Curriculum Guide

Department: Mathematics

Course Name: Algebra I

Instruction will focus on the mathematical content in Algebra 1 aligned with the Maine Learning Results and Common Core Standards while having students use exploratory learning, team building, and problem solving skills. Students will explore units designed around (but not limited to): manipulation of expressions, solving of equations, analyzing different types of functions, and working with continuous, linear growth.

This course is based on applications and includes some work with statistics, probability and geometry. Topics covered in this course are simplifying expressions, linear sentences, lines, distances, slopes, exponents and polynomials. If time permits, systems of equations, quadratic expressions and functions will be studied. A scientific calculator is recommended.

Prerequisite: successful completion of Mathematical Transitions/Pre-Algebra/8th grade math
Full Year/One Credit

Maine Learning Results - Mathematics Standards

RSU14 staff use the Maine State Learning Results to craft each course of study. The below standards and targets are aligned and are updated when changes are made at the state level.

Graduation Standards for course:

A. The Real Number System
- Students will extend the properties of exponents to rational exponents.

B. Quantities
- Students will choose and use units consistently to understand and solve problems
- Students will define appropriate level of accuracy and quantities for the purpose of descriptive modeling

C. Seeing Structure in Expressions

- **●** Students will interpret the structure of expressions.
- **●** Students will write expressions in equivalent forms to solve problems.

D. Arithmetic with Polynomials and Rational Expressions
- **●** Students will perform arithmetic operations on polynomials

E. Creating Equations
- **●** Students will create equations that describe numbers or relationships.

F. Reasoning with Equations and Inequalities
- **●** Students will understand solving equations as a process of reasoning and explain the reasoning
- **●** Students will solve equations and inequalities in one variable.
- **●** Students will solve systems of equations.

G. Interpreting Functions
- **●** Students will describe the concept of a function and use function notation.
- **●** Students will interpret functions that arise in application in terms of context.
- **●** Students will analyze functions using different representations.

H. Building Functions
- **●** Students will build a function that models a relationship between two quantities

I. Linear, Quadratic, and Exponential Models
- **●** Students will construct and compare linear, quadratic, and exponential models and solve problems
- **●** Students will interpret expressions for functions in terms of the situation they model

21st Century Skills/Guiding Principles for course:

A. **A clear and effective communicator:**
- **●** I can show my understanding of the material by showing each step necessary to solve the problem given.
- **●** I can share my ideas and strategies with my classmates and teammates

B. **A self-directed and lifelong learner:**
- **●** I can identify the best method to solve complex problems given the information present. I can use different methods to solve systems of equations.

C. **A creative and practical problem solver:**
- **●** I can work through real world situations to find solutions through a variety of connected methods (graphs, tables, equations).

Curriculum Materials may include:

Course Units:

This course follows the text Core Connections Algebra 1 from the CPM Program

- Chapter 1 - Functions
- Chapter 2 - Linear Relationships
- Chapter 3 - Simplifying and Solving
- Chapter 4 - Systems of Equations
- Chapter 5 - Sequences
- Chapter 6 - Modeling Two-Variable Data
- Chapter 7 - Exponential Functions
- Chapter 8 - Quadratic Functions
- Chapter 9 - Solving Quadratic Equations

Reference Text - Core Connections Algebra 1

Algebra Tiles and Math Manipulatives

Graphing Technology