

First, let's remind ourselves of the differences between equations, inequalities, and expressions.

Expressions

Equations

Inequalities

Two-Step Equations with Fractions

When the equations have fractions as coefficients, instead of integers, there is really nothing different. We still undo the addition or subtraction first, then the multiplication or division. As always, we undo these operations by using the opposite operation. Here's an example:

$$\begin{array}{r}
 14 - \frac{1}{4}x = -3 \\
 \hline
 -14 \qquad -14 \\
 \hline
 -\frac{1}{4}x = -17 \\
 \cdot -\frac{4}{1} \quad \cdot -\frac{4}{1} \\
 \hline
 x = 68 \\
 \text{☺}
 \end{array}
 \longrightarrow \text{First, subtract 14 from each side of the equation.}$$

$$\longrightarrow \text{Second, multiply each side of the equation by } -\frac{4}{1}.$$

Let's try a few of these together. Solve each equation.

• $\frac{2}{7}x - 7 = 11$

• $3 - \frac{3}{4}x = -12$

$$\bullet -9 = \frac{3}{2}x + 2$$

$$\bullet \frac{x}{5} + 3 = 4$$

Now, try a few on your own. Solve each equation.

$$1. -\frac{5}{2}x + 2 = 20$$

$$2. 11 - \frac{11}{7}x = 0$$

$$3. 2 - \frac{x}{6} = -7$$

$$4. \frac{7}{3}x + 6 = 23$$

$$5. -\frac{3}{4}x = 8$$

$$6. 180 - \frac{2}{3}x = 0$$