Overview of the Integrated Pathway for the Common Core State Mathematics Standards

This table shows the domains and clusters in each course in the Integrated Pathway. The standards from each cluster included in that course are listed below each cluster. For each course, limits and focus for the clusters are shown in italics.

The standards ***not*** assessed on the DCAS for Integrated Mathematics are highlighted in yellow.

	Domains	Mathematics I	Mathematics II	Mathematics III	Fourth Courses
Number and Quantity	The Real Number System	• Extend the properties of exponents to rational exponents. N.RN.1, 2	• Extend the properties of exponents to rational exponents. N.RN.2 • Use properties of rational and irrational numbers. N.RN.3	• Extend the properties of exponents to rational exponents. N.RN.1, 2 • Use properties of rational and irrational numbers. N.RN.3	
	Quantities	• Reason quantitatively and use units to solve problems. *Foundation for work with expressions, equations and functions* N.Q.1, 2, 3	• Reason quantitatively and use units to solve problems. *Foundation for work with expressions, equations and functions* N.Q.1, 2, 3	• Reason quantitatively and use units to solve problems. *Foundation for work with expressions, equations and functions* N.Q.1, 2, 3	
	The Complex Number System		• Perform arithmetic operations with complex numbers. *i^2 as highest power of i* N.CN.1, 2 • Use complex numbers in polynomial identities and equations. *Quadratics with real coefficients* N.CN.7		• Perform arithmetic operations with complex numbers. (+) N.CN.3 • Represent complex numbers and their operations on the complex plane. (+) N.CN.4, 5, 6 • Use complex numbers in polynomial identities and equations. N.CN.(+) 8, (+) 9
	Vector Quanitities and Matrices		• Perform operations on matrices and use matrices in applications. (+) N.VM.6, 7, 8, 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.9

	Domains	Mathematics I	Mathematics II	Mathematics III	Fourth Courses
Algebra	Seeing Structure in Expressions	• Interpret the structure of expressions. *Linear expressions and exponential expressions with integer exponents* A.SSE.1, 1a, 1b	• Interpret the structure of expressions. *Quadratic and exponential* A.SSE.1, 1a, 2 • Write expressions in equivalent forms to solve problems. *Quadratic and exponential* A.SSE.3, 3a	• Interpret the structure of expressions. *Polynomial and rational* A.SSE.1, 1a, 1b, 2 • Write expressions in equivalent forms to solve problems. *Quadratic and exponential* A.SSE.3, 3a, 3b, 3c, 4	
	Arithmetic with Polynomials and Rational Expressions	• Perform arithmetic operations on polynomials. *Polynomials that simplify to quadratics* A.APR.1	• Understand the relationship between zeros and factors of polynomials. A.APR.2 • Use polynomial identities to solve problems. A.APR.4 • Rewrite rational expressions. A.APR.6	• Perform arithmetic operations on polynomials. *Beyond quadratic* A.APR.1 • Understand the relationship between zeros and factors of polynomials. A.APR.3	• Use polynomial identities to solve problems. (+) A.APR.5 • Rewrite rational expressions. *Linear and quadratic denominators* (+) A.APR.7
	Creating Equations	• Create equations that describe numbers or relationships. *Linear, and exponential (integer inputs only); for A.CED.3, linear only* A.CED. 1, 2, 3, 4	• Create equations that describe numbers or relationships. A.CED. 1, 2	• Create equations that describe numbers or relationships. *Equations using all available types of expressions including simple root functions* A.CED.1, 2, 3, 4	
		• Understand solving equations as a process of reasoning and explain the reasoning. *Master linear, learn as general principle* A.REI.1 • Solve equations and inequalities in one variable. *Linear inequalities; literal that are linear in the variables being solved for; exponential of a form, such as* $2^x = 1/16$ A.REI.3, 4, 4b • Solve systems of equations. *Linear systems* A.REI.5, 6 • Represent and solve equations and inequalities graphically. *Linear and exponential; learn as general principle* A.REI.10, 11, 12	• Understand solving equations as a process of reasoning and explain the reasoning. *Master linear, learn as general principle* A.REI.1 • Solve equations and inequalities in one variable. *Linear inequalities; literal that are linear in the variables being solved for; exponential of a form, such as* $2^x = 1/16$ A.REI.3, 4, 4b • Solve systems of equations. *Linear-quadratic systems* A.REI.7	• Understand solving equations as a process of reasoning and explain the reasoning. *Simple radical and rational* A.REI.1, 2 • Solve equations and inequalities in one variable. *Quadratics with real coefficients* A.REI.3, 4, 4a, 4b • Represent and solve equations and inequalities graphically. *Combine polynomial, rational, radical, absolute value, and exponential functions* A.REI.10, 11, 12	• Solve systems of equations. (+) A.REI.8, 9

	Domains	Mathematics I	Mathematics II	Mathematics III	Fourth Courses
Functions	Interpreting Functions	• Understand the concept of a function and use function notation. *Learn as general principle. Focus on linear and exponential (integer domains) and on arithmetic and geometric sequences* F.IF.3 • Interpret functions that arise in applications in terms of a context. *Linear and exponential, (linear domain)* F.IF.4, 6 • Analyze functions using different representations. *Linear and exponential* F.IF.7, 7a, 8b, 9	• Understand the concept of a function and use function notation. *Learn as general principle. Focus on linear and exponential (integer domains) and on arithmetic and geometric sequences* F.IF.2 • Interpret functions that arise in applications in terms of a context. *Include rational, square root and cube root; emphasize selection of appropriate models* F.IF.4 • Analyze functions using different representations. *Linear, exponential, quadratic, absolute value, step, piecewise-defined* F.IF.7, 7a, 7b, 9	• Understand the concept of a function and use function notation. *Learn as general principle. Focus on linear and exponential (integer domains) and on arithmetic and geometric sequences* F.IF.1, 2 • Interpret functions that arise in applications in terms of a context. *Include rational, square root and cube root; emphasize selection of appropriate models* F.IF.4, 5, 6 • Analyze functions using different representations. *Include rational and radical; focus on using key features to guide selection of appropriate type of model function* F.IF.7, 7a, 7b, 7c, 7e, 8, 8a, 8b, 9	• Analyze functions using different representations. *Logarithmic and trigonometric functions* (+) F.IF.7d
		• Build a function that models a relationship between two quantities. *For F.BF.1, 2, linear and exponential (integer inputs)* F.BF.1, 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. *For F.BF.1, 2, linear and exponential (integer inputs)* F.BF.1, 1a, 2 • Build new functions from existing functions. *Quadratic and absolute value* F.BF.3, 4, 4a	• Build a function that models a relationship between two quantities. *Include all types of functions studied* F.BF.1, 1a, 1b, 2 • Build new functions from existing functions. *Include simple radical, rational, and exponential functions; emphasize common effect of each transformation across function types* F.BF.3	• Build a function that models a relationship between two quantities. (+) F.BF.1c • Build new functions from existing functions. (+) F.BF.4b, 4c, 4d, 5
	Linear, Quadratic, and Exponential Models	• Construct and compare linear, quadratic, and exponential models and solve problems. *Linear and exponential* F.LE.1, 1a, 1b, 1c, 2, 3 • Interpret expressions for functions in terms of the situation they model. *Linear and exponential of form $f(x) = b^x + k$* F.LE.5	• Construct and compare linear, quadratic, and exponential models and solve problems. *Include quadratic* F.LE. 3	• Construct and compare linear, quadratic, and exponential models and solve problems. *Logarithms as solutions for exponentials* F.LE.4	

	Domains	Mathematics I	Mathematics II	Mathematics III	Fourth Courses
Functions (continued)	Trigonometric Functions		• Extend the domain of trigonometric functions using the unit circle. F.TF.2	• Extend the domain of trigonometric functions using the unit circle. F.TF.1 • Model periodic phenomena with trigonometric functions. F.TF. 5 • Prove and apply trigonometric identities. F.TF.8	• Extend the domain of trigonometric functions using the unit circle. (+) F.TF.3, 4 • Model periodic phenomena with trigonometric functions. (+) F.TF.6, 7 • Prove and apply trigonometric identities. (+) F.TF.9
Geometry	Congruence		• Experiment with transformations in the plane. G.CO.1, 2, 3, 4, 5 • 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 • Prove geometric theorems. *Focus on validity of underlying reasoning while using variety of ways of writing proofs* G.CO.9, 10, 11 • Make geometric constructions. *Formalize and explain processes* G.CO.12, 13		
	Similarity, Right Triangles, and Trigonometry		• Understand similarity in terms of similarity transformations. G.SRT.1, 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 ratios and solve problems involving right triangles. G.SRT.6, 7, 8		• Apply trigonometry to general triangles. (+) G.SRT.9. 10, 11

	Domains	Mathematics I	Mathematics II	Mathematics III	Fourth Courses*
Geometry (continued)			• Understand and apply theorems about circles. G.C.1	• Understand and apply theorems about circles. G.C.2, 3 • Find arc lengths and areas of sectors of circles. *Radian introduced only as unit of measure* G.C.5	
	Expressing Geometric Properties with Equations	• 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. G.GPE.1, 2 • Use coordinates to prove simple geometric theorems algebraically. G.GPE.5, 6, 7	• Translate between the geometric description and the equation for a conic section. G.GPE.1	• Translate between the geometric description and the equation for a conic section. (+) G.GPE.3
	Geometric Measurement and Dimension	• Explain volume formulas and use them to solve problems. G.GMD.1, 3	• Explain volume formulas and use them to solve problems. G.GMD.1, 3 • Visualize relationships between two-dimensional and three-dimensional objects G.GMD.4		• Explain volume formulas and use them to solve problems. (+) G.GMD.2
	Modeling with Geometry	• Apply geometric concepts in modeling situations. G.MG.1	• Apply geometric concepts in modeling situations. G.MG.1, 3	• Apply geometric concepts in modeling situations. G.MG.2	

	Domains	Mathematics I	Mathematics II	Mathematics III	Fourth Courses*
Statistics and Probability	Interpreting Categorical and Quantitative Data	• 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. *Linear focus; discuss general principle* S.ID.5, 6, 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 two categorical and quantitative variables. *Linear focus; discuss general principle* S.ID.6, 6a	
	Making Inferences and Justifying Conclusions		• 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		
	Interpreting Categorical and Quantitative Data	• Understand independence and conditional probability and use them to interpret data. *Link to data from simulations or experiments* S.CP.2	• Understand independence and conditional probability and use them to interpret data. *Link to data from simulations or experiments* S.CP.1, 2, 4 • Use the rules of probability to compute probabilities of compound events in a uniform probability model. (+) S.CP.9	• Understand independence and conditional probability and use them to interpret data. *Link to data from simulations or experiments* S.CP. 3, 5 • Use the rules of probability to compute probabilities of compound events in a uniform probability model. S.CP.6, 7	• Use the rules of probability to compute probabilities of compound events in a uniform probability model. (+) S.CP.8
	Using Probability to Make Decisions			• Use probability to evaluate outcomes of decisions. (+) S.MD.5, 5a, 5b	• Calculate expected values and use them to solve problems. (+) S.MD.1, 2, 3, 4 • Use probability to evaluate outcomes of decisions. *Include more complex situations* (+) S.MD.6, 7