Grade 8 Curriculum Map 2018-19
Key: Math in Focus Course 1 (MIF)

TIME FRAME	UNIT/CONCEPTS	CORE GOALS & SKILLS	PA ELIGIBLE STANDARDS & ASSESSMENTS	Resources	Vocabulary
September (18 days)	Course 3A Content Chapter 1: Exponents	**Big Idea**: You can use exponential notation to represent repeated multiplication of the same factor 1.1 Exponential Notation ● Understand and use exponential notation ● Use exponents to write the prime factorization of a number 1.2 The product and quotient ● Understand the product of powers property ● Understand the quotient of powers property ● Multiply and divide expressions in exponential notation 1.3 The power of a power ● Understand raising a power to a power ● Use properties of exponents to simplify expressions 1.4 The power of a product and the power of a quotient ● Understand the power of a product property ● Understand the power of a quotient property ● Use properties of exponents to simplify expressions 1.5 Zero and negative exponents ● Understand zero and negative exponents ● Simplify expressions involving zero and negative exponents 1.6 real-world problems: Squares and cubes	CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. (M08.A-N.1.1) CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP. 3 Construct arguments and critique the reasoning of others. CC.K-12.MP 4 Model with mathematics. CC.K-12.MP. 6 Attend to precision CC.K-12.MP.7 Look for and use structure.	**Recall Prior Knowledge (RPK)** Interpreting the real number system and integers p.3 Book A Chapter 1 Pretest MIF Textbook A p. 5-57 ALEKS and Quick tables	Exponential notation Power Base Exponent Prime factorization

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			CC.K-12.MP.8 Look for and express regularity in repeated reasoning. *Initial Knowledge Check – ALEKS* *Chapter 1 Test – Math in Focus*		
September (10 days)	Chapter 2: Scientific Notation	**Big Idea:** Scientific notation is a way of writing numbers that makes it easier to work with very large or very small numbers. 2.1 Understanding scientific notation ● Understand the need for scientific notation ● Write numbers in scientific notation or in standard form. ● Compare numbers in scientific notation 2.2 Adding and subtracting in scientific notation ● Add and subtract numbers in scientific notation. ● Introduce the prefix system 2.3 Multiplying and dividing in scientific notation ● Multiply and divide numbers in scientific notation ● Solve real-world problems involving the calculation of numbers in different forms. ● Use calculators to operate with numbers written in scientific notation.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. (M08.B-E.1.1) CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.6 Attend to precision CC.K-12.MP.7 Look for and use structure. CC.K-12.MP.8 Look for and express regularity in repeated reasoning.	**RPK:** Multiplying and dividing by positive powers of ten p. 59 Book A Chapter 2 pre-test MIF Textbook A p. 60-91 ALEKS and Quick tables	Scientific notation Coefficient Standard form

			Chapter 2 Test – Math in Focus *Chapter 1 -2 Cumulative Review*		
September-October (10 days)	Chapter 3: Algebraic Linear Equations	**Big Idea:** Linear equations can be used to solve mathematical and real-world problems. A linear equation with one variable can have one solution, no solution, or infinitely many solutions. 3.1 Solving Linear Equations with One Variable ● Solve linear equations with one variable ● Solve real-world problems involving linear equations with one variable 3.2 Identifying the Number of Solutions to a Linear equation ● Understand and identify linear equations with no solution ● Understand and identify linear equations with infinitely many solutions 3.3 Understanding Linear Equations with Two Variables ● Represent a relationship between two variables using a linear equation. ● Represent a linear relationship using a table of values 3.4 Solving for a Variable in a Two-Variable Linear Equation ● Solve for a two-variable linear equation	CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous equations. CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP 4 Model with mathematics. CC.K-12.MP.7 Look for and use structure. CC.K-12.MP.8 Look for and express regularity in repeated reasoning. *Chapter 3 Test – Math in Focus*	**RPK:** Understand equivalent equations and linear equations p. 95 Chapter 3 pretest MIF Textbook A p. 96-127 ALEKS and Quick tables	Inconsistent equation Consistent equation identity

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October- (14 days)	Chapter 4: Lines and Linear Equations	**Big Idea:** the graph of a linear equation in two variables is a line, and you can write the equation of the line in slope-intercept form... 4.1 Finding and Interpreting Slopes of Lines ● Find the slopes of lines 4.2 Understanding Slope-intercept Form ● Explore the relationship between the lines y = mx and y = mx + b 4.3 Writing Linear equations ● Write an equation of a line in slope-intercept form. ● Write an equation of a line parallel to another line 4.4 Sketching Graphs of Linear Equations ● Understanding graphing linear equations ● Sketch a linear graph by using *m* and *b* ● Sketch a linear graph by using *m* and a point of the line. 4.5 Real-World Problems: Linear Equations ● Explain slope and y-intercept in the context of real-world problems	CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations. (M08.B-E.2) CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations (M08.B-E.3) CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations. (M08.D-S.1.1) CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP 4 Model with mathematics. CC.K-12.MP.5 Use appropriate tools strategically CC.K-12.MP.7 Look for and use structure.	**RPK:** Interpreting direct proportion p. 130 Book A Chapter 4 pre-test MIF Textbook A p. 130-189 ALEKS and Quick tables	Slope Rise Run y-intercept x-intercept slope-intercept form linear relationship

			Chapter 4 Test – Math in Focus *Chapter 3-4 Cumulative review*		
November (14 days)	Chapter 5: Systems of Linear Equations	**Big Idea:** A system of linear equations may have a unique solution. It can be solved using the elimination, substitution, or graphical method. 5.1 Introduction to Systems of Linear Equations ● Understand systems of linear equations. 5.2 Solving Systems of Linear Equations Using Algebraic Methods ● Solve systems of linear equations using the elimination method ● Solve systems of linear equations using the substitution method 5.3 Real-world problems: Systems of linear equations ● Solve real-world problems using systems of linear equations. 5.4 Solving Systems of Linear Equations by Graphing ● Solve systems of linear equations using the graphical method 5.5 Inconsistent and Dependent Systems of Linear Equations ● Understand and identify inconsistent systems of linear equations. ● Understand and identify dependent systems of linear equations.	CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations. (M08.B-E.3.1.3-5) CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP 4 Model with mathematics. CC.K-12.MP.7 Look for and use structure. CC.K-12.MP.8 Look for and express regularity in repeated reasoning. *Chapter 5 Test – Math in Focus*	**RPK:** Graphing linear equations using a table of values p. 191 Book A Chapter 5 pre-test MIF Textbook A p. 191-239 ALEKS and Quick tables	System of linear equations Unique solution Common term Elimination method Substitution method Standard form Graphical method Point of intersection Inconsistent systems of equations Dependent system of equations
December (15 days)	Chapter 6: Functions	**Big Idea:** A function is a relation in which every input has exactly one output. You can use tables, graphs, and equations to represent many functions. 6.1 Understanding Relations and Functions ● Understand relations ● Identify functions	CC.2.2.8.C.1 Define, evaluate, and compare functions. (M08.B-F.1.1.2 -3) CC.K-12.MP.1 Solve problems and persevere in solving them.	**RPK:** Writing algebraic expressions to represent unknown quantities	Relation Input Output Function Vertical line test Linear function

		6.2 Representing Functions ● Represent a function in different forms 6.3 Understanding Linear and Nonlinear Functions ● Identify linear functions ● Identify nonlinear functions from graphs ● Describe and sketch functions to show their qualitative features. 6.4 Comparing Two Functions ● Compare linear functions represented in the same and in different forms	CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.7 Look for and use structure. *Chapter 6 Test – Math in Focus* *Chapter 5-6 Cumulative review* *District Benchmark*	p. 241 Book A Chapter 6 pre-test MIF Textbook A p. 241 -297 ALEKS and Quick tables	Rate of change Nonlinear function
January (12 days)	Chapter 7: the Pythagorean Theorem	**Big Idea:** The Pythagorean Theorem describes the relationship among the three sides of a right triangle. 7.1 Understanding the Pythagorean Theorem and the Plane Figure ● Use the Pythagorean Theorem to find the unknown side lengths. ● Use the converse of the Pythagorean Theorem. ● Sole real-world problems involving the Pythagorean Theorem 7.2 Understanding the distance formula ● Use the Pythagorean Theorem to find the distance between two points on a coordinate plane ● Understand the distance formula 7.3 Understanding the Pythagorean Theorem and Solids ● Use the Pythagorean Theorem to solve problems involving solids 7.4 Identifying Volume of Composite Solids ● Use the Pythagorean Theorem to find volume of composite solids	CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. (M08.A-N.1.1) CC.2.3.8.A.3 Understand and apply the Pythagorean Theorem to solve problems. (M08.C-G.2.1) CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations. (M08.D-S.1.1) CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively.	**RPK:** Understanding squares and square roots, cubes and cube roots p. 3 Book B Chapter 7 pre-test MIF Textbook B p. 3-47 ALEKS and Quick tables	Variable Pythagorean Theorem Hypotenuse Leg

			CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.6 Attend to precision CC.K-12.MP.7 Look for and use structure. CC.K-12.MP.8 Look for and express regularity in repeated reasoning. *Chapter 7 Test – Math in Focus*		
	SUPPLEMENT	**COURSE 2 Chapter 6 - Angle Properties and Straight Lines & Chapter 8 - Volume and Surface Area of Solids**			
February (15 days)	Chapter 8: Geometric Transformations	**Big Idea:** Geometric Transformations move figures on a plane. Each transformation changes some properties of a figure, but leaves others unchanged. 8.1 Translations ● Understand the concept of a translation ● Draw images after translations. ● Find the coordinates of points after translations. 8.2 Reflections ● Understand the concept of a reflection ● Draw images after reflections ● Find the coordinates of points after reflections. 8.3 Rotations ● Understand the concept of a rotation	CC.2.3.8.A.2 Understand and apply congruence similarity, and geometric transformations using various tools. (M08.C-G.1.1) CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively.	**RPK:** Recognizing a symmetric point on a coordinate plane. p. 49 Book B Chapter 8 pretest MIF Textbook B p. 49-111	Translation Map Image Transformation Invariant point Reflection Line of reflection Rotation Center of rotation Clockwise Counter clockwise Angle of rotation Half turn Dilation

		● Draw images after rotations 8.4 Dilations ● Understand the concept of a dilation ● Find the dimensions of figures after dilations ● Draw images after dilations ● Find the center of a dilation.	CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.5 Reason abstractly and quantitatively CC.K-12.MP.7 Look for and use structure. *Chapter 8 Test – Math in Focus*	ALEKS and Quick tables	Scale factor Center of dilation Isometry
March (11 days)	Chapter 9: Congruence and Similarity	**Big Idea:** Both congruent figures and similar figures can be related by geometric transformations. 9.1 Understanding and Applying Congruent Figures ● Understand and apply the concept of congruence ● Use tests for congruent triangles 9.2 Understanding and Applying Similar Figures ● Understand and apply the concept of similarity ● Use tests for similar triangles 9.3 Relating Congruent and Similar Figures to Geometric Transformations ● Relate congruent or similar figures using geometric transformations ● Perform and identify a sequence of transformations.	CC.2.3.8.A.2 Understand and apply congruence similarity, and geometric transformations using various tools. (M08.C-G.1.1) . CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.5 Reason abstractly and quantitatively	**RPK:** Identifying the scale factor and solving problems involving scale factors. Finding the measure of an angle p.115 Book B Chapter 9 pre-test MIF Textbook B p. 115-171 ALEKS and Quick tables	Congruence Corresponding angles Corresponding sides Statement of congruence Protractor Ruler Scissors

			CC.K-12.MP.7 Look for and use structure.		
April (14 days)	Chapter 10: Statistics	**Big Idea:** A line of best fit can model the linear association of bivariate quantitative data. A two0way table displays the relative frequencies of categorical data. 10.1 Scatter Plots ● Draw a scatter plot given two sets of quantitative data ● Identify patterns of association between two sets of quantitative data ● Identify outliers in a scatter plot 10.2 Modeling Linear Associations ● Understand a line of best fit ● Write a linear equation for a line of best fit ● Use an equation for a lien of best fit 10.3 Two-way tables ● Read data form a two-way table ● Construct and interpret a two-way table ● Convert data to relative frequencies in a two-way table	CC.2.4.8.B.1.Analyze and/or interpret bivariate data displayed in multiple representations. (M08.D-S.1.1) CC.2.4.8.B.2 Understand that patterns of association can be seen in bivariate data utilizing frequencies. (M08.D-S.1.2) CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.6 Use appropriate tools strategically CC.K-12.MP.7 Look for and use structure.	**RPK:** Finding relative frequencies p.173 Chapter 10 pretest MIF Textbook B p. 173-215 ALEKS and Quick tables	Scatter plot Quantitative data Association Bivariate data Clustering Line of best fit Interpolate Extrapolate Two-way table Categorical data Qualitative data
		PSSA TEST WINDOW			
May (14 days)	Chapter 11: Probability	**Big Idea:** The probability of simple events can be used to compute the probability of compound events, either dependent or independent. 11.1 Compound events ● Understand compound events ● Represent compound events 11.2 Probability of a compound event ● Use possibility diagrams to find probability of compound events 11.3 Independent events	CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations. (M08.B-E.3.1) . CC.2.4.8.B.2 Understand that patterns of association can be seen in bivariate data utilizing frequencies. (M08.D-S.1.2)	**RPK:** Finding the probability of a simple event p.217 Book B Chapter 11 pre-test MIF Textbook B p. 217-273	Compound event Simple event Possibility diagram Tree diagram Independent events Multiplication rule of probability Addition rule of probability

		● Understand independent events ● Use the multiplication rue and the addition rule of probability to solve problems with independent events. 11.4 Dependent events ● Understand dependent events ● Use rules of probability to solve problems with dependent events	CC.K-12.MP.1 Solve problems and persevere in solving them. CC.K-12.MP.2 Reason abstractly and quantitatively. CC.K-12.MP.3 Construct arguments and critique the reasoning of others. CC.K-12.MP.4 Model with mathematics. CC.K-12.MP.7 Look for and use structure. CC.K-12.MP.8 Look for and express regularity in repeated reasoning.	ALEKS and Quick tables	Dependent events