

COMMON CORE ALGEBRA II

VERSION 2.0

BY KIRK WEILER

UNIT #1 – ALGEBRAIC ESSENTIALS REVIEW – 6 LESSONS 9

- Lesson #1 – Variables, Terms and Expressions
- Lesson #2 – Solving Linear Equations
- Lesson #3 – Common Algebraic Expressions
- Lesson #4 – Basic Exponent Manipulation
- Lesson #5 – Multiplying Polynomials
- Lesson #6 – Using Tables on Your Calculator

UNIT #2 – FUNCTIONS AS THE CORNERSTONES OF ALGEBRA – 7 LESSONS 39

- Lesson #1 – Introduction to Functions
- Lesson #2 – Function Notation
- Lesson #3 – Function Composition
- Lesson #4 – The Domain and Range of a Function
- Lesson #5 – One to One Functions
- Lesson #6 – Inverse Functions
- Lesson #7 – Key Features of Functions

UNIT #3 – LINEAR FUNCTIONS, EQUATIONS, AND THEIR ALGEBRA – 7 LESSONS 75

- Lesson #1 – Direct Variation
- Lesson #2 – Average Rate of Change
- Lesson #3 – Forms of a Line
- Lesson #4 – Linear Modeling
- Lesson #5 – Inverses of Linear Functions
- Lesson #6 – Piecewise Linear Functions
- Lesson #7 - Systems of Linear Equations (Primarily 3 by 3)



UNIT #4 – EXPONENTIAL AND LOGARITHMIC FUNCTIONS – 14 LESSONS 111

- Lesson #1 – Integer Exponents
- Lesson #2 – Rational Exponents
- Lesson #3 – Exponential Function Basics
- Lesson #4 – Finding Equations of Exponentials
- Lesson #5 – The Method of Common Bases
- Lesson #6 – Exponential Modeling with Percent Growth and Decay
- Lesson #7 – Mindful Percent Manipulations
- Lesson #8 – Introduction to Logarithms
- Lesson #9 – Graphs of Logarithms
- Lesson #10 – Logarithm Laws
- Lesson #11 – Solving Exponential Equations Using Logarithms
- Lesson #12 – The Number e and the Natural Logarithm
- Lesson #13 – Compound Interest
- Lesson #14 – Newton's Law of Cooling

UNIT #5 – SEQUENCES AND SERIES – 6 LESSONS 179

- Lesson #1 – Sequences
- Lesson #2 – Arithmetic and Geometric Sequences
- Lesson #3 – Summation Notation
- Lesson #4 – Arithmetic Series
- Lesson #5 – Geometric Series
- Lesson #6 – Mortgage Payments

UNIT #6 – QUADRATIC FUNCTIONS AND THEIR ALGEBRA – 11 LESSONS 213

- Lesson #1 – Quadratic Function Review
- Lesson #2 – Factoring
- Lesson #3 – Factoring Trinomials
- Lesson #4 – Complete Factoring
- Lesson #5 – Factoring by Grouping
- Lesson #6 – The Zero Product Law
- Lesson #7 – Quadratic Inequalities in One Variable
- Lesson #8 – Completing the Square and Shifting Parabolas
- Lesson #9 – Modeling with Quadratic Functions
- Lesson #10 – Equations of Circles
- Lesson #11 – The Locus Definition of a Parabola



UNIT #7 – TRANSFORMATIONS OF FUNCTIONS – 5 LESSONS 269

- Lesson #1 – Shifting Functions
- Lesson #2 – Reflecting Parabolas
- Lesson #3 – Vertically Stretching of Functions
- Lesson #4 – Horizontal Stretching of Functions
- Lesson #5 – Even and Odd Functions

UNIT #8 – RADICALS AND THE QUADRATIC FORMULA – 7 LESSONS 297

- Lesson #1 – Square Root Functions
- Lesson #2 – Solving Square Root Equations
- Lesson #3 – The Basic Exponent Properties
- Lesson #4 – Fractional Exponents Revisited
- Lesson #5 – More Exponent Practice
- Lesson #6 – The Quadratic Formula
- Lesson #7 – More Work with the Quadratic Formula

UNIT #9 – COMPLEX NUMBERS – 4 LESSONS 333

- Lesson #1 – Imaginary Numbers
- Lesson #2 – Complex Numbers
- Lesson #3 – Solving Quadratic Equations with Complex Solutions
- Lesson #4 - The Discriminant of a Quadratic

UNIT #10 – POLYNOMIAL AND RATIONAL FUNCTIONS – 14 LESSONS 355

- Lesson #1 – Power Functions
- Lesson #2 – Graphs and Zeroes of a Polynomial
- Lesson #3 – Creating Polynomial Equations
- Lesson #4 – Polynomial Identities
- Lesson #5 – Introduction to Rational Functions
- Lesson #6 – Simplifying Rational Expressions
- Lesson #7 – Multiplying and Dividing Rational Expressions
- Lesson #8 – Combining Rational Expressions Using Addition and Subtraction
- Lesson #9 – Complex Fractions
- Lesson #10 – Polynomial Long Division
- Lesson #11 – The Remainder Theorem
- Lesson #12 – Solving Rational Equations
- Lesson #13 – Solving Rational Inequalities
- Lesson #14 - Reasoning About Radical and Rational Equations



UNIT #11 – THE CIRCULAR FUNCTIONS – 11 LESSONS 423

- Lesson #1 – Rotations and Angle Terminology
- Lesson #2 – Radian Angle Measurement
- Lesson #3 – The Unit Circle
- Lesson #4 – The Definition of the Sine and Cosine Functions
- Lesson #5 – More Work with the Sine and Cosine Functions
- Lesson #6 – Basic Graphs of Sine and Cosine
- Lesson #7 – Vertical Shifting of Sinusoidal Graphs
- Lesson #8 – The Frequency and Period of a Sinusoidal Graph
- Lesson #9 – Sinusoidal Modeling
- Lesson #10 – The Tangent Function
- Lesson #11 - The Reciprocal Functions

UNIT #12 – PROBABILITY – 6 LESSONS 481

- Lesson #1 – Introduction to Probability
- Lesson #2 – Sets and Probability
- Lesson #3 – Adding Probabilities
- Lesson #4 – Conditional Probability
- Lesson #5 – Independent Events
- Lesson #6 – Multiplying Probabilities

UNIT #13 – STATISTICS– 12 LESSONS 511

- Lesson #1 – Variability and Sampling
- Lesson #2 – Population Parameters
- Lesson #3 – The Normal Distributions
- Lesson #4 – The Normal Distribution and Z-Scores
- Lesson #5 – Sample Means
- Lesson #6 – Sample Proportions
- Lesson #7 – The Difference in Samples Means
- Lesson #8 - The Distribution of Sample Means
- Lesson #9 - The Distribution of Sample Proportions
- Lesson #10 - Margin of Error
- Lesson #11 – Linear Regression and Lines of Best Fit
- Lesson #12 – Other Types of Regression

TOTAL LESSON COUNT = 110

