# Unit Twelve - Rational Expressions and Equations 

| Content Area: | Mathematics |
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| Course(s): | Algebra $\mathbf{7}$ |
| Time Period: | June |
| Length: | $\mathbf{2}$ weeks |
| Status: | Published |

## Transfer

## Big Idea: Radical Expression \& Equations

## Enduring Understandings

## Samples

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

Samples
How does knowing perfect squares help in simplifying radicals?

What similarities and differences exist between operations with radical expressions and operations with polynomials expressions?

## Vocabulary

Vocabulary
Extraneous Solution, Hypotenuse, Leg, Like Radicals, Pythagorean Theorem, Radical Expression, Radical Equation, Square Root Function, Unlike radicals

## Learning Objectives

Bloom's Taxonomy
Solve problems using Pythagorean Theorem (8.G.SRT.6,7,8)
Identify right triangles (8.G.SRT.6,7,8)
Simplify sums, differences, products and quotients of radical expressions (A.REI.2)
Solve equations containing radicals (A.REI.2)
Identify extraneous solutions (A.REI.2)
Graph and translate square root functions (F.IF.7.b)

## Resources

Khan Academy: Rational relationships
Desmos: Rational Functions Sign Analysis

## Standards

MA.8.G.B
MA.8.G.B. 6
MA.8.G.B. 7

MA.8.G.B. 8

MA.F-IF.C

Understand and apply the Pythagorean Theorem.
Explain a proof of the Pythagorean Theorem and its converse.
Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Analyze functions using different representations

MA.F-IF.C.7b

MA.A-REI.A
MA.A-REI.A. 2

Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Understand solving equations as a process of reasoning and explain the reasoning
Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

