

Math AE Course Overview

Course Description

This course is for students who have had exposure to, but have not mastered the following 6th grade topics: connecting ratio and rate to whole number multiplication and division; using concepts of ratio and rate to solve problems; operations with positive and negative rational numbers; writing, interpreting, and using expressions, equations, and inequalities; statistical thinking representing and analyzing quantitative relationships between dependent and independent; developing an understanding of statistical variability; describing distributions; finding common factors and multiple; solve real-world problems involving area, surface area, and volume. This course is a below grade level course that will have an individualized remediation component, as well as cover essential Math A standards. Essential Math A standards will include: analyzing proportional relationships; drawing, constructing and describing geometrical figures; finding angle measure, area, surface area, and volume, evaluating probability models. Students will be expected to work collaboratively, individually and demonstrate their learning through the Standards of Mathematical Practice.

Module 1: Ratio, Rates, Proportions, and Fractions

Ratios and unit rates as a means of reviewing fractions and simplifying fractions. Build fluency with ratios, rates, and proportions. Scale a ratio up or down to using whole number scalars, simplify fractions and find a common denominator. Equivalent fractions, using models, review addition and subtraction of fractions, including mixed numbers and improper fractions.

Module 2: Operations with Rational Numbers and Integers

Extend and formalize an understanding of the number system, including negative rational numbers. Operations with integers. Modeling with integers. Explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. Equivalent forms of rational numbers (fractions of integers, complex fractions, and decimals).

Module 3: Multiplying and Dividing Fractions

Use models to represent and add fractions. Multiply and divide fractions. Use equivalent fractions to simplify fractions. Create and use models to deepen understanding of multiplying fractions. Move between mixed numbers and improper fractions. Review all four operations with fractions and build fluency with scaling fractions up or down using whole number scalars.

Module 4: Expressions

Model problem situations, construct arguments, look for and make sense of structure, and reason abstractly as they explore various representations of situations. Entry-level expressions to build an understanding of structure. Write basic numerical and algebraic expressions in various ways. Understand the difference between an expression and an equation and understand how to represent an unknown in either an expression or equation. Connect manipulations with numeric expressions to manipulations with algebraic expressions. Rules of arithmetic when working with algebraic expressions and equations. Properties of arithmetic. Simplify expressions and justify work with properties of arithmetic.

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Module 5: Equations

Model problem situations, construct arguments, look for and make sense of structure, and reason abstractly as they explore various representations of situations. Entry level equations to build an understanding of structure. Distribute and combine like terms to solve an equation. Use models to solve equations.

Module 6: Fractions, Decimals, and Percents

Understand that fractions, percents, and decimals are all relative to a whole. Compare and order fractions. Solve percent and fraction problems including those involving discounts, interest, taxes, tips, and percent increase or decrease.

Module 7: Proportional Relationships and Problem Solving

Algebraic representations with a focus on ratios and proportions. Find unit rates, compare rates and situations, write expressions and equations, and analyze tables and graphs. Use representations of ratio and proportion to solve a variety of problems.

Module 8: Probability and Statistics