Name: _____

Algebra I
Equations with Fractions

*****REVIEW*****

Rules for Adding/Subtracting Fractions:

1. Look for least common multiple (LCM) between denominators
2. Multiply numerators by missing factor
3. Add/subtract across the numerators

Ex: $\frac{x}{2}+\frac{3x}{4} \longrightarrow \frac{2x}{4}+\frac{3x}{4}=\frac{5x}{4}$ (LCM is 4)

When you have an equation with a fraction, first solve the same way you would an expression:

Ex: $\frac{x}{2}+\frac{3x}{4}=10$

$\longrightarrow \frac{2x}{4}+\frac{3x}{4}=\frac{5x}{4}=10$

Then cross multiply:

$\frac{5x}{4}=10 \longrightarrow \frac{5x}{4}=\frac{10}{1} \longrightarrow 5x=40 \longrightarrow \frac{5x}{5}=\frac{40}{5}$ $\boxed{x=8}$

To solve equations containing fractions:

1. Look for least common multiple (LCM) between denominators
2. Multiply numerators by missing factor
3. Add/subtract across the numerators
4. Cross multiply with the solution
5. Solve for the variable

Ex:

1. $\frac{3x}{4}+\frac{4x}{5}=2$ LCM = _____

2. $\frac{x}{4}-\frac{x}{5}=-19$ LCM = _____

3. $\frac{2x}{3}+\frac{x}{2}=7$ LCM = _____

4. $5 - \frac{x}{6} = 6$ LCM = _____

When the solution has a fraction, same rules apply, but ***do not include the solution when looking for an LCM***

(Ex1) $\frac{4x}{9} - \frac{4x}{6} = \frac{4}{9}$ (LCM = 18)

$\frac{2(4x)}{18} - \frac{3(4x)}{18} = \frac{4}{9} \rightarrow \frac{8x}{18} - \frac{12x}{18} = \frac{4}{9} \rightarrow \frac{-4x}{18} = \frac{4}{9}$

$(-4x)(9) = (18)(4) \rightarrow -36x = 72 \rightarrow \frac{-36x}{-36} = \frac{72}{-36}$

$x = -2$

(Ex2) $\frac{1}{6x} + \frac{1}{3x} = \frac{1}{8}$ (LCM = 6x)

$\frac{1}{6x} + \frac{2(1)}{6x} = \frac{1}{8} \rightarrow \frac{1}{6x} + \frac{2}{6x} = \frac{1}{8} \rightarrow \frac{3}{6x} = \frac{1}{8}$

$(3)(8) = 6x \rightarrow 24 = 6x \rightarrow \frac{24}{6} = \frac{6x}{6}$ $x = 4$

Examples:

1. $\frac{5}{8} - \frac{1}{2} = \frac{3}{2x}$ LCM = _____

2. $\frac{x}{4}+\frac{x-1}{8}=1$ LCM = _____

3. $\frac{x-4}{3}-\frac{x+1}{6}=3$ LCM = _____