**Unit 3**: Multiplying & Dividing Rational Expressions Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* A **rational expression** is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of two polynomials
* **Simplest form**: when the numerator and the denominator have no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 Ex) $\frac{\left(x-3\right)(x+2)}{\left(x-1\right)(x+2)} $ =

**Practice:** Simplify the following.

1.  b)  c) 

**Multiplying Rational Expressions**

$2. Simplify: \frac{x^{2}+ x-6}{x-5}∙\frac{x^{2}-25}{x^{2}+ 4x + 3}$

$$\frac{\left( \right)( )}{x-5}∙\frac{\left( \right)( )}{\left( \right)( )}$$

$1. Simplify: \frac{4x+8}{x^{2}-25}∙\frac{x-5}{5x+10}$ **Notes:**

|  |  |
| --- | --- |
| You Try:   | You Try:  |

**Dividing Rational Functions**

When dividing rational functions, you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the first fraction by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the second fraction, and simplifying (i.e. canceling, like we did with multiplication) where you can. We call this \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **Given the expression:** | **Keep – Change - Flip** | **Factor/Simplify** | **Multiply & Reduce** |
| $$\frac{3}{x+3}÷\frac{2x}{2x+6}$$ | $$\frac{3}{x+3}∙\frac{2x+6}{2x}$$ | $$\frac{3}{x+3}∙\frac{2(x+3)}{2x}$$ | $$\frac{6}{2x}=\frac{3}{x}$$ |
|   |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |