High School Integrated Pathway Courses

SCUSD has elected the integrated pathway of mathematics to implement the CCSS-M at the high school level, which will be phased in over a threeyear period: Math 1 in 2014-15; Math 2 in 2015-16; and Math 3 in 2016-17.

The integrated pathway (Math 1, Math 2, and Math 3) is a sequence of courses that build upon the foundation established in elementary and middle school mathematics. These courses develop mathematics across multiple categories, including a blend of Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability concepts throughout all three courses.

High schools will offer two options for mathematics courses (see below). In Option 1, students take Math 1, Math 2, and Math 3, followed by Pre-Calculus (or other 4th course options, e.g. Statistics or EAP Math). In Option 2, students take Math 1, Math 2 Plus, and Math 3 Plus, followed by AP Calculus AB. Math 2 Plus and Math 3 Plus have the Pre-Calculus standards embedded within them, which prepares students to go directly to AP Calculus AB. Both options meet the University of California A – G requirements, and will prepare students for college and career opportunities upon graduation.

The "plus" (+) standards are additional standards written in the CCSS-M that prepare students for advanced math courses, like AP Calculus. Most of the pre-calculus standards are comprised of the (+) standards and they have been embedded into the Math 2 Plus and Math 3 Plus courses. The regular Math 2 and Math 3 courses also have some (+) standards within them, which all students will learn.

Option 1: Math 1	Math 2 (Starting 2015-16)	Math 3 (Starting 2016-17)	Pre-Calculus	Other possible cours • Statistics	e options after Math 3:
Option 2: Math 1	Math 2 Plus (Starting 2015-16)	Math 3 Plus (Starting 2016-17)	AP Calculus AB	AP StatisticsEAP Math (Control	ollege Ready Math)
		Function Types Addre	essed in Each Course		
Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Linear	Linear	Linear	Linear	Linear	Linear
Exponential	Exponential	Exponential	Exponential	Exponential	Exponential
	Quadratic	Quadratic	Quadratic	Quadratic	Quadratic
			Polynomial	Polynomial	Polynomial
			Rational	Rational	Rational
			Radical	Radical	Radical
			Logarithmic	Logarithmic	Logarithmic
			Trigonometric	Trigonometric	Trigonometric
				Inverse	Inverse

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
	The Real Number System (N.RN)		Extend the properties of exponents to rational exponents. N.RN.1,2 Use properties of rational and irrational numbers.	Extend the properties of exponents to rational exponents. N.RN.1,2 Use properties of rational and irrational numbers.			
r and Quantity	Quantities (N.Q)	Reason quantitatively and use units to solve problems. Foundation for work with expressions, equations and functions N.Q.1,2,3					
Numbe	The Complex Number System (N.CN)		Perform arithmetic operations with complex numbers. i^2 as highest power of i N.CN.1,2	Perform arithmetic operations with complex numbers. i^2 as highest power of i N.CN.1,2 (+)N.CN.3 Represent complex numbers and their operations on the complex plane. (+)N.CN.4,5,6 (rectangular form only)		Represent complex numbers and their operations on the complex plane. (+)N.CN.4 (polar Form)	Perform arithmetic operations with complex numbers. (+)N.CN.3 Represent complex numbers and their operations on the complex plane. (+)N.CN.4 (polar and rectangular form)

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This table shows the domains and clusters in each course in the Integrated Pathway. The standards from each cluster are listed, including commentary on the focus or any limitations of the clusters (shown in italics).

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
and Quantity	The Complex Number System (<i>continued</i>)		Use complex numbers in polynomial identities and equations. <i>Quadratics with real</i> <i>coefficients</i> N.CN.7 (+)N.CN.8,9	Use complex numbers in polynomial identities and equations. <i>Quadratics with real</i> <i>coefficients</i> N.CN.7 (+)N.CN.8,9	Use complex numbers in polynomial identities and equations. Polynomials with real coefficients; apply N.CN.9 to higher degree polynomials (+)N.CN.8,9	Use complex numbers in polynomial identities and equations. Polynomials with real coefficients; apply N.CN.9 to higher degree polynomials (+)N.CN.8,9	
Number	Vector Quantities and Matrices (N.VM)			Represent and model with vector quantities. (+)N.VM.1,2,3 Perform operations on vectors. (+)N.VM.4a,4b,4c, 5a,5b		Perform operations on matrices and use matrices in applications. (+)N.VM.6,7,8,9,10, 11,12	Represent and model with vector quantities. (+)N.VM.1,2,3 Perform operations on vectors. (+)N.VM.4a,4b,4c, 5a,5b Perform operations on matrices and use matrices in applications. (+)N.VM.6,7,8,9,10, 11,12

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
	Seeing Structure in Expressions (A.SSE)	Interpret the structure of expressions. <i>Linear expressions</i> <i>and exponential</i> <i>expressions with</i> <i>integer exponents</i> A.SSE.1a,1b	Interpret the structure of expressions. <i>Quadratic and</i> <i>exponential</i> A.SSE.1a,1b,2 Write expressions in equivalent forms to solve problems. <i>Quadratic and</i> <i>exponential</i> A.SSE.3a,3b,3c	Interpret the structure of expressions. <i>Quadratic and</i> <i>exponential</i> A.SSE.1a,1b,2 Write expressions in equivalent forms to solve problems. <i>Quadratic and</i> <i>exponential</i> A.SSE.3a,3b,3c	Interpret the structure of expressions. <i>Polynomial and</i> <i>rational</i> A.SSE.1a,1b,2 Write expressions in equivalent forms to solve problems. A.SSE.4	Interpret the structure of expressions. <i>Polynomial and</i> <i>rational</i> A.SSE.1a,1b,2 Write expressions in equivalent forms to solve problems. A.SSE.4	Interpret the structure of expressions. <i>All available types of</i> <i>expressions</i> A.SSE.1a,1b,2
Algebra	Arithmetic with Polynomials and Rational Expressions (A.APR)		Perform arithmetic operations on polynomials. <i>Polynomials that</i> <i>simplify to</i> <i>quadratics</i> A.APR.1	Perform arithmetic operations on polynomials. <i>Polynomials that</i> <i>simplify to</i> <i>quadratics</i> A.APR.1	Perform arithmetic operations on polynomials. <i>Beyond quadratic</i> A.APR.1 Understand the relationship between zeros and factors of polynomials. A.APR.2,3 Use polynomial identities to solve problems. A.APR.4 (+)A.APR.5	Perform arithmetic operations on polynomials. <i>Beyond quadratic</i> A.APR.1 Understand the relationship between zeros and factors of polynomials. A.APR.2,3 Use polynomial identities to solve problems. A.APR.4 (+)A.APR.5	

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
	Arithmetic with Polynomials and Rational Expressions (continued)				Rewrite rational expressions. <i>Linear and quadratic</i> <i>denominators</i> A.APR.6 (+)A.APR.7	Rewrite rational expressions. <i>Linear and quadratic</i> <i>denominators</i> A.APR.6 (+)A.APR.7	Rewrite rational expressions. <i>All available types of</i> <i>expressions</i> A.APR.6 (+)A.APR.7
ebra	Creating Equations (A.CED)	Create equations that describe numbers or relationships. <i>Linear, and</i> <i>exponential (integer</i> <i>inputs only);</i> <i>absolute value (CA)</i> <i>for A.CED.3, linear</i> <i>only</i> A.CED.1,2,3,4	Create equations that describe numbers or relationships. In A.CED.4, include formulas involving quadratic terms A.CED.1,2,4	Create equations that describe numbers or relationships. In A.CED.4, include formulas involving quadratic terms A.CED.1,2,4	Create equations that describe numbers or relationships. Equations using all available types of expressions including simple root functions; absolute value (CA) A.CED.1,2,3,4	Create equations that describe numbers or relationships. Equations using all available types of expressions including simple root functions; absolute value (CA) A.CED.1,2,3,4	Create equations that describe numbers or relationships. <i>Equations using all</i> <i>available types of</i> <i>expressions</i> A.CED.1,2,3,4
Alge	Reasoning with Equations and Inequalities (A.REI)	Understand solving equations as a process of reasoning and explain the reasoning. <i>Master linear, learn</i> <i>as general principle</i> A.REI.1 Solve equations and inequalities in one variable. <i>Linear inequalities;</i> <i>exponential of a</i>	Solve equations and inequalities in one variable. Quadratics with real coefficients	Solve equations and inequalities in one variable. Quadratics with real coefficients	Understand solving equations as a process of reasoning and explain the reasoning. <i>Simple radical and</i> <i>rational</i> A.REI.2	Understand solving equations as a process of reasoning and explain the reasoning. <i>Simple radical and</i> <i>rational</i> A.REI.2	
		$2^{x} = \frac{1}{16}$ A.REI.3, 3.1 (CA)	A.KEI.4a,4b	A.KEI.4a,4b			

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Algebra	Reasoning with Equations and Inequalities (<i>continued</i>)	Solve systems of equations. <i>Linear systems</i> A.REI.5,6 Represent and solve equations and inequalities graphically. <i>Linear and</i> <i>exponential; learn as</i> <i>general principle</i> A.REI.10,11,12	Solve systems of equations. <i>Linear-quadratic</i> <i>systems</i> A.REI.7	Solve systems of equations. <i>Linear-quadratic</i> <i>systems</i> A.REI.7	Represent and solve equations and inequalities graphically. <i>Combine</i> polynomial, rational, radical, absolute value, and exponential functions A.REI.11	Solve systems of equations. Use matrices to represent and solve a system of linear equations (+)A.REI.8,9 Represent and solve equations and inequalities graphically. Combine polynomial, rational, radical, absolute value, and exponential functions A.REI.11	Solve systems of equations. Use matrices to represent and solve a system of linear equations (+)A.REI.8,9

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Functions	Interpreting Functions (F.IF)	Understand the concept of a function and use function notation. <i>Learn as general</i> <i>principle. Focus on</i> <i>linear and</i> <i>exponential (integer</i> <i>domains) and on</i> <i>arithmetic and</i> <i>geometric sequences</i> F.IF.1,2,3 Interpret functions that arise in applications in terms of a context. <i>Linear and</i> <i>exponential (linear</i> <i>domain)</i> F.IF.4,5,6	Interpret functions that arise in applications in terms of a context. <i>Quadratic</i> F.IF.4,5,6	Interpret functions that arise in applications in terms of a context. <i>Quadratic</i> F.IF.4,5,6	Interpret functions that arise in applications in terms of a context. Include rational, square root and cube root F.IF.4,5,6	Interpret functions that arise in applications in terms of a context. Include rational, square root and cube root F.IF.4,5,6	Interpret functions that arise in applications in terms of the context. <i>All function types</i> F.IF.4,5
		Analyze functions using different representations. <i>Linear and</i> <i>exponential</i> F.IF.7a,7e,9	Analyze functions using different representations. <i>Linear, exponential,</i> <i>quadratic, absolute</i> <i>value, step,</i> <i>piecewise-defined</i> F.IF.7a,7b,8a,8b,9	Analyze functions using different representations. <i>Linear, exponential,</i> <i>quadratic, absolute</i> <i>value, step,</i> <i>piecewise-defined</i> F.IF.7a,7b,8a,8b,9	Analyze functions using different representations. Include rational, radical, polynomial, logarithmic, and trigonometric functions F.IF.7b,7c,7e,8,9	Analyze functions using different representations. Include rational, radical, polynomial, logarithmic, and trigonometric functions F.IF.7b,7c,7e,8,9 Graph rational functions (+)F.IF.7d Graph polar coordinates, curves (+)F.IF.10, 11 (CA)	Analyze functions using different representations. <i>All function types</i> <i>Graph rational</i> <i>functions</i> (+)F.IF.7d <i>Graph polar</i> <i>coordinates, curves</i> (+)F.IF. 10, 11 (CA)

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Functions	Building Functions (F.BF)	Build a function that models a relationship between two quantities. For F.BF.1,2, linear and exponential (integer inputs) F.BF.1a,1b,2 Build new functions from existing functions. Linear and exponential; focus on vertical translations for exponential F.BF.3	Build a function that models a relationship between two quantities. <i>Quadratic and exponential</i> F.BF.1a,1b Build new functions from existing functions. <i>Quadratic, absolute</i> <i>value</i> F.BF.3,4a	Build a function that models a relationship between two quantities. <i>Quadratic and exponential</i> F.BF.1a,1b Build new functions from existing functions. <i>Quadratic, absolute</i> <i>value</i> F.BF.3,4a	Build a function that models a relationship between two quantities. Include all types of functions studied F.BF.1b Build new functions from existing functions. Include simple radical, rational, and exponential functions F.BF.3,4a	Build a function that models a relationship between two quantities. Include all types of functions studied F.BF.1b (+)F.BF.1c Build new functions from existing functions. Include simple radical, rational, exponential and inverse functions F.BF.3,4a (+)F.BF.4b,4c,4d,5	Build a function that models a relationship between two quantities. <i>All function types</i> (+)F.BF.1c Build new functions from existing functions. <i>All function types</i> F.BF.3 (+)F.BF.4b,4c,4d,5
	Linear, Quadratic, and Exponential Models (F.LE)	Construct and compare linear, quadratic, and exponential models and solve problems. <i>Linear and</i> <i>exponential</i> F.LE.1a,1b,1c,2,3 Interpret expressions for functions in terms of the situation they model <i>Linear, exponential</i> F.LE.5	Construct and compare linear, quadratic, and exponential models and solve problems. <i>Include quadratic</i> F.LE.3 Interpret expressions for functions in terms of the situation they model. <i>Quadratic</i> F.LE.6 (CA)	Construct and compare linear, quadratic, and exponential models and solve problems. <i>Include quadratic</i> F.LE.3 Interpret expressions for functions in terms of the situation they model. <i>Quadratic</i> F.LE.6 (CA)	Construct and compare linear, quadratic, and exponential models and solve problems. <i>Logarithms as</i> <i>solutions for</i> <i>exponentials</i> F.LE.4 F.LE.4.1,4.2,4.3 (CA)	Construct and compare linear, quadratic, and exponential models and solve problems. <i>Logarithms as</i> <i>solutions for</i> <i>exponentials</i> F.LE.4 F.LE.4.1,4.2,4.3 (CA)	

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
					Extend the domain of trigonometric functions using the unit circle. F.TF.1,2, 2.1 (CA)	Extend the domain of trigonometric functions using the unit circle. F.TF.1,2, 2.1 (CA) Use special triangles and unit circle (+)F.TF.3,4	Extend the domain of trigonometric functions using the unit circle. Use special triangles and unit circle (+)F.TF.3,4
ions	Trigonometric				Model periodic phenomena with trigonometric functions. F.TF.5	Model periodic phenomena with trigonometric functions. F.TF.5 Use inverse function (+)F.TF.6,7	Model periodic phenomena with trigonometric functions. <i>Use inverse function</i> (+)F.TF.6,7
Funct	Functions (F.TF)					Prove and apply trigonometric identities. <i>Prove</i> addition/subtraction formulas (+)F.TF.9 <i>Prove angle</i> <i>identities</i> (+)F.TF. 10 (CA)	Prove and apply trigonometric identities. Prove addition/subtraction formulas (+)F.TF.9 Prove angle identities (+)F.TF.10 (CA)
			Prove and apply trigonometric identities. <i>Prove Pythagorean</i> <i>Identity</i> F.TF.8	Prove and apply trigonometric identities. <i>Prove Pythagorean</i> <i>Identity</i> F.TF.8			

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
		Experiment with transformations in the plane. G.CO.1,2,3,4,5					
			Prove geometric theorems. Focus on validity of underlying reasoning while using variety of ways of writing proofs G.CO.9,10,11	Prove geometric theorems. Focus on validity of underlying reasoning while using variety of ways of writing proofs G.CO.9,10,11			
Geometry	Congruence (G.CO)	Understand congruence in terms of rigid motions. Build on rigid motions as a familiar starting point for development of concept of geometric proof G.CO.6,7,8 Make geometric constructions. Formalize and explain processes G.CO.12,13					

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Geometry	Similarity, Right Triangles, and Trigonometry (G.SRT)		Understand similarity in terms of similarity transformations. G.SRT.1a,1b,2,3 Prove theorems involving similarity. Focus on validity of underlying reasoning while using variety of formats G.SRT.4,5 Define trigonometric rations and solve problems involving right triangles. G.SRT.6,7,8, 8.1 (CA)	Understand similarity in terms of similarity transformations. G.SRT.1a,1b,2,3 Prove theorems involving similarity. Focus on validity of underlying reasoning while using variety of formats G.SRT.4,5 Define trigonometric rations and solve problems involving right triangles. G.SRT.6,7,8, 8.1 (CA)	Apply trigonometry to general triangles.	Apply trigonometry to general triangles.	
	Circles (G.C)		Understand and apply theorems about circles. G.C.1,2,3,(+)4 Find arc lengths and areas of sectors of circles <i>Radian introduced</i> <i>only as unit of</i> <i>measure; convert</i> <i>between degrees</i> <i>and radians (CA)</i> G.C.5	Understand and apply theorems about circles. G.C.1,2,3,(+)4 Find arc lengths and areas of sectors of circles <i>Radian introduced</i> <i>only as unit of</i> <i>measure; convert</i> <i>between degrees</i> <i>and radians (CA)</i> G.C.5			

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Geometry	Expressing Geometric Properties with Equations (G.GPE)	Use coordinates to prove simple geometric theorems algebraically. Include distance formula; relate to Pythagorean theorem G.GPE.4,5,7	Translate between the geometric description and the equation for a conic section. <i>Circles and</i> <i>parabolas only.</i> G.GPE.1,2 Use coordinates to prove simple geometric theorems algebraically. <i>For G.GPE.4 include</i> <i>simple circle</i> <i>theorems</i> G.GPE.4,6	Translate between the geometric description and the equation for a conic section. Include circles, parabolas, ellipses, and hyperbolas G.GPE.1,2 (+)G.GPE.3 Use coordinates to prove simple geometric theorems algebraically. For G.GPE.4 include simple circle theorems G.GPE.4,6	Translate between the geometric description and the equation for a conic section. <i>Complete the</i> <i>square, write in</i> <i>standard form.</i> <i>Include only circles</i> <i>and parabolas</i> G.GPE.3.1 (CA)	Translate between the geometric description and the equation for a conic section. <i>Complete the</i> <i>square, write in</i> <i>standard form.</i> <i>Include circles,</i> <i>parabolas, ellipses,</i> <i>and hyperbolas</i> G.GPE.3.1 (CA)	Translate between the geometric description and the equation for a conic section. Include circles, parabolas, ellipses, and hyperbolas (+)G.GPE.3 G.GPE.3.1 (CA)
	Geometric Measurement and Dimension (G.GMD)		Explain volume formulas and use them to solve problems. G.GMD.1,3 G.GMD. 5(CA),6(CA)	Explain volume formulas and use them to solve problems. G.GMD.1,3 G.GMD.5(CA),6(CA) Cavalieri's principle (+)G.GMD.2	Visualize the relation between two-dimensional and three- dimensional objects.	Visualize the relation between two-dimensional and three- dimensional objects.	Explain volume formulas and use them to solve problems. <i>Cavalieri's principle</i> (+)G.GMD.2
					G.GMD.4	G.GMD.4	

. <u> </u>	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
	Modeling with Geometry (G.MG)				Apply geometric concepts in modeling situations. G.MG.1,2,3	Apply geometric concepts in modeling situations. G.MG.1,2,3	

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Statistics and Probability	Interpreting Categorical and Quantitative Data (S.ID)	Summarize, represent, and interpret data on a single count or measurement variable. S.ID.1,2,3 Summarize, represent, and interpret data on two categorical and quantitative variables. <i>Linear focus; discuss</i> <i>general principle</i> S.ID.5,6a,6b,6c Interpret linear models. S.ID.7,8,9			Summarize, represent, and interpret data on a single count or measurement variable. S.ID.4	Summarize, represent, and interpret data on a single count or measurement variable. S.ID.4	
	Making Inferences and Justifying Conclusions (S.IC)				Understand and evaluate random processes underlying statistical experiments. S.IC.1,2 Make inferences and justify conclusions from sample surveys, experiments and observational studies. S.IC.3,4,5,6	Understand and evaluate random processes underlying statistical experiments. S.IC.1,2 Make inferences and justify conclusions from sample surveys, experiments and observational studies. S.IC.3,4,5,6	

	Domains	Math 1	Math 2	Math 2 Plus	Math 3	Math 3 Plus	Pre-Calculus
Statistics and Probability	Conditional Probability and the Rules of Probability (S.CP)		Understand independence and conditional probability and use them to interpret data. <i>Link to data from</i> <i>simulations or</i> <i>experiments</i> S.CP.1,2,3,4,5 Use the rules of probability to compute probabilities of compound events in a uniform probability model. S.CP.6,7 (+)S.CP.8,9	Understand independence and conditional probability and use them to interpret data. <i>Link to data from</i> <i>simulations or</i> <i>experiments</i> S.CP.1,2,3,4,5 Use the rules of probability to compute probabilities of compound events in a uniform probability model. S.CP.6,7 (+)S.CP.8,9			
	Using Probability to Make Decisions (S.MD)		Use probability to evaluate outcomes of decisions. <i>Introductory; apply</i> <i>counting rules</i> (+)S.MD.6,7	Use probability to evaluate outcomes of decisions. Introductory; apply counting rules (+)S.MD.6,7	Use probability to evaluate outcomes of decisions. <i>Include more</i> <i>complex situations</i> (+)S.MD.6,7	Use probability to evaluate outcomes of decisions. <i>Include more</i> <i>complex situations</i> (+)S.MD.6,7	