

N-GEN MATH[®]

ALGEBRA I

BY KIRK WEILER

UNIT #1 – THE BUILDING BLOCKS OF ALGEBRA 11

- Lesson 1 – Variables and Expressions
- Lesson 2 – The Commutative and Associative Properties
- Lesson 3 – The Distributive Property
- Lesson 4 – Equivalent Expressions
- Lesson 5 – Like Terms
- Lesson 6 – Seeing Structure in Expressions
- Lesson 7 – Exponent Review
- Lesson 8 – Multiplying Binomials
- Lesson 9 – Multiplying Binomials Using Area Models
- Lesson 10 – More Structure Work
- Lesson 11 – Translating English to Algebra
- Lesson 12 – Algebraic Puzzles
- Unit 1 – The Building Blocks of Algebra – Unit Review

UNIT #2 – LINEAR EQUATIONS AND INEQUALITIES 67

- Lesson 1 – Equations and Their Solutions
- Lesson 2 – Using Inverse Operations to Solve Equations
- Lesson 3 – Linear Equation Solving Review
- Lesson 4 – Justifying Steps in Solving an Equation
- Lesson 5 – Modeling with Linear Equations
- Lesson 6 – Modeling with Linear Equations Involving Integers



UNIT #2 – LINEAR EQUATIONS AND INEQUALITIES (CONT.) 67

- Lesson 7 – Solving Equations with Unspecified Constants
- Lesson 8 – Inequalities
- Lesson 9 – Solving Linear Inequalities
- Lesson 10 – Modeling with Inequalities
- Unit 2 – Linear Equations and Inequalities – Unit Review

UNIT #3 – FUNCTIONS 115

- Lesson 1 – Sets of Numbers
- Lesson 2 – Interval Notation
- Lesson 3 – Introduction to Functions
- Lesson 4 – Function Notation
- Lesson 5 – Key Features of Functions
- Lesson 6 – Working with Functions in Table Form
- Lesson 7 – Average Rate of Change
- Lesson 8 – Average Rate of Change and Motion
- Lesson 9 – More Work with Domain and Range
- Unit 3 – Functions – Unit Review

UNIT #4 – LINEAR FUNCTIONS 159

- Lesson 1 – Introduction to Linear Functions
- Lesson 2 – More Work Graphing Linear Functions (Lines)
- Lesson 3 – Writing the Equation of a Line
- Lesson 4 – Working with Linear Functions in Table Form
- Lesson 5 – Modeling with Linear Functions
- Lesson 6 – More Modeling with Linear Functions
- Lesson 7 – Equations of Horizontal and Vertical Lines
- Lesson 8 – Piecewise Linear Functions



UNIT #4 – LINEAR FUNCTIONS (CONT.) 159

- Lesson 9 – Step Functions
- Lesson 10 – Absolute Value Functions
- Lesson 11 – The Truth About Graphs
- Lesson 12 – Linear Inequalities with Two Variables
- Lesson 13 – Introduction to Sequences
- Lesson 14 – Arithmetic Sequences
- Unit 4 – Linear Functions – Unit Review

UNIT #5 – LINEAR SYSTEMS 223

- Lesson 1 – Solving Systems Graphically
- Lesson 2 – Solving Systems by Substitution
- Lesson 3 – Properties of Systems and Their Solutions
- Lesson 4 – The Elimination Method
- Lesson 5 – Modeling with Systems of Equations
- Lesson 6 – Solving Equations Graphically
- Lesson 7 – Systems of Inequalities
- Lesson 8 – Modeling with Systems of Inequalities
- Unit 5 – Linear Systems – Unit Review

UNIT #6 – EXPONENTIAL ALGEBRA AND FUNCTIONS 263

- Lesson 1 – Exponential Increase and Decrease
- Lesson 2 – Geometric Sequences
- Lesson 3 – Equivalent Exponential Expressions
- Lesson 4 – Simplifying Fractions Involving Exponents
- Lesson 5 – Zero and Negative Exponents
- Lesson 6 – More Work with Exponent Properties
- Lesson 7 – Introduction to Exponential Functions
- Lesson 8 – Percent Review
- Lesson 9 – Percent Increase and Decrease



UNIT #6 – EXPONENTIAL ALGEBRA AND FUNCTIONS (CONT.) 263

- Lesson 10 – Exponential Models Based on Percent Growth
- Lesson 11 – Constructing Exponential Functions
- Lesson 12 – Linear Versus Exponential Functions
- Unit 6 – Exponential Algebra and Functions – Unit Review

UNIT #7 – POLYNOMIALS 319

- Lesson 1 – Introduction to Polynomials
- Lesson 2 – Adding and Subtracting Polynomials
- Lesson 3 – Multiplying Polynomials
- Lesson 4 – More Work Multiplying Polynomials
- Lesson 5 – Factoring Polynomials
- Lesson 6 – Conjugate Binomials
- Lesson 7 – Factoring Trinomials
- Lesson 8 – Complete Factoring
- Lesson 9 – Recognizing Structure to Factor
- Lesson 10 – Factoring Challenging Trinomials
- Unit 7 – Polynomials – Unit Review

UNIT #8 – QUADRATIC FUNCTIONS 367

- Lesson 1 – Introduction to Quadratic Functions
- Lesson 2 – The Leading Coefficient of a Quadratic
- Lesson 3 – The Symmetry of Quadratic Functions
- Lesson 4 – Solving Quadratic Equations Using Inverse Operations
- Lesson 5 – Solving Quadratics by Completing the Square
- Lesson 6 – Area and Completing the Square
- Lesson 7 – More Work Solving Quadratics by Completing the Square
- Lesson 8 – The Zero Product Law
- Lesson 9 – More Work Factoring to Solve Quadratics



UNIT #8 – QUADRATIC FUNCTIONS (CONT.) 367

- Lesson 10 – Graphs of Cubic Polynomial Functions
- Lesson 11 – Solving Linear-Quadratic Systems
- Lesson 12 – Quadratic Word Problems
- Unit 8 – Quadratic Functions – Unit Review

UNIT #9 – ROOTS AND IRRATIONAL NUMBERS 427

- Lesson 1 – Integers and Rational Numbers
- Lesson 2 – Square Roots
- Lesson 3 – Irrational Numbers
- Lesson 4 – Square Root Arithmetic
- Lesson 5 – Quadratic Equations with Irrational Solutions
- Lesson 6 – The Quadratic Formula
- Lesson 7 – Final Work with Quadratic Equations
- Unit 9 – Roots and Irrational Numbers – Unit Review

UNIT #10 – FUNCTIONS AND THEIR TRANSFORMATIONS 463

- Lesson 1 – Parent Functions
- Lesson 2 – Vertical Shifting of Functions
- Lesson 3 – Horizontal Shifting of Functions
- Lesson 4 – Combined Shifting of Functions
- Lesson 5 – Vertical Stretching and Compressing of Functions
- Lesson 6 – Reflecting Functions Across the x -Axis
- Lesson 7 – The Vertex Form of a Quadratic Function
- Unit 10 – Functions and Their Transformations – Unit Review

UNIT #11 – STATISTICS 499

- Lesson 1 – The Purpose of Statistics
- Lesson 2 – The Standard Deviation of a Data Set



UNIT #11 – STATISTICS (CONT.) 499

- Lesson 3 – More Work with Standard Deviation
- Lesson 4 – Data Distribution Shapes
- Lesson 5 – Comparing Samples
- Lesson 6 – Bivariate Data Analysis
- Lesson 7 – Linear Regression on the Calculator
- Lesson 8 – The Strength of Correlation
- Lesson 9 – Categorical Data
- Lesson 10 – Understanding Associations in Categorical Data
- Unit 11 – Statistics – Unit Review

