Unit 5 - Rational Numbers and Equations

Content Area: **Mathematics**
Course(s): **Pre-Algebra 6**
Time Period: **January**
Length: **3 weeks**
Status: **Published**

Transfer

Big Idea: Rational Numbers and Equations

Enduring Understandings

Meanings of and relationships among operations provide tools necessary to solve realistic problems encountered in everyday life.

Computing fluently and making reasonable estimates increases the ability to solve realistic problems encountered in everyday life.

Essential Questions

How do mathematical ideas interconnect and build on one another to produce a coherent whole?

How can I use what I know about mental math and estimation to develop efficient strategies for determining the reasonableness of answers

Critical Knowledge and Skills

Vocabulary

Vocabulary

Rational number

Terminating decimal

Repeating decimal

Reciprocals

Multiplicative inverses

Learning Objectives

Write fractions as decimals

Write decimals as fractions

*Use inductive and deductive reasoning to determine whether mathematical statements are true or false.

Add and subtract like fractions

Add and subtract unlike fractions

Subtract rational numbers on a number line.

Multiply fractions and mixed numbers

Convert temperatures between degrees Celsius and degrees Fahrenheit

Divide fractions and mixed numbers

Extend number properties to rational numbers.

Use multiplicative inverses to solve equations.

Use the LCD to solve equations and inequalities.

Resources

Prior Knowledge

*Performed operations with decimals

*Solved equations and inequalities with integers

*Simplified fractions

*Compared fractions using the LCD

Standards

MA.K-12.2	Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.
MA.7.NS.A	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.6.NS.A	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
MA.6.NS.A.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.

MA.6.NS.C	Apply and extend previous understandings of numbers to the system of rational numbers.
MA.6.NS.C.6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.7.EE.A	Use properties of operations to generate equivalent expressions.
MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
MA.7.EE.B	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
MA.7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.