**Lesson 2.4b Multiplying & Dividing Fractions**

EQ: How do we use what we know about multiplying/ dividing integers to multiply/divide fractions?

Key Idea: When multiplying/dividing fractions, use the same rules as multiplying/dividing integers.

**SAME SIGNS = POSITIVE ANSWER**

**-**$ \frac{a}{b}$ **÷ -** $\frac{c}{d}$ **= + ,** $\frac{a}{b}$ **÷** $\frac{c}{d}$ **= + , -**$ \frac{a}{b}$ **• -** $\frac{c}{d}$ **= + ,** $\frac{a}{b}$ **•** $\frac{c}{d}$ **= +**

**DIFFERENT SIGNS = NEGATIVE ANSWER**

**-** $\frac{a}{b}$ **÷** $\frac{c}{d} $**=** **- ,** $\frac{a}{b}$ **÷ -** $\frac{c}{d}$ **= - , -** $\frac{a}{b}$ **•** $\frac{c}{d} $**=** **- ,** $\frac{a}{b}$ **• -** $\frac{c}{d}$ **= -**

**MULTIPLYING FRACTIONS**

**\*REDUCING FIRST\***

**STEP 1-** Cross cancel diagonally

**STEP 2-** Reduce each fraction if possible.

**STEP 3-** Multiply across

**STEP 4-** CHECK/ADD your + or – SIGN!

EX: **-** $\frac{8}{16}$ **• -** $\frac{6}{12}$ **-** $\frac{8 }{16}$ $\frac{2}{8}$ $\frac{1}{4}$**• -** $\frac{6}{12}$ $\frac{3}{6}$ $\frac{1}{1}$ = $\frac{1}{4}$

**\*REDUCING LAST\***

**STEP 1-** Multiply across

**STEP 2-** Reduce/Simplify your answer by dividing numerator and denominator by common factors until simplified.

EX: **-** $\frac{8}{16}$ **• -** $\frac{6}{12}$ = $\frac{48}{192}$ **÷** $\frac{2}{2}$ **=** $\frac{24}{96}$ **÷** $\frac{2}{2}$ **=** $\frac{12}{48}$ **÷** $\frac{12}{12}$ **= -** $\frac{1}{4}$

**DIVIDING FRACTIONS**

**Dividing by fractions = Multiplying by the RECIPROCAL**

**RECIPROCAL-** The multiplicative inverse, what you multiply a fraction by to get 1, basically it is the upside down version of a fraction.

 EX: $\frac{1}{4}$ 🡪reciprocal is $\frac{4}{1}$

**STEP 1- Rewrite the problem-**

**KEEP** the first fraction as you see it.

**CHANGE** division to multiplication

**RECIPROCAL-** change the 2nd fraction to its reciprocal

**STEP 2-** Multiply the fractions just like in 2.4a notes.

**STEP 3-** CHECK/ADD your + or – SIGN!

EX: **-** $\frac{1}{2}$ **÷** $\frac{4}{9}$ 🡪 **-** $\frac{1}{2}$ **x** $\frac{9}{4}$ = - $\frac{9}{8}$ 🡪 -1$\frac{1}{8}$

When adding, subtracting, multiplying, or dividing more than two rational numbers in a problem…

-REMEMBER: **ORDER of OPERATIONS**

**PARENTHESIS ( )**

**EXPONENTS x2**

**MULTIPLICATION & DIVISION** from left to right

**ADDITION & SUBTRACTION** from left to right

-REMEMBER to follow the rules for **+, -, x, ÷**

-REMEMBER to follow rules for **+ & - SIGNS**

**Ex. 2.85 – 6.2 ÷ 22**

 **2.85 – 6.2 ÷ 4**

* 1. **– 1.55 = 1.3**

**On your own:**

1. **-** $\frac{6}{5}$ **÷ (-**$\frac{1}{2}$ **) 2.** $\frac{1}{3}$ **÷ (- 2**$\frac{2}{3}$ **) 3. -**$\frac{2}{7}$ **•** $\frac{1}{3}$

**4. -**$\frac{2}{3}$ **• 7** $\frac{7}{8}$ **•** $\frac{3}{2}$ **5. 1** $\frac{5}{9}$ **÷ (-** $\frac{2}{3}$ **) + (- 2**$\frac{3}{5}$ **)**

**Lesson 2.4b Multiplying & Dividing Fractions**

EQ: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Key Idea:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**SAME SIGNS = POSITIVE ANSWER**

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**MULTIPLYING FRACTIONS**

**\*REDUCING FIRST\***

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**\*REDUCING LAST\***

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EX: **-** $\frac{8}{16}$ **• -** $\frac{6}{12}$ =

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EX: **-** $\frac{1}{2}$ **÷** $\frac{4}{9}$

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