

Name:	Date:	Period:
-------	-------	---------

## 7.1 Multiplying and Dividing Rational Expressions

<p>Warm up</p>	<p>1. Simplify: <math>\frac{3}{4} \cdot \frac{16}{21}</math></p> <p><math>\frac{4}{7}</math></p> <p>2. Simplify: <math>\frac{15}{3} \div \frac{10}{27}</math></p> <p><math>\frac{15}{3} \cdot \frac{27}{10} = \frac{27}{2}</math></p> <p>OR <math>5 \cdot \frac{27}{10} = \frac{27}{2}</math></p> <p><i>Simplify and then multiply.</i></p>
<p>Multiplying Rational Expressions</p>	<ul style="list-style-type: none"> <li>Factor BOTH the numerator and denominator.</li> <li>Determine EXCLUDED VALUES</li> <li>Simplify</li> </ul>

Directions: Multiply the following rational expressions and state the excluded values.

1.  $\frac{4a^2y^3}{15ab^3} \cdot \frac{5a^3b^6}{12a^4b^7}$

$\frac{a^2y^3a^3b^6}{9ab^3a^4b^7}$

$\frac{a^5y^3b^6}{9a^5b^{10}}$

$\frac{y^3}{9b^4}$

$a \neq 0, b \neq 0$

2.  $\frac{10v-5v^2}{v^2-11v+18} \cdot \frac{v^2-8v-9}{15v}$

$\frac{5v(2-v)}{(v-9)(v-2)} \cdot \frac{(v-9)(v+1)}{15v}$

$\frac{(2-v)(v+1)}{v-2} \rightarrow \frac{-1(v-2)(v+1)}{v-2}$

$-\frac{(v+1)}{3}$  or  $-\frac{v+1}{3}$

$v \neq 0, 2, 9$



# Dividing Rational Expressions

- Factor BOTH the numerator and denominator.
- Determine EXCLUDED VALUES
- Multiply by the reciprocal of the second fraction
- Determine EXCLUDED values of denominator.
- Simplify

Directions: Divide the following rational expressions and state the excluded values.

3.  $\frac{5pq}{16p^3} \div \frac{35p^2q^2}{8p^5}$

$$\frac{5pq}{16p^3} \cdot \frac{8p^5}{35p^2q^2}$$

$$\frac{p^6q}{14p^5q^2}$$

$$\frac{p}{14q}$$

$p \neq 0$   
 $q \neq 0$

4.  $\frac{10}{4x-3} \div \frac{2x^2+6x}{x^2+x-6}$

$$\frac{10}{4x-3} \div \frac{2x(x+3)}{(x+3)(x-2)}$$

$$\frac{5}{4x-3} \cdot \frac{(x+3)(x-2)}{2x(x+3)}$$

$$\frac{5(x-2)}{x(4x-3)}$$

after reciprocal  
 $x \neq \frac{3}{4}, -3, 2, 0$

5.  $\frac{k+3}{k} \div (4k+1) \cdot \frac{16k^2-1}{k+3}$

$$\frac{\cancel{k+3}}{k} \cdot \frac{1}{4k+1} \cdot \frac{(4k-1)\cancel{(4k+1)}}{\cancel{k+3}}$$

$$\frac{4k-1}{k}$$

$k \neq 0, -3, -\frac{1}{4}$