

Foundations of Algebra Teaching & Learning Framework

Semester 1

Module 1 2 weeks	Module 2 3 weeks	Module 3 3 weeks	Module 4 5 weeks	Module 5 5 weeks
Number Sense & Quantity	Arithmetic to Algebra	Proportional Reasoning	Equations & Inequalities	Quantitative Reasoning with Functions
<p>MFANSQ1 Relationships (4 operations; multiples of fractions; multiply/divide by powers of ten with decimals; compare fractions/decimals)</p> <p>MFANSQ2 +/- (Real number+- on a number line & the meaning of zero)</p> <p>MFANSQ3 Irrationals (Irrational number approximations; adding & multiplying with rational & irrational numbers)</p> <p>MFANSQ4 Computation (Compute multi-digit decimals; compute with rational numbers; division of fractions by fractions; multi-step problems with any form of rational number)</p> <p>Algebra I Unit 1: MGSE9-12.N.RN.3 (Properties of rational & irrational numbers)</p>	<p>MFAAA1 Equivalent Expressions (Commutative & distributive properties; numerical & algebraic expressions; add, subtract & multiply algebraic expressions; equivalent expressions; evaluate formulas)</p> <p>MFAAA2 Exponents (integer exponents; formulas; square & cube roots; Pythagorean Theorem)</p> <p style="text-align: center;">Algebra I Unit 1:</p> <p>MGSE9-12.A.SSE.1 (Interpret expressions in context)</p> <p>MGSE9-12.A.SSE.1a-b (Interpret formulas & expressions in context)</p> <p>MGSE9-12.A.APR.1 (Add, subtract & multiply polynomials)</p> <p>MGSE9-12.N.RN.2 (Expressions with Radicals)</p>	<p>MFAPR1 Equivalent Ratios (Equivalent ratios)</p> <p>MFAPR2 Proportions (Fraction equivalence & division; percent problems)</p> <p>MFAPR3 Graphing (Unit rates as slope; similar triangles and slope; compare proportions in multiple representations)</p> <p style="text-align: center;">Algebra I Unit 1:</p> <p>MGSE9-12.N.Q.1-3 (Reason quantitatively & use units to solve problems)</p>	<p>MFAEI1 One Variable (Solve equations & inequalities & justify solutions)</p> <p>MFAEI2 Units (Scale, units, graphing)</p> <p>MFAEI3 Two Variables (Algebraic models; graphing calculators; systems of equations)</p> <p>MFAEI4 Literal Equations (Solve for a specific variable)</p> <p style="text-align: center;">Algebra I Unit 1:</p> <p>MGSE9-12.N.Q.1-3 (Reason quantitatively & use units to solve problems)</p> <p style="text-align: center;">Algebra I Unit 2:</p> <p>MGSE9-12.A.CED.1-4 (Create equations that describe numbers or relationships)</p> <p>MGSE9-12.A.REI.1,3,5 (Solve equations & inequalities 1-2 variable)</p> <p>MGSE9-12.A.REI.6 (Solve systems)</p> <p>MGSE9-12.A.REI.10-12 (Solve equations & inequalities 2 variables)</p>	<p>MFAQR1 Characteristics (Domain & range)</p> <p>MFAQR2 Compare & Graph (Rates of change; linear & non-linear; key features; compare with multiple representations)</p> <p>MFAQR3 Construct & Interpret (Write; variables in context; function notation)</p> <p style="text-align: center;">Algebra I Unit 2:</p> <p>MGSE9-12.F.BF.1 (Write a function)</p> <p>MGSE9-12.F.BF.1a,2 (Arithmetic sequences)</p> <p>MGSE9-12.F.IF.1 (Input vs. output)</p> <p>MGSE9-12.F.IF.2 (Function notation)</p> <p>MGSE9-12.F.IF.3-4 (Sequences & characteristics)</p> <p>MGSE9-12.F.IF.5-6 (Rate of change)</p> <p>MGSE9-12.F.IF.7,7a,9 (Analyze functions)</p>

These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units.

All units will include the Mathematical Practices and indicate skills to maintain

NOTE: Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics

NSQ- number sense & quantity

AA- arithmetic to algebra

PR- proportional reasoning

EI- equations and inequalities

QR- quantitative reasoning with functions

FA Algebra I Teaching & Learning Framework			
Semester 2			
Unit 3 6 weeks	Unit 4 4 weeks	Unit 5 3 weeks	Unit 6 5 weeks
Modeling & Analyzing Quadratic Functions	Modeling & Analyzing Exponential Functions	Comparing & Contrasting Functions	Describing Data Review and Extend
<p>MGSE9-12.A.SSE.2 (Interpret the structure of expressions)</p> <p>MGSE9-12.A.SSE.3,3a-b (Equivalent forms of expressions)</p> <p>MGSE9-12.A.CED.1-2,4 (Create equations that describe numbers or relationships)</p> <p>MGSE9-12.A.REI.1 (Justify how to solve an equation)</p> <p>MGSE9-12.A.REI.4,4a-b (Methods of solving quadratics)</p> <p>MGSE9-12.F.BF.1,3 (Write a function & build new functions)</p> <p>MGSE9-12.F.IF.1 (Input vs. output)</p> <p>MGSE9-12.F.IF.2 (Function notation)</p> <p>MGSE9-12.F.IF.4 (Characteristics)</p> <p>MGSE9-12.F.IF.5-6 (Rate of change)</p> <p>MGSE9-12.F.IF.7,7a (Graph functions)</p> <p>MGSE9-12.F.IF.8 (Write a function)</p> <p>MGSE9-12.F.IF.8a,9 (Compare & contrast functions)</p>	<p>MGSE9-12.A.CED.1-2 (Create equations 1-2 variables)</p> <p>MGSE9-12.A.REI.1 (Justify how to solve an equation)</p> <p>MGSE9-12.F.BF.1 (Write a function)</p> <p>MGSE9-12.F.BF.1a,2 (Arithmetic & geometric sequences)</p> <p>MGSE9-12.F.BF.3 (Build new functions)</p> <p>MGSE9-12.F.IF.1 (Input vs. output)</p> <p>MGSE9-12.F.IF.2 (Function notation)</p> <p>MGSE9-12.F.IF.3-4 (Sequences & characteristics)</p> <p>MGSE9-12.F.IF.5-6 (Rate of change)</p> <p>MGSE9-12.F.IF.7,7e (Graph functions)</p> <p>MGSE9-12.F.IF.9 (Compare functions)</p>	<p>MGSE9-12.F.LE.1 (Linear vs exponential)</p> <p>MGSE9-12.F.LE.1a (Growth of functions)</p> <p>MGSE9-12.F.LE.1b,c,2-3 (Changes in rate and relating to context)</p> <p>MGSE9-12.F.LE.5 (Interpret parameters)</p> <p>MGSE9-12.F.BF.3 (Build new functions)</p> <p>MGSE9-12.F.IF.1 (Input vs. output)</p> <p>MGSE9-12.F.IF.2 (Function notation)</p> <p>MGSE9-12.F.IF.4 (Characteristics)</p> <p>MGSE9-12.F.IF.5-6 (Rate of change)</p> <p>MGSE9-12.F.IF.7 (Graph functions)</p> <p>MGSE9-12.F.IF.9 (Compare functions)</p>	<p>MGSE9-12.S.ID.1 (Dot plots, histograms & box plots)</p> <p>MGSE9-12.S.ID.2 (Compare data distribution)</p> <p>MGSE9-12.S.ID.3 (Shape, center & spread)</p> <p>MGSE9-12.S.ID.5-6 (Bivariate data)</p> <p>MGSE9-12.S.ID.6a,c (Function of best fit)</p> <p>MGSE9-12.S.ID.7-9 (Slope, correlation coefficient, causation & correlation)</p> <p>Review: All standards by differentiating for student needs</p> <p>Extend: MGSE9-12.G.CO.1 (Precise definitions)</p>
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Grades 9-12 Key: Algebra Strand: SSE = Seeing Structure in Expressions, APR = Arithmetic with Polynomial and Rational Expressions, CED = Creating Equations, REI = Reasoning with Equations and Inequalities

Functions Strand: IF = Interpreting Functions, LE = Linear and Exponential Models, BF = Building Functions, TF = Trigonometric Functions

Geometry Strand: CO = Congruence, SRT = Similarity, Right Triangles, and Trigonometry, C = Circles, GPE = Expressing Geometric Properties with Equations, GMD = Geometric Measurement and Dimension, MG = Modeling with Geometry

Statistics and Probability Strand: ID = Interpreting Categorical and Quantitative Data, IC = Making Inferences and Justifying Conclusions, CP = Conditional Probability and the Rules of Probability, MD = Using Probability to Make Decisions