

# Rational Expressions

<p><b>SIMPLIFY</b></p> <p><b>Monomials</b></p> $\frac{12y^2}{3y^5} \cdot \frac{12x^2y^3}{2x^6y^2z}$	<p><b>1) Cancel Factors</b></p>	<p>A) <math>\frac{4 \cancel{12}y^2}{\cancel{3}y^5} = \frac{4}{y^3}</math></p>	<p>B) <math>\frac{6 \cancel{12}x^2y^3}{\cancel{2}x^6y^2z} = \frac{6y}{x^4z}</math></p>
<p><b>SIMPLIFY</b></p> <p><b>Polynomials</b></p> $\frac{x^2-4}{x+2} \cdot \frac{10}{x^2-6x+5}$	<p><b>1) Factor</b> <b>2) Cancel Factors</b></p>	<p>C) <math>\frac{x^2-4}{x+2} = \frac{(x+2)(x-2)}{(x+2)} = x-2</math></p>	
<p><b>MULTIPLY</b></p> <p><b>Monomials</b></p> $\frac{2x^4y^5}{3x^2} \cdot \frac{15x^2}{8x^3y^2}$	<p><b>1) Cancel Factors</b> <b>2) Multiple Numerators, then Denominators</b></p>	<p>D) <math>\frac{\cancel{2}x^4y^5}{\cancel{3}x^2} \cdot \frac{\cancel{15}x^2}{\cancel{8}x^3y^2} = \frac{5x^2y^3}{4}</math></p>	
<p><b>MULTIPLY</b></p> <p><b>Polynomials</b></p> $\frac{x^2-4}{x+2} \cdot \frac{x-3}{x-2}$	<p><b>1) FACTOR</b> <b>2) Cancel Factors</b> <b>3) Multiple Numerators, then Denominators</b></p>	<p>E) <math>\frac{x^2-4}{x+2} \cdot \frac{x-3}{x-2} = \frac{(x+2)(x-2)(x-3)}{(x+2)(x-2)} = x-3</math></p>	

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Algebra II, Chapter 10, Lessons 1,2 &3

<https://www.itutoring.com/video/lesson-1-simplifying-rational-expressions-1>

<https://www.itutoring.com/video/lesson-2-multiplying-rational-expressions-1>

<https://www.itutoring.com/video/lesson-3-dividing-rational-expressions-1>

**DIVIDE**

**Monomials**

$$\frac{4x^3}{9x^2y} \div \frac{16}{9y^5}$$

- 1) Flip Fraction after  $\div$
- 2) Cancel Factors
- 3) Multiple Numerators, then Denominators

F)  $\frac{4x^3}{9x^2y} \div \frac{16}{9y^5}$

$$\frac{4x}{9y} \cdot \frac{9y^5}{16} = \frac{xy^4}{4}$$

**DIVIDE**

**Polynomials**

$$\frac{x^2 - 4}{x + 2} \div \frac{x - 3}{x - 2}$$

- 1) Flip Fraction after  $\div$
- 2) Factor
- 3) Cancel Factors
- 4) Multiple Numerators, then Denominators

G)  $\frac{x^2 - 4}{x + 2} \div \frac{x - 3}{x - 2}$

$$\frac{(x+2)(x-2)}{x+2} \cdot \frac{x-2}{x-3} = \frac{(x-2)^2}{x-3}$$