

## 7.7 NOTES – PRODUCTS OF RATIONAL EXPRESSIONS

### OBJECTIVES:

- 1) Multiply rational expressions

### WARM-

Evaluate without the use of a calculator:  $\frac{3}{4} \cdot \frac{8}{5} \cdot \frac{6}{3} \cdot \frac{2}{4} \cdot \frac{3}{10} \cdot \frac{11}{12}$



**CAUTION!**  
**COMMON MISTAKES!**



$$\frac{4}{x+4} \neq \frac{1}{x}$$

$$\frac{x^2+4}{x} \neq x+4$$

Multiplying rational expressions is the same as multiplying numerical fractions. We don't need the same base and we can simplify the expression to make it easier to compute.

1)  $\frac{x^2 + 5x + 6}{x^2 - x - 20} \cdot \frac{x^2 + 3x - 4}{x^2 + x - 2}$

$$\frac{(x+3)(\cancel{x+2})}{(x-5)(\cancel{x+4})} \cdot \frac{(\cancel{x+4})(x-1)}{(\cancel{x+2})(\cancel{x-1})}$$

$$\boxed{\frac{x+3}{x-5}}$$

2)  $\frac{x^2 + 7x + 12}{12} \cdot \frac{4}{x+4}$

$$\frac{(\cancel{x+4})(x+3)}{3 \cancel{12}} \cdot \frac{\cancel{4}}{(\cancel{x+4})}$$

$$\boxed{\frac{x+3}{3}}$$

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

$$\frac{(\cancel{x+2})(\cancel{x-2})}{\cancel{2}(x-2)} \cdot \frac{\cancel{2}}{(\cancel{x+2})} = \boxed{1}$$

4) Simplify:  $\frac{x-6}{6-x}$

$$\frac{x-6}{-(-6+x)} = \frac{x-6}{-(x+6)} = \boxed{-1}$$