<u>Unit 0, Lesson 1 - Fractions</u>

- Fraction Operations
  - \> Add
  - \> Subtract
  - \> Multiply
  - \> Divide
- Homework: Worksheet
- QA over lesson tomorrow.

<u>Multiplying Fractions</u>:
1. Multiply straight across. Numerator multiplies with numerator, denominator multiplies with denominator.
2. Reduce your fraction if necessary. Dividing the numerator and denominator by the same number until there are no whole numbers that go into both the top/bottom of the fraction.

Ex: $\dfrac{2}{5}\left(\dfrac{1}{3}\right) = \dfrac{2}{15}$

Ex: $\dfrac{5}{3}\left(\dfrac{3}{4}\right) = \dfrac{15}{12} \overset{\div 3}{\underset{\div 3}{=}} \dfrac{5}{4}$

Dividing Fractions: $\frac{3}{4}$ $\frac{4}{3}$
1.   Multiply by the reciprocal of the second fraction.
     Dividing is the same as multiplying by the
     reciprocal.
2.   Treat the problem like a multiplication problem.

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Ex: $\dfrac{2}{5} \div \dfrac{1}{3}$ $= \dfrac{2}{5} \cdot \dfrac{3}{1} = \dfrac{6}{5}$

Ex: $\dfrac{7}{8} \div \dfrac{5}{4}$ $= \dfrac{7}{8} \cdot \dfrac{4}{5} = \dfrac{28}{40} = \dfrac{7}{10}$

<u>Least Common Multiple</u>: The smallest number that a set of numbers can go into.

Example: Find the LCM between 4 and 6.

Multiples of 4 : 4, 8, 12, 16, 20, 24, 28, 32, ...

Multiples of 6 : 6, 12, 18, 24, 30, 36, ...

What is the smallest number that is on both of these lists?   12

Ex 2: Find the LCM between 2, 3, and 6.

2 4 6 8 10 ...

3 6 9 12 ...

6 12 18 ...

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Converting to a Common Denominator:

Step 1: Identify the LCM of the numbers in the denominators.   2   3   8   LCM : 24

Step 2: Multiply each fraction (top and bottom of fraction) by the number needed to get the LCM.

· Ex: Convert all of the following fractions to ones with a common denominator.

$$\frac{12}{12} \cdot \frac{3}{2} \qquad \frac{8}{8} \cdot \frac{1}{3} \qquad \frac{5}{8} \cdot \frac{3}{3}$$

$$\frac{36}{24} \qquad \frac{8}{24} \qquad \frac{15}{24}$$

<u>Adding and Subtracting Fractions:</u>

· 1. Use the LCM to make all fractions have the same denominator (like on previous slide)

2. Add/subtract the numerators & keep the denominator the same.

$$\frac{4}{4} \quad \frac{4}{5} - \frac{1\overset{10}{\cancel{10}}}{2} + \frac{3}{4} \cdot \frac{5}{5}$$

$$\frac{16}{20} - \frac{10}{20} + \frac{15}{20} = \frac{21}{20}$$

Reduce your answer.

$$\text{Ex:}\ \frac{5}{5} \cdot \frac{3}{2} + \frac{7}{5} \cdot \frac{2}{2} \ = \ \frac{15}{10} + \frac{14}{10} = \frac{29}{10}$$

LCM: 10

2,4,6,8,10,...

5,10,...

$$\text{Ex:}\ \frac{6}{6} \cdot \frac{1}{2} + \frac{4}{4} \cdot \frac{4}{3} - \frac{3}{4} \cdot \frac{3}{3} \ = \ \frac{6}{12} + \frac{16}{12} - \frac{9}{12} = \frac{13}{12}$$

LCM: 12