Course Overview

Elementary School | 4 | Math - *Last Updated on October 17, 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 Fourth Grade math curriculum is a comprehensive framework designed to equip students with a deep understanding and proficiency in mathematics, segmented into four critical focus areas: numbers and operations, algebraic concepts, geometry and measurement, and data and probability. Each area is carefully structured to build upon students' existing knowledge, while also introducing new concepts and skills that are essential for academic success and real-world problem-solving. Foundational concepts include fractions, decimals, model drawing, expressions, and equations that are embedded within each of the four focus areas in preparation for algebra. Through exploration of the first domain, number and operations, students utilize concrete and pictorial models to create sets and numbers, use numbers to represent quantities to 100,000, count by thousands and ten thousands, compare and order whole numbers to 100,000 and write these numbers in standard, expanded, and word form. The curriculum facilitates a deeper understanding of fractions and includes mixed number and improper fractions in various forms. The curriculum also provides an in-depth exploration of equivalent fractions with the inclusion of benchmarks for comparison. The curriculum emphasizes whole number computation skills that focus on regrouping in addition/subtraction up to 100,000; students are expected to fluently apply the standard algorithm. Additionally, students multiply a four-digit whole number by a one-digit whole number, multiply two two-digit numbers using strategies based on place value and the properties of operations, and solve multi-digit division problems. Explicit instruction to facilitate mastery of decimal computation is supplemented by representational modeling. Finally, estimation and mental math strategies are applied to problems involving all four operations. The exploration of algebraic concepts facilitates a deeper understanding of patterns and properties, requiring students to analyze and identify rules for number sequences, and represent division as the inverse of multiplication . Models (e.g. concrete, pictorial, symbolic) continue to be utilized to reinforce conceptual understanding of fractions and decimals. Ongoing practice with number theory (e.g. greatest common factor, least common multiple, prime, composite) reinforces students' understanding of relationships between numbers. Finally, students write multiplication and division number sentences for multi-step word problems.

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Geometry instruction focuses again on perpendicular/parallel lines and circular measurement (360°) and engages students in hands-on practice measuring angles with protractors. Coordinate geometry is introduced. Finally, rotational symmetry and transformations are used to explore tessellations. In addressing measurement, the curriculum continues to extend practice for unit conversions and hands-on practice with tools (e.g. protractor to measure angles). Finally, the curriculum provides continued practice in area and perimeter calculations using area formulas as a solution strategy.

STANDARDS

Pennsylvania Common Core - Grade 4 - Mathematics

CC.2.1.4.B.1 | CC.2.1.4.B.2 | CC.2.1.4.C.1 | CC.2.1.4.C.2 | CC.2.1.4.C.3 | CC.2.2.4.A.1

CC.2.2.4.A.2 | CC.2.2.4.A.4 | CC.2.3.4.A.1 | C.2.3.4.A.2 | CC.2.3.4.A.3 | CC.2.4.4.A.1

CC.2.4.4.A.2 | CC.2.4.4.A.4 | CC.2.4.4.A.6

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 Grade 4 Mathematics.

ASSESSMENT TYPES

The following assessment types will be used during the course:

- Curriculum-based Measures
- Formative Assessments
- Performance-based 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
- Concrete Representational Abstract (CRA) approach
- Guided Learning - allows for students to check their learning while working with guidance from instructor
- Independent Practice - students practice skills independently
- Use of manipulative, models, and technology to practice skills
- Communication of reasoning processes

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RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
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