

N-GEN MATH[®]
ALGEBRA I
(WITH NGMLS ALIGNMENT)

BY KIRK WEILER

UNIT #1 – THE BUILDING BLOCKS OF ALGEBRA 11

- Lesson 1 – Variables and Expressions – **MP.1**
- Lesson 2 – The Commutative and Associative Properties – **MP.1**
- Lesson 3 – The Distributive Property – **MP.1, MP.2, MP.8, A.SSE.2, A.APR.1**
- Lesson 4 – Equivalent Expressions – **MP.1, A.SSE.2**
- Lesson 5 – Like Terms – **MP.1, MP.7, A.APR.1**
- Lesson 6 – Seeing Structure in Expressions – **MP.2, MP.7, A.SSE.2**
- Lesson 7 – Exponent Review – **MP.2, MP.3, MP.7, A.SSE.2, A.SSE.3c, A.F.IF.8.b**
- Lesson 8 – Multiplying Binomials – **MP.2, MP.3, A.SSE.2, A.APR.1**
- Lesson 9 – Multiplying Binomials Using Area Models – **MP.7, MP.8, A.APR.1**
- Lesson 10 – More Structure Work – **MP.2, MP.7, A.SSE.2**
- Lesson 11 – Translating English to Algebra – **MP.2, MP.3, MP.4**
- Lesson 12 – Algebraic Puzzles – **MP.2, MP.3, A.APR.1**

UNIT #2 – LINEAR EQUATIONS AND INEQUALITIES 67

- Lesson 1 – Equations and Their Solutions – **MP.1, MP.3, A.SSE.1.a**
- Lesson 2 – Using Inverse Operations to Solve Equations – **MP.1, MP.7, A.CED.1, A.REI.1.a, A.REI.3**
- Lesson 3 – Linear Equation Solving Review – **MP.1, A.REI.1.a, A.REI.3**
- Lesson 4 – Justifying Steps in Solving an Equation – **MP.3, A.REI.1.a, A.REI.3**
- Lesson 5 – Modeling with Linear Equations – **MP.4, A.CED.1, A.REI.1.a, A.REI.3**



UNIT #2 – LINEAR EQUATIONS AND INEQUALITIES (CONTINUED) 67

- Lesson 6 – Modeling with Linear Equations Involving Integers – **MP.4, A.CED.1, A.REI.1.a, A.REI.3**
- Lesson 7 – Solving Equations with Unspecified Constants – **MP.1, A.CED.4, A.REI.1.a, A.REI.3**
- Lesson 8 – Inequalities – **MP.2, A.CED.2, A.CED.3**
- Lesson 9 – Solving Linear Inequalities – **MP.1, A.REI.3, A.CED.2, A.CED.3**
- Lesson 10 – Modeling with Inequalities – **MP.3, MP.4, A.CED.2, A.CED.3, A.REI.3**

UNIT #3 – FUNCTIONS 115

- Lesson 1 – Sets of Numbers – **MP.7**
- Lesson 2 – Interval Notation – **MP.7, A.REI.3**
- Lesson 3 – Introduction to Functions – **MP.7, F.IF.1, F.IF.4, F.IF.5, F.LE.5**
- Lesson 4 – Function Notation – **MP.7, F.IF.2, F.IF.5**
- Lesson 5 – Key Features of Functions – **MP.7, A.APR.3, F.IF.1, F.IF.4, F.IF.7.a, F.IF.8.a, F.LE.5**
- Lesson 6 – Working with Functions in Table Form – **MP.4, MP.5, A.APR.3, F.IF.7.a, F.IF.8.a, F.IF.9**
- Lesson 7 – Average Rate of Change – **MP.4, F.IF.4, F.IF.6, F.IF.9, F.LE.5**
- Lesson 8 – Average Rate of Change and Motion – **MP.3, MP.4, F.IF.4, F.IF.6, F.LE.5**
- Lesson 9 – More Work with Domain and Range – **MP.3, MP.4, A.CED.2, A.CED.3, F.IF.4, F.IF.5, F.BF.1.a, F.LE.2, F.LE.5**

UNIT #4 – LINEAR FUNCTIONS 159

- Lesson 1 – Introduction to Linear Functions – **MP.2, MP.4, F.IF.1, F.IF.6, F.IF.7.a**
- Lesson 2 – More Work Graphing Linear Functions (Lines) – **MP.4, MP.7, A.CED.4, F.IF.7.a,**
- Lesson 3 – Writing the Equation of a Line – **MP.4, MP.7, A.CED.2, A.CED.3, F.IF.7.a, F.BF.1.a, F.LE.2**
- Lesson 4 – Working with Linear Functions in Table Form – **MP.3, MP.4, F.IF.7.a, F.IF.9, F.LE.1.a, F.LE.1.b**



UNIT #4 – LINEAR FUNCTIONS (CONTINUED) 159

- Lesson 5 – Modeling with Linear Functions – **MP.4, MP.7, A.CED.2, A.CED.3, F.IF.4, F.IF.5, F.IF.6, F.BF.1.a, F.LE.2, F.LE.5**
- Lesson 6 – More Modeling with Linear Functions – **MP.4, A.CED.2, A.CED.3, F.IF.6, F.BF.1.a, F.LE.1.a, F.LE.1.b, F.LE.2, F.LE.5**
- Lesson 7 – Equations of Horizontal and Vertical Lines – **MP.7, F.IF.7.a, F.LE.5**
- Lesson 8 – Piecewise Linear Functions – **MP.4, MP.7, F.IF.4, F.IF.7.b, F.LE.5**
- Lesson 9 – Step Functions – **MP.3, MP.4, F.IF.5, F.IF.7.b**
- Lesson 10 – Absolute Value Functions – **MP.7, F.IF.4, F.IF.7.a, F.IF.7.b, F.LE.5**
- Lesson 11 – The Truth About Graphs – **MP.1, A.REI.1.a, A.REI.10**
- Lesson 12 – Linear Inequalities with Two Variables – **MP.4, MP.8, A.REI.12**
- Lesson 13 – Introduction to Sequences – **MP.2, MP.4, F.IF.3, F.BF.1.a, F.LE.1.a**
- Lesson 14 – Arithmetic Sequences – **MP.2, F.IF.3, F.BF.1.a, F.LE.1.a**

UNIT #5 – LINEAR SYSTEMS 223

- Lesson 1 – Solving Systems Graphically – **MP.1, MP.4, A.CED.3, A.REI.6.a, A.REI.11**
- Lesson 2 – Solving Systems by Substitution – **MP.4, MP.5, A.CED.3, A.REI.6.a, A.REI.11**
- Lesson 3 – Properties of Systems and Their Solutions – **MP.1, MP.8, A.REI.6.a, A.REI.11**
- Lesson 4 – The Elimination Method – **MP.1, MP.4, A.CED.3, A.REI.6.a, A.REI.11**
- Lesson 5 – Modeling with Systems of Equations – **MP.4, A.SSE.1.b, A.CED.3, A.REI.6.a, A.REI.11**
- Lesson 6 – Solving Equations Graphically – **MP.5, MP.7, A.APR.3, A.REI.1.a, A.REI.3, A.REI.4.b, A.REI.6.a, A.REI.11, F.IF.7.a, F.IF.8.a**
- Lesson 7 – Systems of Inequalities – **MP.1, MP.7, A.CED.2, A.CED.3, A.REI.12**
- Lesson 8 – Modeling with Systems of Inequalities – **MP.3, MP.4, MP.5, A.CED.3, A.REI.11, A.REI.12**



UNIT #6 – EXPONENTIAL ALGEBRA AND FUNCTIONS 263

- Lesson 1 – Exponential Increase and Decrease – **MP.2, MP.3, F.IF.3, F.LE.1.a, F.LE.1.c**
- Lesson 2 – Geometric Sequences – **MP.2, MP.7, F.IF.3, F.BF.1.a, F.LE.1.a, F.LE.1.b**
- Lesson 3 – Equivalent Exponential Expressions – **MP.7, A.SSE.2, A.SSE.3.c**
- Lesson 4 – Simplifying Fractions Involving Exponents – **MP.2, MP.7, MP.8, A.SSE.2, A.SSE.3.c**
- Lesson 5 – Zero and Negative Exponents – **MP.2, MP.7, A.SSE.3.c**
- Lesson 6 – More Work with Exponent Properties – **MP.3, MP.7, A.SSE.2, A.SSE.3.c**
- Lesson 7 – Introduction to Exponential Functions – **MP.2, MP.4, A.CED.3, F.IF.7.a, F.LE.1.c, F.LE.2, F.LE.5**
- Lesson 8 – Percent Review – **MP.1, A.CED.1, A.REI.1.a, A.REI.3**
- Lesson 9 – Percent Increase and Decrease – **MP.1**
- Lesson 10 – Exponential Models Based on Percent Growth – **MP.4, MP.5, A.CED.3, F.IF.5, F.IF.7.a, F.LE.1.c, F.LE.2, F.LE.5**
- Lesson 11 – Constructing Exponential Functions – **MP.3, MP.4, A.CED.3, A.REI.1.a, A.REI.3, F.IF.9, F.LE.2, F.LE.5**
- Lesson 12 – Linear Versus Exponential Functions – **MP.2, MP.4, F.IF.7.a, F.LE.1.a, F.LE.1.b**

UNIT #7 – POLYNOMIALS 319

- Lesson 1 – Introduction to Polynomials – **MP.7, A.SSE.2**
- Lesson 2 – Adding and Subtracting Polynomials – **MP.1, MP.8, A.SSE.2, A.APR.1**
- Lesson 3 – Multiplying Polynomials – **MP.1, MP.7, A.APR.1**
- Lesson 4 – More Work Multiplying Polynomials – **MP.1, A.APR.1**
- Lesson 5 – Factoring Polynomials – **MP.1, A.SSE.2**
- Lesson 6 – Conjugate Binomials – **MP.1, MP.3, MP.5, A.SSE.2, A.APR.1**
- Lesson 7 – Factoring Trinomials – **MP.2, MP.3, A.SSE.2, A.APR.1**
- Lesson 8 – Complete Factoring – **MP.3, MP.7, A.SSE.2**
- Lesson 9 – Recognizing Structure to Factor – **MP.1, MP.7, A.SSE.2, A.APR.1**



UNIT #7 – POLYNOMIALS (CONTINUED) 319

- Lesson 10 – Factoring Challenging Trinomials – **MP.3, MP.7, A.SSE.2, A.APR.1**

UNIT #8 – QUADRATIC FUNCTIONS 367

- Lesson 1 – Introduction to Quadratic Functions – **MP.5, MP.7, A.APR.3, F.IF.4, F.IF.7.a, F.IF.8.a, F.LE.5**
- Lesson 2 – The Leading Coefficient of a Quadratic – **MP.5, MP.7, MP.8, F.IF.7.a, F.IF.8.a, F.LE.5**
- Lesson 3 – The Symmetry of Quadratic Functions – **MP.3, MP.5, A.APR.3, F.IF.4, F.IF.7.a, F.IF.8.a, F.LE.5**
- Lesson 4 – Solving Quadratic Equations Using Inverse Operations – **MP.3, MP.7, A.APR.3, A.REI.4.b**
- Lesson 5 – Solving Quadratics by Completing the Square – **MP.2, MP.8, A.SSE.2, A.APR.1, A.REI.4.b**
- Lesson 6 – Area and Completing the Square – **MP.2, MP.3, A.APR.1, A.REI.4.b**
- Lesson 7 – More Work Solving Quadratics by Completing the Square – **MP.1, A.REI.4.b**
- Lesson 8 – The Zero Product Law – **MP.1, MP.5, A.APR.3, F.IF.8.a, A.SSE.3.a, A.REI.4.b**
- Lesson 9 – More Work Factoring to Solve Quadratics – **MP.1, A.APR.3, F.IF.8.a, A.REI.4.b**
- Lesson 10 – Graphs of Cubic Polynomial Functions – **MP.1, MP.5, A.APR.1, A.APR.3, F.IF.7.a, F.IF.8.a**
- Lesson 11 – Solving Linear-Quadratic Systems – **MP.1, A.REI.7.a, A.REI.4.b**
- Lesson 12 – Quadratic Word Problems – **MP.1, MP.4, A.CED.3, A.REI.4.b, A.REI.7.a, F.BF.1.a**

UNIT #9 – ROOTS AND IRRATIONAL NUMBERS 427

- Lesson 1 – Integers and Rational Numbers – **MP.7, N.RN.3.a**
- Lesson 2 – Square Roots – **MP.7, M.RN.2**
- Lesson 3 – Irrational Numbers – **MP.5, MP.6, MP.7, N.RN.3.a, N.RN.3.b**
- Lesson 4 – Square Root Arithmetic – **MP.1, MP.5, N.RN.3.a**



UNIT #9 – ROOTS AND IRRATIONAL NUMBERS (CONTINUED) 427

- Lesson 5 – Quadratic Equations with Irrational Solutions – **MP.1, MP.5, A.REI.4.b, F.IF.7.a**
- Lesson 6 – The Quadratic Formula – **MP.1, MP.4, A.REI.4.b, F.IF.7.a**
- Lesson 7 – Final Work with Quadratic Equations – **MP.1, MP.5, MP.7, F.IF.4, F.LE.5, A.REI.4.b**

UNIT #10 – FUNCTIONS AND THEIR TRANSFORMATIONS 463

- Lesson 1 – Parent Functions – **MP.7, F.IF.4, F.IF.7.a, F.IF.7.b, F.LE.5**
- Lesson 2 – Vertical Shifting of Functions – **MP.3, MP.4, A.REI.4.b, F.IF.7.a, F.IF.8.a, F.BF.3.a, F.LE.3**
- Lesson 3 – Horizontal Shifting of Functions – **MP.4, MP.7, F.IF.7.a, F.IF.8.a, F.BF.3.a, F.LE.3**
- Lesson 4 – Combined Shifting of Functions – **MP.3, MP.4, A.APR.3, F.IF.5, F.IF.7.b, F.IF.8.a, F.BF.3.a, F.LE.3**
- Lesson 5 – Vertical Stretching and Compressing of Functions – **MP.4, MP.7, F.IF.4, F.IF.7.a, F.IF.8.a, F.BF.3.a, F.LE.5**
- Lesson 6 – Reflecting Functions Across the x -Axis – **MP.4, MP.5, MP.7, F.IF.7.a, F.BF.3.a, F.LE.3, F.LE.5**
- Lesson 7 – The Vertex Form of a Quadratic Function – **MP.3, MP.4, A.REI.4.a, F.IF.7.a, F.IF.8.a, F.BF.3.a, F.LE.3, F.LE.5**

UNIT #11 – STATISTICS 499

- Lesson 1 – The Purpose of Statistics – **MP.1, MP.2, MP.5, S.ID.1, S.ID.2**
- Lesson 2 – The Standard Deviation of a Data Set – **MP.1, MP.4, S.ID.2, S.ID.3**
- Lesson 3 – More Work with Standard Deviation – **MP.2, MP.5, S.ID.3**
- Lesson 4 – Data Distribution Shapes – **MP.2, MP.4, MP.5, S.ID.3**
- Lesson 5 – Comparing Samples – **MP.2, MP.4, S.ID.2, S.ID.3**
- Lesson 6 – Bivariate Data Analysis – **MP.2, MP.4, N.Q.1, S.ID.6.a, S.ID.7, S.ID.9**
- Lesson 7 – Linear Regression on the Calculator – **MP.2, MP.4, MP.5, F.IF.7.a, F.LE.5, S.ID.6.a, S.ID.7, S.ID.9**



UNIT #11 – STATISTICS (CONTINUED) 499

- Lesson 8 – The Strength of Correlation – **MP.2, MP.4, MP.5, S.ID.8**
- Lesson 9 – Categorical Data – **MP.1, MP.4, S.ID.5**
- Lesson 10 – Understanding Associations in Categorical Data – **MP.1, MP.5, S.ID.5**

