Integrated Math 1, Part 1
Course Outline & Objectives

Course Description:
In Integrated Math Part 1, students learn how to solve linear equations, both simple and multi-step, as well as absolute value equations and literal equations. They learn how to graph and solve linear inequalities, as well as how to solve compound inequalities and absolute value inequalities. From there, students learn about linear functions, scatter plots and lines of best fit, systems of linear equations, and exponential and radical functions, including exponential growth and decay. Finally, students learn about arithmetic and geometric sequences, including how to find the nth term, the sum of n terms, and the sum of infinite geometric series.

Credits - One Semester (0.5 Carnegie unit / CA: 5 credits) | Prerequisites: None

Course Outline
Unit 1 – Solving Linear Equations
1.1 Simple (one step) Equations
1.2 Multi-Step Equations
1.3 Equations with Variables on both sides
1.4 Solving Ratios and Proportions
1.5 Absolute Value Equations
1.6 Solving Literal Equations

Common Core Standards
In this unit:
Students will learn how to solve a variety of equations. Students will first learn how to solve a simple one step equation, then learn to solve equations that are progressively more challenging. They will learn how to add like terms, work with variables on both sides of the equation, and write two equations from an absolute value equation. The unit culminates with learning to solve for any variable given a literal equation.
[N-Q, A-CED, A-REI]

Unit 2 – Solving Linear Inequalities
2.1 Writing Inequalities
2.2 Graphing Inequalities (on a number line)
2.3 Solving Simple Inequalities
2.4 Solving Multi-Step Inequalities
2.5 Solving Compound Inequalities
2.6 Absolute Value Inequalities

In this unit
Students will explore the difference between an equation and an inequality on a number line. They will use number lines to express an inequality and then solve progressively more challenging inequalities. Students will learn the similarities and differences between a compound inequality and an absolute value inequality and how to represent both on a number line.
[A-REI, A-SSE, A-CED]

Unit 3 – Graphing Linear Functions
3.1 Functions
3.2 Linear Functions
3.3 Function Notation
3.4 Graphing Linear Equations
3.5 Transformations and Shifts in Linear Graphs
3.6 Graphing Absolute Value Functions

In this unit:
Students will learn how to recognize, evaluate and analyze functions. They will learn function notation and how to recognize a linear function in graphic form or as a set of ordered pairs. They will learn to graph functions using slope and y-intercept as well as use the parent function to transform functions in the coordinate plane. Students will use algebraic and visual techniques for graphing absolute value functions.
[A-CED, F-IF, F-BF, F-LE]

Course Outline

Unit 4 – Writing Linear Functions

4.1 Slopes and Graphs
4.2 Writing Linear Equations - Slope-Intercept Form
4.3 Writing Linear Equations - Point-Slope Form
4.4 Writing Linear Equations - Standard Form
4.5 Scatter Plots and Lines of Best Fit

Unit 5 – Systems of Linear Equations

5.1 Solving Systems of Equations - Graphing Methods
5.2 Solving Systems of Equations - The Substitution Method
5.3 Solving Systems of Equations - The Elimination (aka Addition) Method
5.4 Special Systems of Linear Equations
5.5 Graphing Linear Inequalities (2 Variables)
5.6 Systems of Linear Inequalities

Unit 6 – Exponential and Radical Functions

6.1 Zero and Negative Exponents
6.2 Exponential Functions
6.3 Exponential Growth vs. Decay
6.4 Solving Exponential Equations
6.5 Simplifying Radicals

Unit 7 – Arithmetic and Geometric Sequences

7.1 Arithmetic Sequences
7.2 Geometric Sequences
7.3 Infinite Geometric Series

Common Core Standards

In this unit:
Students will explore linear functions in depth. They will move from recognizing functions to writing and manipulating functions given an intercept and slope, a point and slope, or two points. Applying what they have learned about linear functions students will interpret data and recognize correlations given a set of data points and determine a line of best fit.
[N-Q, A-SSE, F-IF, A-CED, S-ID]

In this unit:
Students will explore systems of equations, including consistent and inconsistent equations, and their relationships on a coordinate plane. They will develop strategies for determining the number of solutions of two equations, and use substitution, addition, and graphing to solve systems of equalities and inequalities. Students will learn techniques for determining the most appropriate method. They will learn to determine ranges of solutions of inequalities and express solutions on the coordinate plane as well as using interval notation.
[A-CED, A-REI]

In this unit:
Students will explore rational expressions to develop an understanding of the properties of exponents, including the relationship between dividing and negative exponents. Applying this understanding, students will recognize and solve growth and decay functions. Students will extend this understanding of exponents to rational exponents, learning how to convert them to radical expressions.
[A-SSE, A-APR, A-REI]

In this unit:
Students will explore mathematical patterns, applying these patterns to arithmetic and geometric sequences. Students will identify common differences or common ratios in order to distinguish between arithmetic and geometric sequences. They will learn techniques to find the specific term in a sequence and the sum of a series, both finite or infinite. Students will recognize the growth patterns for each sequence.
[A-SSE, A-APR]