

Solving Equations with Fractions Notes

Important Information

- If you have an equation with fractions, you can make an equivalent equation to make it easier to solve.
- Equivalent equations are the same equations, all of the terms are just multiplied or divided by the same number.

Examples:

- Equations with fractions that are all the same denominator...

$\frac{3}{2}x + \frac{1}{2} = 5$ multiply every term by the denominator. (In this case 2)

$2 \cdot \frac{3}{2}x + 2 \cdot \frac{1}{2} = 5 \cdot 2$

$\frac{6}{2}x + \frac{2}{2} = 10$ Do NOT multiply the number by the denominator, now divide

$3x + 1 = 10$ solve

$\begin{array}{r} 3x + 1 = 10 \\ -1 \quad -1 \\ \hline 3x = 9 \\ \frac{3}{3} \quad \frac{9}{3} \\ x = 3 \end{array}$

Things to remember!

Examples:

- Equations with fractions that have different denominators...

$\frac{1}{3}x + 9 = \frac{3}{4}x + 4$ multiply the denominators. $3 \times 4 = 12$

multiply all the terms in the equation by that number.

$12 \cdot \frac{1}{3}x + 12 \cdot 9 = 12 \cdot \frac{3}{4}x + 12 \cdot 4$ Do NOT multiply that number by the denominator.

$\frac{12}{3}x + 108 = \frac{36}{4}x + 48$ Divide

$4x + 108 = 9x + 48$ Solve

$\begin{array}{r} 4x + 108 = 9x + 48 \\ -4x \quad -48 \\ \hline 4x + 60 = 9x + 48 \\ -4x \quad -4x \\ \hline 60 = 5x \\ \frac{60}{5} = \frac{5x}{5} \\ 12 = x \end{array}$

Can you do it?

$$\frac{3}{8}x + 2 = \frac{7}{2}$$

Show all work.

The solution is $x=4$.