

Cycle Breakdown by Overall and Specific Expectations for the MFM1P Curriculum

Overall Expectations	Specific Expectations	Cycle 1	Cycle 2	Cycle 3
NSA1: solve problems involving proportional reasoning	1.1 illustrate equivalent ratios, using a variety of tools	✓		
	1.2 represent, using equivalent ratios and proportions, directly proportional relationships arising from realistic situations		✓	
	1.3 solve for unknown values in proportions, using a variety of methods	✓		
	1.4 make comparisons using unit rates		✓	
	1.5 solve problems involving ratios, rates, directly proportional relationships in various contexts			✓
	1.6 solve problems requiring expression of percents, fractions and decimals in equivalent forms			✓
NSA2: simplify numerical and polynomial expressions in one variable and solve simple first-degree equations	2.1 simplify numerical expressions with integers and rational numbers with and without technology (as needed and applied throughout the course)	✓		
	2.2 relate understanding of inverse operations to squaring and taking square root, and apply inverse operations to simplify expressions and solve equations		✓	
	2.3 describe relationship between algebraic and geometric representations of single variable term up to degree three			✓
	2.4 substitute into and evaluate algebraic expressions involving exponents		✓	
	2.5 add and subtract polynomials with same degree up to degree three, using a variety of tools	✓		
	2.6 multiply polynomial by monomial with same variable to give results up to degree three, using a variety of tools			✓
	2.7 solve first-degree equations with non-fractional coefficients, using a variety of tools		✓	
	2.8 substitute into algebraic equations and solve for one variable in first degree	✓		
LR1: apply data-management techniques to investigate relationships between two variables	1.1 interpret the meanings of points on scatter plots or graphs that represent linear relations, including scatter plots or graphs in more than one quadrant	✓		
	1.2 pose problems, identify variables and formulate hypotheses associated with relationship between two variables		✓	✓
	1.3 carry out an investigation or experiment involving relationships between two variables, including collection and organization of data, using appropriate methods, equipment, and/or technology and techniques			✓
	1.4 describe trends and relationships observed in data, make inferences from data, compare the inferences with hypotheses about the data, and explain differences between the inferences and the hypotheses		✓	
LR2: determine the characteristics of linear relations	2.1 construct tables of values and graphs using a variety of tools, to represent linear relations derived from descriptions of realistic situations	✓		
	2.2 construct tables of values, scatter plots, and lines or curves of best fit as appropriate using a variety of tools, for linearly related and non-linearly related data collected from variety of sources		✓	
	2.3 identify, through investigation, some properties of linear relations and apply properties to determine whether relation is linear or non-linear	✓		

LR3: demonstrate an understanding of constant rate of change and its connection to linear relations	3.1 determine, through investigation, that the rate of change of linear relation can be found by choosing any two points on the line that represents the relation, finding vertical change between points (i.e., the rise) and the horizontal change between points (i.e., the run, and writing the ratio rise/run	✓		
	3.2 determine, through investigation, connections among the representations of constant rate of change of a linear relation	✓		
	3.3 compare the properties of direct variation and partial variation in applications and identify initial value		✓	
	3.4 express a linear relation as an equation in two variables, using rate of change and initial value		✓	
	3.5 describe the meaning of rate of change and the initial value for linear relation arising from realistic situation	✓	✓	✓
LR4: connect various representations of a linear relation, and solve problems using the representations	4.1 determine values of linear relation by using table of values, equation and interpolating/extrapolating from graph of the relation	✓	✓	
	4.2 describe situation that would explain events illustrated by a given graph with two variables		✓	
	4.3 determine other representations of linear relation arising from realistic situation given one representation			✓
	4.4 solve problems that can be modelled with first-degree equations and compare algebraic method to other solution methods		✓	
	4.5 describe effects on linear graph and make the corresponding changes to the linear equation with the conditions of the situation they represent are varied			✓
	4.6 determine graphically the point of intersection of two linear relations and interpret point of intersection in context of an application			✓
	4.7 select a topic involving two variable relationship, pose a question on the topic, collect data to answer question and present solution using appropriate representations of data	✓	✓	✓
MG1: determine, through investigation, the optimal values of various measurements of rectangles	1.1 determine the maximum area of a rectangle with given perimeter by constructing variety of rectangles using variety of tools and by examining various values of area as side lengths change and perimeter remains constant	✓		
	1.2 determine minimum perimeter of rectangle with given area using variety of tools and by examining various values of the side lengths and perimeter as the area stays constant		✓	
	1.3 solve problems that require maximizing the area of rectangle for fixed perimeter or minimizing perimeter of rectangle for fixed area			✓
MG2: solve problems involving the measurements of two-dimensional shapes and the volumes of three-dimensional figures	2.1 relate geometric representation of Pythagorean theorem to algebraic expression	✓	✓	
	2.2 solve problems using Pythagorean theorem, as required in applications			✓
	2.3 solve problems involving areas and perimeters of composite two-dimensional shapes (rectangles, triangles, parallelograms, trapezoids, circles)	✓		
	2.4 develop, through investigation, formulas for volume of pyramid, cone, sphere		✓	
	2.5 solve problems involving volumes of prisms, pyramids, cylinders, cones, spheres		✓	✓
MG3: determine, through investigation facilitated by dynamic geometry software, geometric properties and relationships involving two-dimensional shapes, and apply the results to solving problems	3.1 determine, through investigation using variety of tools, and describe properties and relationships of the interior and exterior angles of triangles, quadrilaterals, and other polygons and apply result to problems involving angles of polygons		✓	
	3.2 determine, through investigation using variety of tools, and describe the properties and relationships of the angles formed by parallel lines cut by a transversal, and apply results to problems involving parallel lines	✓		
	3.3 create an original dynamic sketch, paper-folding design, or other illustration that incorporates some of the geometric properties from this section or find and report on some real-life application(s)			✓

