Course Overview

Middle School | Algebra I - *Last Updated on October 28, 2024*

DESCRIPTION

K-12 Content Area | Mission & Philosophy Statement

- With confidence and perseverance, young people can tackle complex and novel mathematical challenges, becoming skilled problem solvers who take ownership over their learning process.
- Young people possess the ability to reason mathematically, make conjectures, solve problems and build understanding through effective dialogue and collaboration.
- Learners exhibit critical inquiry through the deliberate asking of questions and the integration of conceptual understanding, reasoning abilities, and procedural fluency.
- Strategically selecting materials, technology, and other resources support mathematical learning and aid in achieving mathematical goals.

Course Description

The Algebra I course is designed to equip students with a deep understanding and proficiency in mathematics, segmented into four critical focus areas: numbers and operations, linear equations and inequalities, functions and coordinate geometry, and data analysis.

In the domain of numbers and operations, students are tasked with a comprehensive exploration of numerical representations and manipulations. Students are expected to adeptly represent and utilize numbers in various equivalent forms, including but not limited to integers, fractions, decimals, percents, square roots, and exponents. Students will apply principles of number theory to explore the relationships that exist among real numbers within the context of problem-solving scenarios. Students are also encouraged to engage with and solve problems leveraging exponents, roots, and absolute values, alongside employing estimation strategies to navigate problem-solving situations effectively. Additionally, the curriculum mandates the simplification of expressions that incorporate polynomials, challenging students to refine their algebraic proficiency. Transitioning to the realm of linear equations and inequalities, students are expected to master the art of writing, solving, and graphically representing linear equations employing a diversity of methods. This competency is extended to systems of linear equations, where students are not only taught to write and solve these systems through various methodologies but are also instructed in the graphical representation of linear inequalities, enhancing their analytical and interpretative skills. As the focus shifts to functions and coordinate geometry, the curriculum aims to deepen students' understanding of mathematical patterns and relationships. An emphasis is placed on interpreting and applying linear functions, including their equations, graphs, or tables, facilitating a comprehensive understanding of linear relationships in a geometric framework. In the final area, which revolves around data analysis, students summarize, represent and interpret data involving two categorical and quantitative variables. Students will analyze linear models to make informed interpretations based on empirical data.

STANDARDS

Pennsylvania - High School - Keystone Algebra I

A1.1.1.1.1	A1.1.1.1.2	A1.1.1.2.1	A1.1.1.3.1	A1.1.1.4.1	A1.1.1.5.1	A1.1.1.5.2
A1.1.1.5.3	A1.1.2.1.3	A1.1.2.1.2	A1.1.2.1.1	A1.1.2.2.1	A1.1.2.2.2	A1.1.3.1.1
A1.1.3.1.2	A1.1.3.1.3	A1.2.1.1.1	A1.1.3.2.2	A1.1.3.2.1	A1.2.1.1.2	A1.2.1.1.3
A1.2.1.2.1	A1.2.1.2.2	A1.2.2.1.1	A1.2.2.1.2	A1.2.2.1.3	A1.2.2.1.4	A1.2.2.2.1
A1.2.3.1.1	A1.2.3.2.1	A1.2.3.2.2	A1.2.3.2.3	A1.2.3.3.1		

COURSE OBJECTIVES

Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Algebra I.

ASSESSMENT TYPES

- Diagnostic Assessments
- Formative Assessments
- Summative Assessments

SUGGESTED METHODS OF INSTRUCTION

Below is a list of suggested strategies for high-quality instruction in Mathematics:

- Instructional components outlined in the Framework for Teaching by Charlotte Danielson
- Teacher-Centered Instruction
- Inquiry-Based Learning
- Small Group Instruction
- Cooperative Learning
- Student-Centered/Constructivist Approach
- Project-Based Learning
- Flipped Classroom

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RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
Algebra I. Prentice Hall (2011)	Keystone Coach Book	Desmos TI-Calculators 84 Central Calculator Activities Nearpod Khan Academy IXL Online Learning Platform Geogebra: Interactive Algebra Resources Study Island