Fractions Reference Sheet

Adding:

butterfly method $\dfrac{a}{b} + \dfrac{c}{d} = \dfrac{ad + bc}{bd}$

$\frac{1}{2} + \frac{3}{8} = \frac{8+6}{16} = \frac{14}{16} = \frac{7}{8}$ (simplified)

Common Denominator method − must be the same denominator

$\dfrac{1}{2}$ becomes $\dfrac{4}{8}$ because we multiplied **2** times 4 to get 8 so we have to multiply **1** times 4.

$+ \dfrac{3}{8}$ stays the same, which is $\frac{3}{8}$, because it already has 8 in the denominator.

now, we can add since they have the same denominator: $\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$

Subtracting:

butterfly method $\dfrac{a}{b} - \dfrac{c}{d} = \dfrac{ad - bc}{bd}$

$\frac{1}{2} - \frac{3}{8} = \frac{8-6}{16} = \frac{2}{16} = \frac{1}{8}$ (simplified)

Common Denominator method − must be the same denominator

$\dfrac{1}{2}$ becomes $\dfrac{4}{8}$ because we multiplied **2** times 4 to get 8 so we have to multiply **1** times 4.

$- \dfrac{3}{8}$ stays the same, which is $\frac{3}{8}$, because it already has 8 in the denominator.

now, we can subtract since they have the same denominator: $\frac{4}{8} - \frac{3}{8} = \frac{1}{8}$

Multiplying:

$\frac{1}{2} x \frac{3}{8} = \frac{3}{16}$ just multiply numerators: 1 x 3 = **3** then multiply the denominators 2 x 8 = **16**

Dividing: complete 3 steps

$\frac{1}{2} \div \frac{3}{8}$ *step* 1: *change* $\div$ *symbol to* x. *Now, we have* $\frac{1}{2} x \frac{3}{8}$ *but do not multiply yet!*

$\frac{1}{2} x \frac{3}{8}$ *step* 2: *find the reciprocal of the 2nd fraction.* $\frac{3}{8}$ *becomes* $\frac{8}{3}$. *Now, we have* $\frac{1}{2} x \frac{8}{3}$

Finally, multiply then simplify $\frac{1}{2} x \frac{8}{3} = \frac{8}{6}$.

NOTE: You must simplify improper fractions:

$\frac{8}{6}$ *becomes* $1\frac{2}{6}$. *However, I am not finished. I can simplify* $1\frac{2}{6}$ *which becomes* $1\frac{1}{3}$

NOTE: When multiplying or dividing a mixed number (such as $3\frac{1}{2}$) then you must turn it into an improper fraction first….It becomes $\frac{7}{2}$ (Multiply 2 x 3 then add 1 = 7. The numerator becomes 7. The denominator, 2, stays the same.)