



Math Virtual Learning

College Prep Algebra

April 29, 2020



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Lesson: April 29, 2020

Objective/Learning Target:
How to multiply rational expressions and
write the product in simplest form.

Let's Get Started:
Here's an example of a Rational Expression.

$$\frac{x^2 + 5}{x + 2}$$

← numerator
← denominator

A Rational Expression
*because it is a "ratio"
of two polynomials*

Yep! It is a fraction.
And it will have an algebraic numerator and denominator.

Today, we are going to focus on multiplying and simplifying the rational expression.

Lesson:

On 4/28, you learned to factor a rational expression.

The first step here is to factor **each** numerator and denominator before any multiplication.

Multiply and Simplify:

$$\frac{4x+8}{x^2-25} \cdot \frac{x-5}{5x+10}$$

$$\frac{4\cancel{(x+2)}}{(x+5)\cancel{(x-5)}} \cdot \frac{\cancel{x-5}}{5\cancel{(x+2)}}$$

- **Make certain you agree with each factored part before going to the next slide, where we will discuss the purple and green slashes.**

Lesson:

On 4/28, you learned that after factoring you would CANCEL the factors that were COMMON to the numerator and denominator.

When multiplying rational expressions you can cancel a numerator factor with a denominator factor, **AS LONG AS THEY ARE IDENTICAL.**

Multiply and Simplify:

$$\frac{4x+8}{x^2-25} \cdot \frac{x-5}{5x+10}$$

$$\frac{4(\cancel{x+2})}{(x+5)(\cancel{x-5})} \cdot \frac{\cancel{x-5}}{5(\cancel{x+2})}$$

- The common factors are color coded
- purple numerator factor matches with purple denominator factor
 - green numerator factor with green denominator factor

Lesson:

When multiplying any fractions,
you multiply across:

$$\frac{\text{numerator} \cdot \text{numerator}}{\text{denominator} \cdot \text{denominator}}$$

Multiply and Simplify:

$$\frac{4x+8}{x^2-25} \cdot \frac{x-5}{5x+10}$$

$$\frac{4\cancel{(x+2)}}{(x+5)\cancel{(x-5)}} \cdot \frac{\cancel{x-5}}{5\cancel{(x+2)}}$$

Notice the factors that were canceled
were not multiplied!

$$\frac{4}{5(x+5)}$$

Practice

[Multiplying Rational Expressions DO](#)
[#13-28](#)
[Problems and Answers](#)

Even more practice

[Multiplying Rational Expressions with Answers.](#)
[\(Only do the ones that show Multiplication\)](#)