

Fraction Reference Sheet

Mixed Numbers and Improper Fractions-

Mixed Numbers TO Improper Fractions

$$3\frac{4}{7} = \frac{25}{7}$$

MULTIPLY then ADD: ($7 \times 3 + 4 = 25$)

Improper Fractions TO Mixed Numbers

$$\frac{19}{5} = 3\frac{4}{5}$$

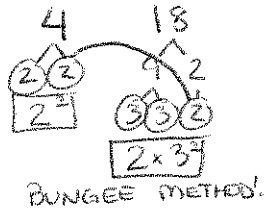
$$5 \overline{)19} \begin{array}{r} 3 \text{ r. } 4 \\ -15 \\ \hline 4 \end{array}$$

DIVIDE: ($19 \div 5 = 3$, remainder 4)

Renaming Fractions-

Simplest Form- Use GCF

$$\frac{4}{18} \xrightarrow{\div 2} \frac{2}{9} \quad \text{GCF: } \underline{2}$$



- STEP 1: Find the GCF of the numerator and denominator.
STEP 2: Divide the numerator and the denominator by the GCF.

Equivalent Fractions- Use CROSS PRODUCTS

$$\frac{3}{4} \neq \frac{2}{3} \quad 3 \times 3 = 4 \times 2 \quad 9 \neq 8$$

Just CROSS MULTIPLY!
The cross products are NOT THE SAME, so the fractions NOT EQUIVALENT.

Comparing Fractions-

METHOD 1- Decimals

$$\frac{5}{6} \quad \frac{7}{9}$$

(Divide each fraction on your calculator to get the decimal)

$$\frac{5}{6} \rightarrow (5 \div 6 = 0.\overline{83})$$

$$\frac{7}{9} \rightarrow (7 \div 9 = 0.\overline{77})$$

(Then compare decimals. Remember the alligator eats the larger number!)

METHOD 2- LCD (Least Common Denominator)

$$\frac{5}{6} \quad \frac{7}{9}$$

$$\text{LCD: } 3^2 \times 2 = \underline{18}$$

$$\frac{5}{6} \xrightarrow{\times 3} \frac{15}{18}$$

$$\frac{7}{9} \xrightarrow{\times 2} \frac{14}{18}$$

$$\frac{5}{6} \xrightarrow{\times 3} \frac{15}{18}$$

$$\frac{7}{9} \xrightarrow{\times 2} \frac{14}{18}$$

Rename each fraction with the LCD.
Then compare the numerators, as they now both have the same denominator!

Adding and Subtracting Fractions-

RULE: MUST HAVE A COMMON DENOMINATOR!!

LIKE Fractions-

Add/Subtract the **NUMERATORS** then put over the **COMMON DENOMINATOR!**

$$\frac{1}{12} + \frac{8}{12} = \frac{1+8}{12} = \frac{9}{12} \text{ or } \frac{3}{4}$$

Common denominator!

UNLIKE Fractions- LCD

Rename fractions with **LEAST COMMON DENOMINATOR (LCD)**, then add/subtract with LIKE fractions!

$$3\frac{2}{5} - 2\frac{1}{3} = ?$$

LCD: $3 \times 5 = 15$

$$3\frac{2}{5} \xrightarrow{\times 3} 3\frac{6}{15}$$
$$2\frac{1}{3} \xrightarrow{\times 5} 2\frac{5}{15}$$
$$\underline{\hspace{1cm}}$$
$$1\frac{1}{15}$$

Multiplying Fractions-

RULE: MULTIPLY STRAIGHT ACROSS!

Multiply the numerators and multiply the denominators.

Fractions \times Fractions:

$$1.) \frac{1}{3} \times \frac{2}{5} = \frac{1 \times 2}{3 \times 5} = \frac{2}{15}$$

Fractions \times Whole Number:

$$2.) \frac{3}{4} \times 2 = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = 1\frac{2}{4} \text{ or } 1\frac{1}{2}$$

Dividing Fractions-

RULE: MULTIPLY BY ITS RECIPROCAL (Flip the 2nd fraction and multiply)!

To divide fractions, multiply by its reciprocal.

$$\textcircled{1} \frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} \text{ or } 1\frac{2}{4} \text{ or } 1\frac{1}{2}$$

$$\textcircled{2} 8 \div \frac{3}{4} = \frac{8}{1} \times \frac{4}{3} = \frac{32}{3} = 10\frac{2}{3}$$

multiply flip!

Turn improper fractions to mixed #s!

STEP 1: Multiply by the reciprocal of $\frac{1}{2}$, which is $\frac{2}{1}$.

STEP 2: Divide out the common factors.

STEP 3: Multiply.