

# Unit 3---LESSON 3- Multiplying and Dividing Rational Expressions

## Steps for $\cdot/\div$ Rational Expressions:

1. Factor
2. Simplify if possible (cancel like terms)
3. If dividing change the operation to multiplication by KEEP—CHANGE—FLIP
4. Multiply the fractions (multiply straight across)
5. Simplify numerator (factor/find GCF if possible)

## EXAMPLES:

1.  $\frac{2}{3} \cdot \frac{4}{5}$

2.  $\frac{x^3}{4y} \cdot \frac{y^2}{x}$

3.  $\left(\frac{3x-6}{2x+6}\right) \cdot \left(\frac{5x+15}{4x+8}\right)$

4.  $\left(\frac{2x+6}{x^2+x-6}\right) \cdot \left(\frac{x^2-4}{2x}\right)$

5.  $\frac{3}{5} \div \frac{4}{7}$

6.  $\frac{x^3}{4y} \div \frac{y^2}{x}$

7.  $\frac{3y^2}{z-1} \div \frac{12y^5}{(z-1)^2}$

8.  $\frac{x^2-5x+6}{x+4} \div \frac{x^2-9}{x^2+5x+4}$

9.  $\frac{\left(\frac{x+2}{x^2-x-6}\right)}{\left(\frac{x^2-x-6}{x^2+6x+5}\right)}$

10.  $\frac{x-2}{x^2+x-2} \cdot \frac{x^2-3x+2}{x+2}$

11.  $\left(\frac{x-2}{x^2+x-2}\right) \div \left(\frac{x^2-3x+2}{x+2}\right)$

# Unit 3---Lesson 3-CLASSWORK/HOMEWORK

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$$1. \frac{x^2-49}{6x^3} \cdot \frac{8x^2}{x^2+7x}$$

$$2. \frac{x-4}{x^3+4x^2} \cdot \frac{9x^2+36x}{4-x}$$

$$3. \frac{2x^2-200}{4x^2-40x} \cdot \frac{7x+21}{x^2+7x-30}$$

$$4. \frac{6x^5}{x^2-11x+18} \div \frac{15x^2}{x^2+7x-18}$$

$$5. \frac{25-x^2}{5x^4} \div \frac{x-5}{x^4+5x^3}$$

$$6. \frac{x^2-5x+24}{8x^2+8x} \div (x^2 + 6x + 9)$$

