

## MCAS/DCCAS Mathematics Correlation Chart Grade 10

<i>MCAS Finish Line Mathematics Grade 10</i>	<i>MCAS Standard</i>	<i>DCCAS Standard</i>	<i>DCCAS Standard Description</i>
<b>Unit 1: Number Sense and Operations</b>			
Lesson 1: <i>Properties of Real Numbers</i>	10.N.1	AI.N.1	Use the properties of operations on real numbers, including the associative, commutative, identity, and distributive properties, and use them to simplify calculations.
Lesson 2: <i>Roots and Powers</i>	10.N.1	AII.N.1	Know and use the properties of operations on real numbers, including the existence of the identity and inverse elements for addition and multiplication and the existence of $n$ th roots of positive real number for any positive integer $n$ , and the $n$ th power of positive real numbers.
	10.N.3	AIN.4	Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers, including approximate error in measurement and the approximate value of square roots. (Reminder: This is without the use of calculators.)
Lesson 3: <i>Exponents</i>	10.N.2	AI.N.2	Simplify numerical expressions, including those involving integer exponents or the absolute value [e.g., $3(2^4 - 1) = 45$ , $4 3 - 5  + 6 = 14$ ]; apply such simplification in the solution of problems.
Lesson 4: <i>Properties of Exponents</i>	10.N.2	AI.N.2	Simplify numerical expressions, including those involving integer exponents or the absolute value [e.g., $3(2^4 - 1) = 45$ , $4 3 - 5  + 6 = 14$ ]; apply such simplification in the solution of problems.



Lesson 5: <i>Simplifying Numerical Expressions</i>	10.N.2	AI.N.2	Simplify numerical expressions, including those involving integer exponents or the absolute value [e.g., $3(2^4 - 1) = 45$ , $4 3 - 5  + 6 = 14$ ]; apply such simplification in the solution of problems.
Lesson 6: <i>Estimation and Reasonableness</i>	10.N.4	AI.N.4	Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers, including approximate error in measurement and the approximate value of square roots. (Reminder: This is without the use of calculators.)
<b>Unit 2: Patterns, Relations, and Algebra</b>			
Lesson 1: <i>Identifying and Representing Patterns</i>	10.P.1	AI.P.1	Recognize, describe, and extend patterns governed by a linear, quadratic, or exponential functional relationship or by a simple iterative process (e.g., the Fibonacci sequence).
		AII.P.1	Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Fibonacci Numbers and Pascal's Triangle.
Lesson 2: <i>Slope and Intercepts of a Line</i>	10.P.2	AI.P.5	Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and $x$ - and $y$ -intercepts from its graph or from a linear equation that represents the line.
Lesson 3: <i>Describing Linear Equations</i>	10.P.2	AI.P.5	Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and $x$ - and $y$ -intercepts from its graph or from a linear equation that represents the line.
		AI.P.6	Find a linear function describing a line from a graph or a geometric description of the line (e.g., by using the point-slope or slope $y$ -intercept formulas). Explain the significance of a positive, negative, zero, or undefined slope.



Lesson 4: <i>Solving Linear Equations and Inequalities</i>	10.P.6	A.I.P.13	Solve equations and inequalities, including those involving absolute value of linear expressions (e.g., $ x - 2  > 5$ ), and apply to the solution of problems.
Lesson 5: <i>Solving Systems of Equations and Inequalities</i>	10.P.8	A.I.P.15	Solve everyday problems (e.g., mixture, rate, and work problems) that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution.
Lesson 6: <i>Operations with Polynomials</i>	10.P.3	A.I.P.8	Add, subtract, and multiply polynomials with emphasis on first- and second-degree polynomials.
		A.I.P.10	Divide polynomials by monomials with emphasis on first- and second-degree polynomials.
Lesson 7: <i>Factoring Algebraic Expressions</i>	10.P.4	A.I.P.9	Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring [e.g., $a^2 - b^2 = (a + b)(a - b)$ , $x^2 + 10x + 21 = (x + 3)(x + 7)$ , $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$ ], identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents.
Lesson 8: <i>Factoring Trinomials</i>	10.P.4	A.I.P.9	Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring [e.g., $a^2 - b^2 = (a + b)(a - b)$ , $x^2 + 10x + 21 = (x + 3)(x + 7)$ , $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$ ], identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents.
Lesson 9: <i>Solving Quadratic Equations</i>	10.P.5	A.I.P.12	Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods.



Lesson 10: <i>Solving Linear Function Problems</i>	10.P.7	A.I.P.14	Solve everyday problems (e.g., compound interest and direct and inverse variation problems) that can be modeled using linear or quadratic functions. Apply appropriate graphical or symbolic methods to the solution.
Lesson 11: <i>Solving Other Function Problems</i>	10.P.7	A.II.P.10	Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, and step functions; absolute values; and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include compound interest, exponential growth and decay, and direct and inverse variation problems.
<b>Unit 3: Geometry</b>			
Lesson 1: <i>Angles</i>	10.G.3	G.G.13	Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.
Lesson 2: <i>Geometric Properties</i>	10.G.1	G.G.3	Apply properties of sides, diagonals, and angles in special polygons; identify their parts and special segments (e.g., altitudes, midsegments); determine interior angles for regular polygons.
		G.G.5	Detect symmetries of geometric figures.
	10.G.5	G.G.14	Solve simple triangle problems using the triangle angle sum property and/or the Pythagorean theorem; study and understand more than one proof of this theorem.
Lesson 3: <i>Using the Pythagorean Theorem</i>	10.G.5	G.G.14	Solve triangle problems using the triangle angle sum property and/or the Pythagorean theorem; study and understand more than one proof of this theorem.
Lesson 4: <i>Special Triangles</i>	10.G.6	G.G.15	Use the properties of special triangles (e.g., isosceles, equilateral, $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ ) to solve problems.



Lesson 5: <i>Congruence and Similarity</i>	10.G.4	G.G.12	Apply congruence and similarity correspondences (e.g., $\triangle ABC \cong \triangle XYZ$ ) and properties of the figures to find missing parts of geometric figures, and provide logical justification.
Lesson 6: <i>Circles</i>	10.G.3	G.G.13	Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.
Lesson 7: <i>Geometric Construction</i>	10.G.2	G.G.11	Draw congruent and similar figures using a compass, straightedge, or protractor. Justify the constructions by logical argument.
Lesson 8: <i>Coordinate Geometry</i>	10.G.7	G.G.18	Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems.
Lesson 9: <i>Parallel and Perpendicular Lines</i>	10.G.8	G.G.19	Find linear equations that represent lines either perpendicular or parallel to a given line and through a point (e.g., by using the point-slope form of the equation).
Lesson 10: <i>Transformations</i>	10.G.9	G.G.20	Draw the results and interpret transformations on figures in the coordinate plane such as translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solution of problems.
Lesson 11: <i>Visualizing Solid Objects</i>	10.G.10	G.G.21	Demonstrate the ability to visualize solid objects and recognize their projections, cross sections, and graph points in 3-D.
Lesson 12: <i>Vertex-Edge Graphs</i>	10.G.11	None	Use vertex-edge graphs to model and solve problems. (MCAS Learning Standard)



<b>Unit 4: Measurement</b>			
Lesson 1: <i>Perimeter and Area</i>	10.M.1	G.G.22	Find and use measures of perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.
Lesson 2: <i>Surface Area and Volume</i>	10.M.2	G.G.23	Find and use measures of lateral areas, surface areas, and volumes of prisms, pyramids, spheres, cylinders, and cones, and relate these measures to each other using formulas.
Lesson 3: <i>Changes in Linear Measurement</i>	10.M.3	G.G.24	Relate changes in the measurement (including units) of one attribute of an object to changes in other attributes.
Lesson 4: <i>Error and Precision</i>	10.M.4	G.G.25	Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements.
<b>Unit 5: Data Analysis, Statistics, and Probability</b>			
Lesson 1: <i>Statistical Measures of Data</i>	10.D.1	PS.5	Determine the mean and the standard deviation of a normally distributed random variable.
		PS.6	Know the definitions of the mean, median, and mode of a distribution of data, and compute each in particular situations.
Lesson 2: <i>Representing and Interpreting Data</i>	10.D.1	PS.8	Organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatter plots, and box-and-whisker plots.
Lesson 3: <i>Lines of Best Fit</i>	10.D.2	PS.10	Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot).



Lesson 4: <i>Sampling and Predictions</i>	10.D.3	PS.9	Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.
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