.4.7	Apply the inequality theorems: triangle inequality, inequality in one triangle, and the Hinge Theorem.	Moderate

MA.912.G.5.1	Prove and apply the Pythagorean Theorem and its converse.	High
MA.912.G.5.2	State and apply the relationships that exist when the altitude is drawn to the hypotenuse of a right triangle.	Moderate
MA.912.G.5.3	Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	Moderate
MA.912.G.5.4	Solve real-world problems involving right triangles.	High
MA.912.G.6.2	Define and identify: circumference, radius, diameter, arc, arc length, chord, secant, tangent and concentric circles.	Low
MA.912.G.6.4	Determine and use measures of arcs and related angles (central, inscribed, and intersections of secants and tangents).	Moderate
MA.912.G.6.5	Solve real-world problems using measures of circumference, arc length, and areas of circles and sectors.	High
MA.912.G.6.6	Given the center and the radius, find the equation of a circle in the coordinate plane or given the equation of a circle in center-radius form, state the center and the radius of the circle.	Moderate
MA.912.G.6.7	Given the equation of a circle in center-radius form or given the center and the radius of a circle, sketch the graph of the circle.	Moderate
MA.912.G.7.1	Describe and make regular, non-regular, and oblique polyhedra, and sketch the net for a given polyhedron and vice versa.	Moderate
MA.912.G.7.2	Describe the relationships between the faces, edges, and vertices of polyhedra.	Moderate
MA.912.G.7.4	Identify chords, tangents, radii, and great circles of spheres	Low
MA.912.G.7.5	Explain and use formulas for lateral area, surface area, and volume of solids.	Moderate

MA.912.G.7.6	Identify and use properties of congruent and similar solids.	Moderate
MA.912.G.7.7	Determine how changes in dimensions affect the surface area and volume of common geometric solids.	Moderate
MA.912.G.8.1	Analyze the structure of Euclidean geometry as an axiomatic system. Distinguish between undefined terms, definitions, postulates, and theorems.	High
MA.912.G.8.2	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Moderate
MA.912.G.8.3	Determine whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.G.8.4	Make conjectures with justifications about geometric ideas. Distinguish between information that supports a conjecture and the proof of a conjecture.	High
MA.912.G.8.5	Write geometric proofs, including proofs by contradiction and proofs involving coordinate geometry. Use and compare a variety of ways to present deductive proofs, such as flow charts, paragraphs, two-column, and indirect proofs.	High
MA.912.G.8.6	Perform basic constructions using straightedge and compass, and/or drawing programs describing and justifying the procedures used. Distinguish between sketching, constructing, and drawing geometric figures.	High
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1206320
Course Title:	Geometry Honors
Course Length:	Year
Course Status:	State Board Approved
Honors?	Yes

ASSESSMENT

Assessment:

The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II.

The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (59) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.1112.1.6.5	The student will relate new vocabulary to familiar words;	

LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
MA.912.D.6.1	Use truth tables to determine truth values of propositional statements.	Moderate
MA.912.D.6.2	Find the converse, inverse, and contrapositive of a statement	Moderate
MA.912.D.6.3	Determine whether two propositions are logically equivalent.	Moderate
MA.912.D.6.4	Use methods of direct and indirect proof and determine whether a short proof is logically valid.	Moderate
MA.912.D.9.3	Use vectors to model and solve application problems.	High
MA.912.D.11.5	Explore and use other sequences found in nature such as the Fibonacci sequence and the golden ratio.	High
MA.912.G.1.1	Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	Moderate
MA.912.G.1.2	Construct congruent segments and angles, angle bisectors, and parallel and perpendicular lines using a straight edge and compass or a drawing program, explaining and justifying the process used.	Moderate
MA.912.G.1.3	Identify and use the relationships between special pairs of angles formed by parallel lines and transversals.	Moderate
MA.912.G.2.1	Identify and describe convex, concave, regular, and irregular polygons.	High

MA.912.G.2.2	Determine the measures of interior and exterior angles of polygons, justifying the method used.	Moderate
MA.912.G.2.3	Use properties of congruent and similar polygons to solve mathematical or real-world problems.	High
MA.912.G.2.4	Apply transformations (translations, reflections, rotations, dilations, and scale factors) to polygons. to determine congruence, similarity, and symmetry. Know that images formed by translations, reflections, and rotations are congruent to the original shape. Create and verify tessellations of the plane using polygons.	High
MA.912.G.2.5	Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.).	Moderate
MA.912.G.2.6	Use coordinate geometry to prove properties of congruent, regular and similar polygons, and to perform transformations in the plane.	High
MA.912.G.2.7	Determine how changes in dimensions affect the perimeter and area of common geometric figures.	Moderate
MA.912.G.3.1	Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite.	Moderate
MA.912.G.3.2	Compare and contrast special quadrilaterals on the basis of their properties.	Moderate
MA.912.G.3.3	Use coordinate geometry to prove properties of congruent, regular, and similar quadrilaterals.	High
MA.912.G.3.4	Prove theorems involving quadrilaterals.	High
MA.912.G.4.1	Classify, construct, and describe triangles that are right, acute, obtuse, scalene, isosceles, equilateral, and equiangular.	Moderate
MA.912.G.4.2	Define, identify, and construct altitudes, medians, angle	Moderate

	bisectors, perpendicular bisectors,orthocenter, centroid, incenter, and circumcenter.	
MA.912.G.4.3	Construct triangles congruent to given triangles.	High
MA.912.G.4.4	Use properties of congruent and similar triangles to solve problems involving lengths and areas.	Moderate
MA.912.G.4.5	Apply theorems involving segments divided proportionally.	Moderate
MA.912.G.4.6	Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles.	High
MA.912.G.4.7	Apply the inequality theorems: triangle inequality, inequality in one triangle, and the Hinge Theorem.	Moderate
MA.912.G.4.8	Use coordinate geometry to prove properties of congruent, regular, and similar triangles.	High
MA.912.G.5.1	Prove and apply the Pythagorean Theorem and its converse.	High
MA.912.G.5.2	State and apply the relationships that exist when the altitude is drawn to the hypotenuse of a right triangle.	Moderate
MA.912.G.5.3	Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	Moderate
MA.912.G.5.4	Solve real-world problems involving right triangles.	High
MA.912.G.6.1	Determine the center of a given circle. Given three points not on a line, construct the circle that passes through them. Construct tangents to circles. Circumscribe and inscribe circles about and within triangles and regular polygons.	High
MA.912.G.6.2	Define and identify: circumference, radius, diameter, arc, arc length, chord, secant, tangent and concentric circles.	Low
MA.912.G.6.3	Prove theorems related to circles, including related angles, chords, tangents, and secants.	High

MA.912.G.6.4	Determine and use measures of arcs and related angles (central, inscribed, and intersections of secants and tangents).	Moderate
MA.912.G.6.5	Solve real-world problems using measures of circumference, arc length, and areas of circles and sectors.	High
MA.912.G.6.6	Given the center and the radius, find the equation of a circle in the coordinate plane or given the equation of a circle in center-radius form, state the center and the radius of the circle.	Moderate
MA.912.G.6.7	Given the equation of a circle in center-radius form or given the center and the radius of a circle, sketch the graph of the circle.	Moderate
MA.912.G.7.1	Describe and make regular, non-regular, and oblique polyhedra, and sketch the net for a given polyhedron and vice versa.	Moderate
MA.912.G.7.2	Describe the relationships between the faces, edges, and vertices of polyhedra.	Moderate
MA.912.G.7.3	Identify, sketch, find areas and/or perimeters of cross sections of solid objects.	Moderate
MA.912.G.7.4	Identify chords, tangents, radii, and great circles of spheres	Low
MA.912.G.7.5	Explain and use formulas for lateral area, surface area, and volume of solids.	Moderate
MA.912.G.7.6	Identify and use properties of congruent and similar solids.	Moderate
MA.912.G.7.7	Determine how changes in dimensions affect the surface area and volume of common geometric solids.	Moderate
MA.912.G.8.1	Analyze the structure of Euclidean geometry as an	High

	axiomatic system. Distinguish between undefined terms, definitions, postulates, and theorems.	
MA.912.G.8.2	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Moderate
MA.912.G.8.3	Determine whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.G.8.4	Make conjectures with justifications about geometric ideas. Distinguish between information that supports a conjecture and the proof of a conjecture.	High
MA.912.G.8.5	Write geometric proofs, including proofs by contradiction and proofs involving coordinate geometry. Use and compare a variety of ways to present deductive proofs, such as flow charts, paragraphs, two-column, and indirect proofs.	High
MA.912.G.8.6	Perform basic constructions using straightedge and compass, and/or drawing programs describing and justifying the procedures used. Distinguish between sketching, constructing, and drawing geometric figures.	High
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1206330
Course Title:	Analytic Geometry
Course Length:	Semester
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (18) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	

LA.1112.1.7.4	The student will identify cause-and-effect relationships in text;	
LA.1112.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, a controlling idea, logical sequence, and time frame for completion; and	
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.1112.3.2.2	The student will draft writing by establishing a logical organizational pattern with supporting details that are substantial, specific, and relevant; and	
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	Low
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.8.7	Solve applications of exponential growth and decay.	High
MA.912.A.9.1	Write the equations of conic sections in standard form and general form, in order to identify the conic section and to find its geometric properties (foci, asymptotes, eccentricity, etc.).	Moderate
MA.912.A.9.2	Graph conic sections with and without using graphing technology.	Moderate

MA.912.A.9.3	Solve real-world problems involving conic sections	High
MA.912.D.6.4	Use methods of direct and indirect proof and determine whether a short proof is logically valid.	Moderate
MA.912.D.10.1	Sketch the graph of a curve in the plane represented parametrically, indicating the direction of motion.	Moderate
MA.912.D.10.2	Convert from a parametric representation of a plane curve to a rectangular equation and vice-versa.	Low
MA.912.D.10.3	Use parametric equations to model applications of motion in the plane.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1206800
Course Title:	Analytic Geometry-International Baccalaureate
Course Length:	Semester
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

ASSESSMENT

Assessment:

The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.
The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.
The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II.
The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1207310
Course Title:	Integrated Mathematics 1
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (40) :

Scheme	Descriptor	Cognitive Complexity
LA.1.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.1.1.6.2	The student will listen to, read, and discuss both familiar and conceptually challenging text;	
LA.1.1.6.5	The student will relate new vocabulary to prior knowledge;	
LA.1.3.1.3	The student will prewrite by organizing ideas using simple webs, maps, or lists.	

MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	Moderate
MA.912.A.2.4	Determine the domain and range of a relation.	Moderate
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	Moderate
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	Moderate
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	Low
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .	Moderate
MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the	High

	slope is the rate of change.	
MA.912.A.3.12	Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	Moderate
MA.912.A.3.13	Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	Moderate
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	Low
MA.912.A.4.2	Add, subtract, and multiply polynomials.	Low
MA.912.A.4.3	Factor polynomial expressions.	Moderate
MA.912.A.6.1	Simplify radical expressions	Moderate
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	Moderate
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High

MA.912.G.1.1	Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	Moderate
MA.912.G.1.2	Construct congruent segments and angles, angle bisectors, and parallel and perpendicular lines using a straight edge and compass or a drawing program, explaining and justifying the process used.	Moderate
MA.912.G.1.3	Identify and use the relationships between special pairs of angles formed by parallel lines and transversals.	Moderate
MA.912.G.1.4	Use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines.	Moderate
MA.912.G.2.1	Identify and describe convex, concave, regular, and irregular polygons.	High
MA.912.G.2.2	Determine the measures of interior and exterior angles of polygons, justifying the method used.	Moderate
MA.912.G.4.1	Classify, construct, and describe triangles that are right, acute, obtuse, scalene, isosceles, equilateral, and equiangular.	Moderate
MA.912.G.4.2	Define, identify, and construct altitudes, medians, angle bisectors, perpendicular bisectors,orthocenter, centroid, incenter, and circumcenter.	Moderate
MA.912.G.5.1	Prove and apply the Pythagorean Theorem and its converse.	High
MA.912.G.8.1	Analyze the structure of Euclidean geometry as an axiomatic system. Distinguish between undefined terms, definitions, postulates, and theorems.	High
MA.912.G.8.2	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Moderate

MA.912.G.8.3	Determine whether a solution is reasonable in the context of the original situation.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1207320
Course Title:	Integrated Mathematics 2
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

RELATED BENCHMARKS (45) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	
LA.910.1.6.2	The student will listen to, read, and discuss familiar and conceptually challenging text;	
LA.910.1.6.5	The student will relate new vocabulary to familiar words;	
LA.910.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	

MA.912.A.1.8	Use the zero product property of real numbers in a variety of contexts to identify solutions to equations.	Moderate
MA.912.A.3.6	Solve and graph the solutions of absolute value equations and inequalities with one variable.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	Moderate
MA.912.A.5.3	Simplify complex fractions.	Moderate
MA.912.A.5.4	Solve algebraic proportions.	Low
MA.912.A.5.5	Solve rational equations.	Moderate
MA.912.A.7.1	Graph quadratic equations with and without graphing technology.	Moderate
MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.	Moderate
MA.912.A.7.6	Identify the axis of symmetry, vertex, domain, range and intercept(s) for a given parabola.	Low
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	Moderate
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	Low
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic	High

	expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	
MA.912.G.2.4	Apply transformations (translations, reflections, rotations, dilations, and scale factors) to polygons. to determine congruence, similarity, and symmetry. Know that images formed by translations, reflections, and rotations are congruent to the original shape. Create and verify tessellations of the plane using polygons.	High
MA.912.G.2.5	Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.).	Moderate
MA.912.G.2.7	Determine how changes in dimensions affect the perimeter and area of common geometric figures.	Moderate
MA.912.G.3.1	Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite.	Moderate
MA.912.G.3.2	Compare and contrast special quadrilaterals on the basis of their properties.	Moderate
MA.912.G.3.3	Use coordinate geometry to prove properties of congruent, regular, and similar quadrilaterals.	High
MA.912.G.3.4	Prove theorems involving quadrilaterals.	High
MA.912.G.4.3	Construct triangles congruent to given triangles.	High
MA.912.G.4.4	Use properties of congruent and similar triangles to solve problems involving lengths and areas.	Moderate
MA.912.G.4.5	Apply theorems involving segments divided proportionally.	Moderate
MA.912.G.4.6	Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles.	High

MA.912.G.4.7	Apply the inequality theorems: triangle inequality, inequality in one triangle, and the Hinge Theorem.	Moderate
MA.912.G.5.2	State and apply the relationships that exist when the altitude is drawn to the hypotenuse of a right triangle.	Moderate
MA.912.G.5.3	Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	Moderate
MA.912.G.5.4	Solve real-world problems involving right triangles.	High
MA.912.G.6.2	Define and identify: circumference, radius, diameter, arc, arc length, chord, secant, tangent and concentric circles.	Low
MA.912.G.6.4	Determine and use measures of arcs and related angles (central, inscribed, and intersections of secants and tangents).	Moderate
MA.912.G.6.5	Solve real-world problems using measures of circumference, arc length, and areas of circles and sectors.	High
MA.912.G.6.6	Given the center and the radius, find the equation of a circle in the coordinate plane or given the equation of a circle in center-radius form, state the center and the radius of the circle.	Moderate
MA.912.G.6.7	Given the equation of a circle in center-radius form or given the center and the radius of a circle, sketch the graph of the circle.	Moderate
MA.912.G.8.2	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Moderate
MA.912.G.8.3	Determine whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.G.8.5	Write geometric proofs, including proofs by contradiction and proofs involving coordinate geometry. Use and compare a variety of ways to present deductive proofs,	High

	such as flow charts, paragraphs, two-column, and indirect proofs.	
MA.912.G.8.6	Perform basic constructions using straightedge and compass, and/or drawing programs describing and justifying the procedures used. Distinguish between sketching, constructing, and drawing geometric figures.	High
MA.912.S.2.3	Identify sources of bias, including sampling and nonsampling errors.	Moderate
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1207330
Course Title:	Integrated Mathematics 3
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (43) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and	

	taught directly;	
LA.910.4.2.1	The student will write in a variety of informational/expository forms, including a variety of technical documents (e.g., how-to-manuals, procedures, assembly directions);	
MA.912.A.1.6	Identify the real and imaginary parts of complex numbers and perform basic operations.	Moderate
MA.912.A.2.5	Graph absolute value equations and inequalities in two variables.	Moderate
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.7	Perform operations (addition, subtraction, division, and multiplication) of functions algebraically, numerically, and graphically.	Moderate
MA.912.A.2.8	Determine the composition of functions.	Low
MA.912.A.2.10	Describe and graph transformations of functions	Moderate
MA.912.A.2.11	Solve problems involving functions and their inverses.	High
MA.912.A.3.14	Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	Moderate
MA.912.A.3.15	Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	High
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	Moderate
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	Moderate
MA.912.A.4.6	Use theorems of polynomial behavior (including but not	Moderate

	limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	Moderate
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	Low
MA.912.A.4.10	Use polynomial equations to solve real-world problems.	Moderate
MA.912.A.6.4	Convert between rational exponent and radical forms of expressions.	Low
MA.912.A.6.5	Solve equations that contain radical expressions.	Moderate
MA.912.A.7.3	Solve quadratic equations over the real numbers by completing the square.	Moderate
MA.912.A.7.4	Use the discriminant to determine the nature of the roots of a quadratic equation.	Low
MA.912.A.7.5	Solve quadratic equations over the complex number system.	Moderate
MA.912.A.8.1	Define exponential and logarithmic functions and determine their relationship	Moderate
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	Low
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.A.8.5	Solve logarithmic and exponential equations.	Moderate
MA.912.A.8.6	Use the change of base formula.	Low

MA.912.A.8.7	Solve applications of exponential growth and decay.	High
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	High
MA.912.D.11.1	Define arithmetic and geometric sequences and series.	Low
MA.912.D.11.3	Find specified terms of arithmetic and geometric sequences.	Low
MA.912.G.7.1	Describe and make regular, non-regular, and oblique polyhedra, and sketch the net for a given polyhedron and vice versa.	Moderate
MA.912.G.7.2	Describe the relationships between the faces, edges, and vertices of polyhedra.	Moderate
MA.912.G.7.4	Identify chords, tangents, radii, and great circles of spheres	Low
MA.912.G.7.5	Explain and use formulas for lateral area, surface area, and volume of solids.	Moderate
MA.912.G.7.6	Identify and use properties of congruent and similar solids.	Moderate
MA.912.G.7.7	Determine how changes in dimensions affect the surface area and volume of common geometric solids.	Moderate
MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate

MA.912.S.3.4	Calculate and interpret measures of variance and standard deviation. Use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.9	Identify outliers in a set of data based on an appropriate graphical presentation of the data, and describe the effect of outliers on the mean, median, and range of the data.	Moderate
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1208300
Course Title:	Liberal Arts Mathematics
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (35) :

Scheme	Descriptor	Cognitive Complexity
LA.910.1.6.1	The student will use new vocabulary that is introduced and taught directly;	

LA.910.4.2.1	The student will write in a variety of informational/expository forms, including a variety of technical documents (e.g., how-to-manuals, procedures, assembly directions);	
MA.912.A.1.3	Simplify real number expressions using the laws of exponents.	Low
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers) using multi-step and real-world problems.	Moderate
MA.912.A.1.8	Use the zero product property of real numbers in a variety of contexts to identify solutions to equations.	Moderate
MA.912.A.2.1	Create a graph to represent a real-world situation.	Moderate
MA.912.A.2.2	Interpret a graph representing a real-world situation.	Moderate
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	Moderate
MA.912.A.3.3	Solve literal equations for a specified variable.	Moderate
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	Moderate
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	Moderate
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	Low
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x- and y-intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form .	Moderate

MA.912.A.3.9	Determine the slope, x-intercept, and y-intercept of a line given its graph, its equation, or two points on the line.	Moderate
MA.912.A.3.10	Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation of a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	Moderate
MA.912.A.3.11	Write an equation of a line that models a data set, and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	High
MA.912.A.3.13	Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	Moderate
MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring and by using the quadratic formula.	Moderate
MA.912.G.1.1	Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	Moderate
MA.912.G.1.4	Use coordinate geometry to find slopes, parallel lines, perpendicular lines, and equations of lines.	Moderate
MA.912.G.2.3	Use properties of congruent and similar polygons to solve mathematical or real-world problems.	High
MA.912.G.2.5	Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.).	Moderate
MA.912.G.2.7	Determine how changes in dimensions affect the perimeter and area of common geometric figures.	Moderate
MA.912.G.3.1	Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite.	Moderate

MA.912.G.4.4	Use properties of congruent and similar triangles to solve problems involving lengths and areas.	Moderate
MA.912.G.5.3	Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	Moderate
MA.912.G.5.4	Solve real-world problems involving right triangles.	High
MA.912.G.7.5	Explain and use formulas for lateral area, surface area, and volume of solids.	Moderate
MA.912.G.7.7	Determine how changes in dimensions affect the surface area and volume of common geometric solids.	Moderate
MA.912.G.8.2	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Moderate
MA.912.G.8.3	Determine whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.S.3.1	Read and interpret data presented in various formats. Determine whether data is presented in appropriate format, and identify possible corrections. Formats to include: • bar graphs • line graphs • stem and leaf plots • circle graphs • histograms • box and whiskers plots • scatter plots • cumulative frequency (ogive) graphs	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following: • bar graphs • line graphs • stem and leaf plots	High

- circle graphs
- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.5	Calculate and interpret the range and quartiles of a set of data.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1209800
Course Title:	Mathematics Studies-International Baccalaureate
Course Length:	Year
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1209810
Course Title:	Pre-AICE Mathematics 1
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	*The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=872*

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1209820
Course Title:	Pre-AICE Mathematics 2
Course Length:	Year
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=872

ASSESSMENT

Assessment:	The Benchmarks MA.912.A.3.14 and MA.912.A.3.15 are limited to a maximum of two variables in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.10.3 is limited to *linear* expressions, equations, and inequalities in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I. The Benchmark MA.912.A.4.4 is limited to dividing polynomials by monomials and does not include synthetic division in Algebra I, Algebra IH, Algebra Ib, and Applied Math II. The Benchmark MA.912.A.6.2 is limited to radical expressions in the form of square roots in Algebra I, Algebra IH, Algebra Ib, Applied Math II, and Integrated Math I.

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1209830
Course Title:	International Baccalaureate Mathematics Higher Level
Course Length:	Year
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1210300
Course Title:	Probability & Statistics with Applications
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (39) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	

LA.1112.1.6.9	The student will determine the correct meaning of words with multiple meanings in context;	
LA.1112.6.2.3	The student will write an informational report that integrates information and makes distinctions between the relative value and significance of specific data, facts, and ideas; and	
MA.912.P.1.1	Use counting principles, including the addition and the multiplication principles, to determine size of finite sample spaces and probabilities of events in those spaces.	High
MA.912.P.1.2	Use formulas for permutations and combinations to count outcomes and determine probabilities of events.	Moderate
MA.912.P.2.1	Determine probabilities of complementary events, and calculate odds for and against the occurrence of events.	Moderate
MA.912.P.2.2	Determine probabilities of independent events.	Moderate
MA.912.P.2.3	Understand and use the concept of conditional probability, including: understanding how conditioning affects the probability of events and finding conditional probabilities from a two-way frequency table.	High
MA.912.P.3.1	Determine probabilities of events from distributions, including: • discrete uniform (all outcomes in a finite set equally likely) • binomial • normal • exponential	High
MA.912.P.3.2	Determine the mean and variance of distributions, including: • discrete uniform (all outcomes in a finite set equally likely) • binomial • normal	Moderate

	• exponential	
MA.912.P.3.3	Apply the properties of the normal distribution.	Moderate
MA.912.P.3.4	Apply the Central Limit Theorem to determine the probability that a sample mean will be in a certain interval.	High
MA.912.S.1.1	Formulate an appropriate research question to be answered by collecting data or performing an experiment.	High
MA.912.S.1.2	Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.	Moderate
MA.912.S.2.1	Compare the difference between surveys, experiments, and observational studies and what types of questions can and cannot be answered by a particular design.	High
MA.912.S.2.2	Apply the definition of random sample and basic types of sampling, including representative samples, stratified samples, censuses.	Moderate
MA.912.S.2.3	Identify sources of bias, including sampling and nonsampling errors.	Moderate
MA.912.S.3.1	Read and interpret data presented in various formats. Determine whether data is presented in appropriate format, and identify possible corrections. Formats to include: • bar graphs • line graphs • stem and leaf plots • circle graphs • histograms • box and whiskers plots • scatter plots • cumulative frequency (ogive) graphs	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following:	High

- bar graphs
- line graphs
- stem and leaf plots
- circle graphs
- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.4	Calculate and interpret measures of variance and standard deviation. Use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.5	Calculate and interpret the range and quartiles of a set of data.	Moderate
MA.912.S.3.6	Use empirical rules such as the 68-95-99.7 rule to estimate spread of distributions and to make comparisons among sets of data.	Moderate
MA.912.S.3.7	Calculate the correlation coefficient of a set of paired data, and interpret the coefficient as a measure of the strength and direction of the relationship between the variables.	Moderate
MA.912.S.3.8	Determine whether a data distribution is symmetric or skewed based on an appropriate graphical presentation of the data.	Low
MA.912.S.3.9	Identify outliers in a set of data based on an appropriate graphical presentation of the data, and describe the effect of outliers on the mean, median, and range of the data.	Moderate
MA.912.S.4.1	Explain and interpret the concepts of confidence level and "margin of error."	High
MA.912.S.4.2	Use a simulation to approximate sampling distributions for	High

	the mean, using repeated sampling simulations from a given population.	
MA.912.S.4.3	Apply the Central Limit Theorem to solve problems.	High
MA.912.S.4.4	Approximate confidence intervals for means using simulations of the distribution of the sample mean.	High
MA.912.S.4.5	Find the equation of the least squares regression line for a set of data.	Low
MA.912.S.5.1	Analyze the relationship between confidence level, margin of error, and sample size.	High
MA.912.S.5.2	Apply the general principles of hypothesis testing.	High
MA.912.S.5.3	Explain and identify the following: null hypothesis, alternative hypotheses, Type I error, and Type II error.	High
MA.912.S.5.4	Explain the meaning of p-value and its role in hypothesis testing.	Moderate
MA.912.S.5.5	Perform hypothesis tests of means and proportions for large samples, using simulations to determine whether a sample mean (proportion) has a low likelihood of occurring.	High
MA.912.S.5.6	Interpret the results of hypothesis tests of means and proportions, and make decisions based on p-values of test.	High
MA.912.S.5.8	Use a regression line equation to make predictions.	Moderate
MA.912.S.5.9	Interpret the coefficient of determination, r^2, for a least-squares regression.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1210310
Course Title:	IB Statistics and Introductory Differential Calculus
Course Length:	Year
Course Status:	State Board Approved
IB? International Baccalaureate	Yes

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1210320
Course Title:	Advanced Placement Statistics
Course Length:	Year
Course Status:	State Board Approved
AP? Advanced Placement	Yes
General Notes:	The course descriptions for Advanced Placement courses are located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/descriptions/index.html

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1210330
Course Title:	AICE Mathematics Statistics
Course Length:	Semester
Course Status:	State Board Approved
AICE? Advanced International Certification of Education	Yes
General Notes:	The course description for this AICE course is provided at this link: http://www.cie.org.uk/qualifications/academic/middlesec/igcse/subject?assdef_id=755

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1211300
Course Title:	Trigonometry
Course Length:	Semester
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (30) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	

LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	
LA.1112.1.7.4	The student will identify cause-and-effect relationships in text;	
LA.1112.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, a controlling idea, logical sequence, and time frame for completion; and	
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
LA.1112.3.2.2	The student will draft writing by establishing a logical organizational pattern with supporting details that are substantial, specific, and relevant; and	
MA.912.D.9.1	Demonstrate an understanding of the geometric interpretation of vectors and vector operations including addition, scalar multiplication, dot product, and cross product in the plane and in three-dimensional space.	Moderate
MA.912.D.9.2	Demonstrate an understanding of the algebraic interpretation of vectors and vector operations including addition, scalar multiplication, dot product, and cross product in the plane and in three-dimensional space.	Moderate
MA.912.D.9.3	Use vectors to model and solve application problems.	High
MA.912.T.1.1	Convert between degree and radian measures.	Moderate
MA.912.T.1.2	Define and determine sine and cosine using the unit circle.	Moderate

MA.912.T.1.3	State and use exact values of trigonometric functions for special angles: multiples of $\frac{\pi}{6}$ and $\frac{\pi}{4}$ (degree and radian measures).	Low
MA.912.T.1.4	Find approximate values of trigonometric and inverse trigonometric functions using appropriate technology.	Low
MA.912.T.1.5	Make connections between right triangle ratios, trigonometric functions, and circular functions.	Moderate
MA.912.T.1.6	Define and graph trigonometric functions using domain, range, intercepts, period, amplitude, phase shift, vertical shift, and asymptotes with and without the use of graphing technology.	High
MA.912.T.1.7	Define and graph inverse trigonometric relations and functions.	Moderate
MA.912.T.1.8	Solve real-world problems involving applications of trigonometric functions using graphing technology when appropriate.	High
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate
MA.912.T.2.2	Solve real-world problems involving right triangles using technology when appropriate.	High
MA.912.T.2.3	Apply the laws of sines and cosines to solve real-world problems using technology.	High
MA.912.T.2.4	Use the area of triangles given two sides and an angle or three sides to solve real-world problems.	Moderate
MA.912.T.3.1	Verify the basic Pythagorean identities, such as $sin^2x + cos^2x = 1$, and show they are equivalent to the Pythagorean Theorem.	Moderate

MA.912.T.3.2	Use basic trigonometric identities to verify other identities and simplify expressions.	Moderate
MA.912.T.3.3	Use the sum and difference, half-angle and double-angle formulas for sine, cosine, and tangent, when formulas are provided.	Moderate
MA.912.T.3.4	Solve trigonometric equations and real-world problems involving applications of trigonometric equations using technology when appropriate.	High
MA.912.T.4.1	Define polar coordinates and relate polar coordinates to Cartesian coordinates with and without the use of technology.	Moderate
MA.912.T.4.2	Represent equations given in rectangular coordinates in terms of polar coordinates.	Moderate
MA.912.T.4.3	Graph equations in the polar coordinate plane with and without the use of graphing technology.	Moderate
MA.912.T.4.4	Define the trigonometric form of complex numbers, convert complex numbers to trigonometric form, and multiply complex numbers in trigonometric form.	Moderate
MA.912.T.4.5	Apply DeMoivre's Theorem to perform operations with complex numbers.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 1211800
Course Title: Trigonometry-International Baccalaureate
Course Length: Semester
Course Status: State Board Approved
IB? International Baccalaureate Yes

ASSESSMENT

Assessment:

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The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1220910
Course Title:	Discrete Mathematics
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

Teachers whose students will take the American Diploma Project (ADP) Algebra 2 End-of-Course Exam may want to be aware of the framework for this exam. The framework is available at: http://www.achieve.org/node/867.

The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (36) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	

LA.1112.1.6.9	The student will determine the correct meaning of words with multiple meanings in context;	
LA.1112.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, outlining);	
MA.912.A.7.9	Solve optimization problems.	High
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guessing- and-checking, solving a simpler problem, writing an equation, working backwards, and creating a table.	High
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	Moderate
MA.912.D.1.1	Use recursive and iterative thinking to solve problems, including identification of patterns, population growth and decline, and compound interest.	Moderate
MA.912.D.1.2	Use finite differences to solve problems and to find explicit formulas for recurrence relations.	High
MA.912.D.1.3	Use mathematical induction to prove various concepts in number theory (such as sums of infinite integer series, divisibility statements, and parity statements), recurrence relations, and other applications.	High
MA.912.D.2.1	Use Euler and Hamilton cycles and paths in graphs to solve routing problems.	High
MA.912.D.2.2	Use critical path analysis to solve scheduling problems.	High
MA.912.D.2.3	Use graph coloring techniques to solve problems.	Moderate
MA.912.D.2.4	Use spanning trees, rooted trees, binary trees, and decision trees to solve problems.	Moderate

MA.912.D.4.1	Solve maximal profit/minimal cost problems.	High
MA.912.D.6.1	Use truth tables to determine truth values of propositional statements.	Moderate
MA.912.D.6.2	Find the converse, inverse, and contrapositive of a statement	Moderate
MA.912.D.6.3	Determine whether two propositions are logically equivalent.	Moderate
MA.912.D.6.4	Use methods of direct and indirect proof and determine whether a short proof is logically valid.	Moderate
MA.912.D.6.5	Identify and give examples of : • undefined terms; • axioms; • theorems; • inductive and deductive proofs; and, • inductive and deductive reasoning.	Low
MA.912.D.6.6	Construct logical arguments using laws of detachment (modus ponens), syllogism, tautology, and contradiction; judge the validity of arguments, and give counterexamples to disprove statements.	High
MA.912.D.6.7	Use applications of the universal and existential quantifiers to propositional statements.	Low
MA.912.D.7.1	Perform set operations such as union and intersection, complement, and cross product.	Low
MA.912.D.7.2	Use Venn diagrams to explore relationships and patterns and to make arguments about relationships between sets.	Moderate
MA.912.D.8.1	Use matrices to organize and store data. Perform matrix operations (addition, subtraction, scalar multiplication, multiplication)	Low

MA.912.D.8.2	Use matrix operations to solve problems.	Moderate
MA.912.D.8.4	Find the inverse of a matrix, and use the inverse to solve problems with and without the use of technology.	High
MA.912.D.8.5	Use determinants of 2 x 2 and 3 x 3 matrices as well as higher order matrices with and without the use of technology.	Low
MA.912.D.8.6	Use matrices to solve Markov chain problems that link present events to future events using probabilities.	High
MA.912.D.11.1	Define arithmetic and geometric sequences and series.	Low
MA.912.D.11.2	Use sigma notation to describe series.	Low
MA.912.D.11.3	Find specified terms of arithmetic and geometric sequences.	Low
MA.912.D.11.4	Find partial sums of arithmetic and geometric series, and find sums of infinite convergent geometric series. Use Sigma notation where applicable.	Moderate
MA.912.D.11.5	Explore and use other sequences found in nature such as the Fibonacci sequence and the golden ratio.	High
MA.912.P.1.1	Use counting principles, including the addition and the multiplication principles, to determine size of finite sample spaces and probabilities of events in those spaces.	High
MA.912.P.1.2	Use formulas for permutations and combinations to count outcomes and determine probabilities of events.	Moderate
MA.912.P.2.2	Determine probabilities of independent events.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number:	1298310
Course Title:	Advanced Topics in Mathematics (formerly 129830A)
Course Length:	Year
Course Status:	State Board Approved

ASSESSMENT

Assessment:

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The following Florida benchmarks are not in the Algebra I/II course sequence, but they are included in the ADP Algebra 2 EOC exam framework:

- MA.912.A.1.1
- MA.912.A.1.3
- MA.912.A.1.4
- MA.912.A.1.7
- MA.912.A.2.9
- MA.912.A.5.6
- MA.912.A.5.7
- MA.912.A.7.9

Additionally the following benchmarks are not in the Integrated I/II/III course sequence, but they are in the ADP Algebra 2 EOC framework:

- MA.912.A.3.5
- MA.912.A.6.3

RELATED BENCHMARKS (51) :

Scheme	Descriptor	Cognitive Complexity
LA.1112.1.6.1	The student will use new vocabulary that is introduced and taught directly;	

LA.1112.1.7.1	The student will use background knowledge of subject and related content areas, prereading strategies (e.g., previewing, discussing, generating questions), text features, and text structure to make and confirm complex predictions of content, purpose, and organization of a reading selection;	
LA.1112.1.7.4	The student will identify cause-and-effect relationships in text;	
LA.1112.3.1.2	The student will prewrite by making a plan for writing that addresses purpose, audience, a controlling idea, logical sequence, and time frame for completion; and	
LA.1112.3.1.3	The student will prewrite by using organizational strategies and tools (e.g., technology, spreadsheet, outline, chart, table, graph, Venn Diagram, web, story map, plot pyramid) to develop a personal organizational style.	
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	Moderate
MA.912.A.2.8	Determine the composition of functions.	Low
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise with and without technology.	Moderate
MA.912.A.2.13	Solve real-world problems involving relations and functions.	High
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	Moderate
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	Moderate
MA.912.A.4.8	Describe the relationships among the solutions of an	Moderate

	equation, the zeros of a function, the x-intercepts of a graph, and the factors of a polynomial expression with and without technology.	
MA.912.A.4.11	Solve a polynomial inequality by examining the graph with and without the use of technology.	Moderate
MA.912.A.5.1	Simplify algebraic ratios.	Moderate
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	Moderate
MA.912.A.5.3	Simplify complex fractions.	Moderate
MA.912.A.5.5	Solve rational equations.	Moderate
MA.912.A.5.6	Identify removable and non-removable discontinuities, and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	Moderate
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	High
MA.912.A.7.5	Solve quadratic equations over the complex number system.	Moderate
MA.912.A.7.7	Solve non-linear systems of equations with and without using technology.	High
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	Low
MA.912.A.8.3	Graph exponential and logarithmic functions.	Moderate
MA.912.A.8.5	Solve logarithmic and exponential equations.	Moderate
MA.912.A.9.1	Write the equations of conic sections in standard form and general form, in order to identify the conic section and to find its geometric properties (foci, asymptotes, eccentricity, etc.).	Moderate

MA.912.A.9.2	Graph conic sections with and without using graphing technology.	Moderate
MA.912.A.9.3	Solve real-world problems involving conic sections	High
MA.912.D.8.1	Use matrices to organize and store data. Perform matrix operations (addition, subtraction, scalar multiplication, multiplication)	Low
MA.912.D.8.2	Use matrix operations to solve problems.	Moderate
MA.912.D.8.4	Find the inverse of a matrix, and use the inverse to solve problems with and without the use of technology.	High
MA.912.D.8.5	Use determinants of 2 x 2 and 3 x 3 matrices as well as higher order matrices with and without the use of technology.	Low
MA.912.D.11.1	Define arithmetic and geometric sequences and series.	Low
MA.912.D.11.2	Use sigma notation to describe series.	Low
MA.912.D.11.3	Find specified terms of arithmetic and geometric sequences.	Low
MA.912.D.11.4	Find partial sums of arithmetic and geometric series, and find sums of infinite convergent geometric series. Use Sigma notation where applicable.	Moderate
MA.912.F.1.1	Explain the difference between simple and compound interest.	Moderate
MA.912.F.1.2	Solve problems involving compound interest.	High
MA.912.F.1.3	Demonstrate the relationship between simple interest and linear growth.	Moderate
MA.912.F.1.4	Demonstrate the relationship between compound interest and exponential growth.	Moderate

MA.912.F.2.1	Calculate the future value of a given amount of money with and without technology.	Moderate
MA.912.P.1.1	Use counting principles, including the addition and the multiplication principles, to determine size of finite sample spaces and probabilities of events in those spaces.	High
MA.912.P.1.2	Use formulas for permutations and combinations to count outcomes and determine probabilities of events.	Moderate
MA.912.P.2.1	Determine probabilities of complementary events, and calculate odds for and against the occurrence of events.	Moderate
MA.912.P.2.2	Determine probabilities of independent events.	Moderate
MA.912.P.2.3	Understand and use the concept of conditional probability, including: understanding how conditioning affects the probability of events and finding conditional probabilities from a two-way frequency table.	High
MA.912.S.3.3	Calculate and interpret measures of the center of a set of data, including mean, median, and weighted mean, and use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.4	Calculate and interpret measures of variance and standard deviation. Use these measures to make comparisons among sets of data.	Moderate
MA.912.S.3.5	Calculate and interpret the range and quartiles of a set of data.	Moderate
MA.912.S.3.6	Use empirical rules such as the 68-95-99.7 rule to estimate spread of distributions and to make comparisons among sets of data.	Moderate
MA.912.T.2.1	Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	Moderate
MA.912.T.2.2	Solve real-world problems involving right triangles using technology when appropriate.	High