

Algebra Lesson 11-2A **Multiplying and Dividing Rational Expressions**

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*Simplify the Rational Expression*

$$\frac{x^2 - 16}{x^2 + x - 20}$$

Handwritten work showing the factoring of the rational expression. The numerator is factored as  $(x+4)(x-4)$  and the denominator as  $(x+5)(x-4)$ . A red box is drawn around the entire fraction. Red diagonal lines are drawn through the  $(x-4)$  terms in both the numerator and denominator, indicating they cancel out.

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

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**Due Next Class: 11-2A p.537 #1-15 odds; #29**

## Multiplying Rational Expressions

$$\frac{3}{x} \cdot \frac{4}{x^2} = \frac{12}{x^3}$$

$$\frac{x}{x+4} \cdot \frac{x-3}{x-2}$$

$$\frac{x(x-3)}{(x+4)(x-2)}$$

$$\frac{4x + 1}{5x + 10} \cdot \frac{30x + 60}{2x - 2} = \frac{(4x+1) \cdot \cancel{30(x+2)}}{5 \cdot \cancel{(x+2)} \cdot 2(x-1)}$$

$$\frac{3(4x+1)}{(x-1)} \leftarrow \frac{\overset{3}{=} \cancel{30}(4x+1)}{\cancel{10}(x-1)}$$

## Multiplying Rational Expressions

$$\frac{3s + 2}{2s + 4} \cdot \frac{s^2 + 5s + 6}{1}$$

*Handwritten work:*

$$\frac{(3s+2)(s+3)(s+2)}{2(s+2)}$$
$$\frac{(3s+2)(s+3)}{2}$$

**Multiply.**

1.  $\frac{7}{3} \cdot \frac{5x}{12}$

2.  $\frac{3}{t} \cdot \frac{4}{t}$

3.  $\frac{5}{3a^2} \cdot \frac{8}{a^3}$

4.  $\frac{m-2}{m+2} \cdot \frac{m}{m-1}$

5.  $\frac{2x}{x+1} \cdot \frac{x-1}{3}$

6.  $\frac{6x^2}{5} \cdot \frac{2}{x+1}$

7.  $\frac{4c}{2c+2} \cdot \frac{c+1}{c-1}$

8.  $\frac{5x^3}{x^2} \cdot \frac{3x^4}{6x}$

9.  $\frac{3t}{t-2} \cdot \frac{3t-6}{t^2}$

10.  $\frac{m-2}{3m+9} \cdot \frac{2m+6}{2m-4}$

11.  $\frac{x-5}{4x+6} \cdot \frac{6x+9}{3x-15}$

12.  $\frac{4x+1}{5x+10} \cdot \frac{30x+60}{2x-2}$

13.  $\frac{4t+4}{t-3} \cdot (t^2 - t - 6)$

14.  $\frac{2m+1}{3m-6} \cdot (9m^2 - 36)$

15.  $(x^2 - 1) \cdot \frac{x-2}{3x+3}$

29.  $\frac{t^2 + 5t + 6}{t - 3} \cdot \frac{t^2 - 2t - 3}{t^2 + 3t + 2}$   
 $\frac{2x(x-1)}{3(x+1)}$

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