Algebra 1 Course Syllabus

Course Overview

Algebra 1 includes all of the topics of Algebra 1A and Algebra 1B in a single, full-year course. This course covers multiple representations of linear and non-linear functions, as well as mathematical concepts for working with rational numbers, various expressions, linear equations and inequalities, data analysis, and polynomials. Students will use hands-on materials and calculators when needed in solving problems where the Algebra concepts are applied. At the end of this course, students will complete an assessment designed to assess proficiency called the Keystone Exams.

Materials

Textbook: *Algebra 1,* Common Core Edition, (2014), McGraw Hill Education. ISBN: 978-0-07-663923-6

TI- 84 Graphing calculator

Khan Academy www.khanacademy.org

Get More Math www.getmoremath.com

Standards

This course covers standards outlined in the Pennsylvania Department of Education Academic Standards for Mathematics

Course Outline

The following is a course outline with a suggested timeline. All times are approximate and subject to change at teacher discretion.

Chapter 1 Expressions, Equations and Functions (approximately 5 weeks)

Standards: CC.2.2.6.B.1, CC.2.2.7.B.1, CC.2.2.HS.D.1, CC.2.2.HS.D.2, CC.2.2.HS.D.1, CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.C.2

- Variables and Expressions
- Order of Operations
- Properties of Numbers
- Equations
- Relations and Functions

Chapter 2 Linear Equations (approximately 4 weeks)

Standards: CC.2.2.7.B.3, CC.2.2.8.B.3, CC.2.2.HS.D.9, CC.2.1.7.D.1

- Writing and Solving Equations
- Absolute Value
- Ratio and Proportion
- Percentage and Weighted Averages

Chapter 3 Linear Functions (approximately 3 weeks)

Standards: CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.2.8.B.2, CC.2.1.7.D.1

- Graphing Linear Equations
- Rate of Change and Slope
- Variation and Arithmetic Sequences.

Chapter 4 Equations of Linear Functions (approximately 3 weeks)

Standards: CC.2.2.HS.D.10, CC.2.2.HS.D.7, CC.2.2.HS.D.8, CC.2.2.HS.D.2

- Slope Intercept Form
- Writing Equations of Lines
- Parallel and Perpendicular
- Scatterplots, Median Fit, And Regression

Chapter 5 Linear Inequalities (approximately 3 weeks)

Standards CC.2.2.HS.D.10, CC.2.2.6.B.2, CC.2.2.HS.D.7

- Solving Linear Inequalities
- Compound Inequalities
- Absolute Value Inequalities

Chapter 6 Systems of Equations and Inequalities (Approximately 3 weeks)

Standards: CC.2.2.HS.D.10, CC.2.2.8.B.3

- Solving a System by Graphing
- Substitution Method
- Elimination Method
- Applications
- Systems of Inequalities

Chapter 7 Exponents (Approximately 2 weeks)

Standards: CC.2.2.HS.D.2, CC.2.1.HS.F.1

- Multiplication and Division Properties of Exponents
- Fractional Exponents
- Scientific Notation
- Pythagorean Theorem
- Simplifying Square Roots

Chapter 8 Quadratic Expressions and Equations (Approximately 5 weeks)

Standards: CC.2.2.HS.D.2, CC.2.2.HS.D.3

- Adding and Subtracting Polynomials
- Multiplying Polynomials
- Special Products
- Factoring trinomials
- Solving Quadratic Equations by Factoring
- Differences of Squares
- Perfect Squares

Miscellaneous Keystone Topics (Approximately 2 weeks)

Standards: CC.2.2.HS.D.2, CC.2.1.8.E.1, CC.2.1.HS.F.2, CC.2.1.6.E.3, CC.2.4.HS.B.2, CC.2.4.HS.B.1, CC.2.4.HS.B.3, CC.2.4.HS.B.4, CC.2.4.HS.B.5, CC.2.4.HS.B.7

- Rational vs Irrational Numbers
- Simplifying Rational Expressions
- Box Plots
- Stem-and-Leaf Plots
- Algebraic Least Common Multiple and Greatest Common Factor
- Probability and Sample Spaces

Miscellaneous PSSA Topics (Approximately 2 weeks)

- Varies by grade level of students in course