Unit Twelve: Rational Expressions and Equations

Content Area: **Mathematics**
Course(s): **Algebra 8**
Time Period: **June**
Length: **2 weeks**
Status: **Published**

Transfer

Big Idea: Rational Expressions & Equations

Enduring Understandings

A single quantity may be represented by many different expressions.

Functions can be represented in a variety of ways, such as graphs, tables, equations, or words. Each representation is particularly useful in certain situations.

The numbers and types of solutions vary predictably, based on the type of equation.

Essential Questions

How do you use your prior knowledge of performing operations with fractions to performing operations with rational expressions?

What are the characteristics of rational functions?

Critical Knowledge and Skills

Vocabulary

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Asymptote, Exclude Value, Rational Equation, Rational Expression, Rational Function

Learning Objectives

Simplify rational expressions (A.APR.7)

Multiply and divide rational expressions (A.APR.7)

Add and subtract rational expressions (A.APR.7)

Solve rational equations and proportions (A.CED.1)

Graph rational functions (F.IF.4)

Resources

Khan Academy: Rational relationships

Desmos: Rational Functions Sign Analysis

Standards

RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP11. Use technology to enhance productivity.

9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income.

9.1.8.C.5 Calculate the cost of borrowing various amounts of money using different types of credit (e.g., credit cards, installment loans, mortgages).

9.1.8.D.3 Differentiate among various investment options.

9.1.8.E.6 Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.

9.2.8.B.7 Evaluate the impact of online activities and social media on employer decisions.

8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.

8.2.8.C.8 Develop a proposal for a chosen solution that include models (physical, graphical or mathematical) to communicate the solution to peers.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.4	Model with mathematics.
MA.F-IF.B	Interpret functions that arise in applications in terms of the context
MA.F-IF.B.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.A-APR.D	Rewrite rational expressions
MA.A-APR.D.7	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
MA.A-CED.A	Create equations that describe numbers or relationships
MA.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems.