

# Intro to Rational Expressions – Fractions and Exponents Review – Lesson

MCR3U

Jensen

## Fractions Review

### Adding and Subtracting Fractions

a)  $\frac{1}{2} + \frac{1}{8}$

b)  $\frac{2x}{3y} - \frac{y}{2}$

*Always find a common denominator when adding or subtracting fractions!*

### Multiplying and Dividing Fractions

a)  $\frac{3}{2} \cdot \frac{4}{5}$

b)  $\frac{2}{3} \div \frac{4}{3}$

*You do NOT need a common denominator when multiplying or dividing fractions!*

**Rule:** We can NEVER have a fraction with a denominator of 0. Why?

**Rule:** Cross multiplication of fractions only happens when...

**Rule:** We can cancel out ONLY when multiplying fractions

**Rule:** We can NOT cancel out when adding or subtracting fractions

Name	Rule	Examples
<b>Adding and Subtracting Monomials</b>	COMBINE LIKE TERMS!  (do not change common variables and exponents)	$3x^2y + 2x^2y =$
<b>Product Rule</b>	$x^a \cdot x^b =$	$(-2x^2y)(3x^3y^2) =$
<b>Quotient Rule</b>	$\frac{x^a}{x^b} =$	$\frac{28x^5}{42x} =$
<b>Power of a Power Rule</b>	$(x^a)^b =$	$(-2x^3)^2 =$
<b>Negative Exponent Rule</b>	$x^{-a} =$	$\frac{4x^2}{8x^5} =$
<b>Exponent of Zero</b>	$x^0$	$87^0 =$

**Simplify the following rational expressions using exponent laws.**

a)  $\frac{12k^2m^8}{4k^5m^5}$

b)  $\frac{5c^3d \cdot 4c^2d^2}{(2c^2d)^2}$

$$\text{c) } \frac{(3xy)^3}{9x^4y^4}$$

$$\text{d) } \frac{(2z^3)^{-2}}{w^5z^2}$$

$$\text{e) } \frac{(x^{-4})^5 x^3}{3x^{-1}}$$

### Combining fractions and exponents

$$\text{Ex. } \frac{3x^3}{2x^2} + \frac{4y^4}{3y}$$