

C2.0 Investigations into Mathematics Unit 2 Course Outline
Rational Number Operations

Topic	Instructional Foci
Topic 1: Building Understanding of Rational Number Operations	<p>In Grade 7, students extend their knowledge of the location of rational numbers on the number line to representing operations with both positive and negative rational numbers on the number line. They are expected to transition from demonstrating understanding of operations with rational numbers through multiple representations to fluency with rational number arithmetic. They are expected to demonstrate fluency with rational number arithmetic by the end of Grade 7.</p> <p><u>Concepts</u></p> <ul style="list-style-type: none"> Reason about quantities that combine to equal zero. Reason about distance and direction on the number line to add rational numbers. Interpret subtraction by comparing it to the distance on a number line. Interpret addition and subtraction by comparing it to distance and direction on a number line. Apply properties of operations as strategies to add and subtract rational numbers. Fluently add and subtract rational numbers. Explore patterns to make generalizations about multiplication with rational numbers. Apply properties to prove rules for multiplying rational numbers. Explore division with rational numbers; including division by zero. Apply properties to efficiently multiply and divide rational numbers. Convert a rational number to a decimal using long division. Apply mental calculations to assess the reasonableness of answers. Fluently add, subtract, multiply, and divide rational numbers.
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Topic 2: Integrating Rational Number Operations in Expressions & Equations	<p>Students extend their understanding of properties of operations to linear expressions with rational coefficients. Students apply these understandings in both mathematical and real world context. They use the arithmetic of rational numbers to generate algebraic expressions and produce different but equivalent expressions for varied purposes. Students model, solve, and analyze multi-step equations and inequalities to represent a situation using defined variables and appropriate units.</p> <p><u>Concepts</u></p> <ul style="list-style-type: none"> Explore and model scenarios using algebraic expressions. Factor linear expressions with rational coefficients. Determine equivalent expressions from given expressions. Model and solve expressions, equations, and inequalities. Solve multi-step equations and inequalities. Reason about solving inequalities with a negative coefficient. Model a given scenario in multiple ways and assess the reasonableness of the solution. Solve problems by reasoning about the quantities.