Equations with Fractions

Solve equations with fractions in the same way that you would equations with integers: Just apply the same operation to both sides of the equation to isolate the unknown.

Sometimes we can make things even easier by choosing an operation that turns the fractions into integers.

Example 1. Solve the equation $x - \frac{7}{8} = \frac{11}{12}$.

We will simply add 7/8 to both sides. We get:

$$x - \frac{7}{8} = \frac{11}{12} \quad \Big| + 7/8$$

$$x = \frac{11}{12} + \frac{7}{8}$$

$$x = \frac{22}{24} + \frac{21}{24} = 1\frac{19}{24}$$

Lastly, we check that 1 19/24 satisfies the equation:

$$1\frac{19}{24} - \frac{7}{8} \stackrel{?}{=} \frac{11}{12}$$

$$1\frac{19}{24} - \frac{21}{24} \stackrel{?}{=} \frac{11}{12}$$

$$\frac{22}{24} = \frac{11}{12}$$ ✓

Example 2. Solve the equation $\frac{x}{3} = \frac{7}{8}$.

Don't get "shook up" by the fraction. Looking at the left side, we see the variable is divided by 3. To isolate it, we simply multiply both sides by 3.

$$\frac{x}{3} = \frac{7}{8} \quad \Big| \cdot 3$$

$$\frac{3x}{3} = \frac{7}{8} \cdot 3$$

$$x = \frac{21}{8} = 2\frac{5}{8}$$

Lastly, we check that 2 5/8 is indeed a solution by substituting it into the equation in place of *x:*

$$2\frac{5}{8} \div 3 \stackrel{?}{=} \frac{7}{8}$$

$$\frac{21}{8} \div 3 = \frac{7}{8}$$ ✓

1. Solve the equations.

a. $x + \frac{1}{2} = \frac{5}{6}$

b. $x - \frac{4}{7} = \frac{2}{3}$