



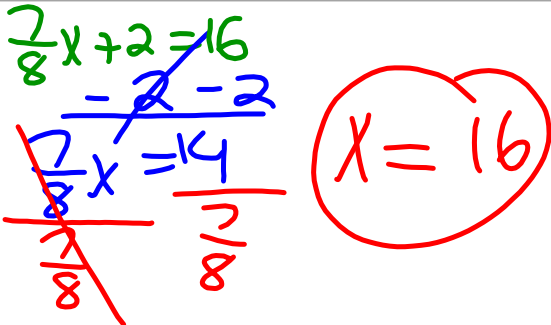
Lesson #54 – Solving Equations with Rational Numbers

Recall that a **RATIONAL NUMBER** is a number that can be written as a fraction or a terminating or repeating decimal.

Great news! You already know how to solve equations with rational numbers.

Example 1) Solve the following equation: $\frac{7}{8}x + 2 = 16$

Steps to solving equations with rational numbers:

<u>Steps</u>	<u>Example</u>
1) Use the distributive property if necessary.	
2) Combine like terms if necessary	
3) Solve the resulting equation.	

****Some helpful hints when solving equations with rational numbers****

- 1) When you see fractions or decimals, **don't panic**. The steps to solving these equations are exactly the same as the equations we've been working with.
- 2) It may be helpful to turn certain fractions into decimals before solving these equations.
- 3) **NEVER USE REPEATING DECIMALS WHEN SOLVING THESE EQUATIONS. IF A FRACTION TURNS INTO A REPEATING DECIMAL, LEAVE IT AS A FRACTION.**
- 4) If leaving numbers as fractions, be sure to use the $A^{b/c}$ button on your calculator when performing any operations with the fractions.

Example 2) Solve the following equation: $\frac{1}{2}x + \frac{1}{3}x - 20 = -10$

$$\frac{5}{6}x - 20 = -10$$

$$\frac{5}{6}x = 10$$

$$x = 12$$

Example 3) Solve the following equation: $9.5(6.5 - 6x) = -27.5$

$$61.75 - 57x = -27.5$$

$$-57x = -89.25$$

$$x = 1.6$$

Now, You Try!

Solve each equation. Round your answer to the nearest hundredth if necessary.

<p>4) $x - \frac{2}{5} = \frac{8}{5}$</p> $x = 2$	<p>5) $0.75(2x + 1) = 2$</p> $1.5x + 0.75 = 2$ $1.5x = 1.25$ $x = .83$
<p>6) $\frac{2}{5}x - \frac{4}{5} = -3$</p> $x = -5\frac{1}{2}$	<p>7) $9.4x + 0.8 = 18.24$</p> $9.4x = 17.44$ $x = 1.85$
<p>8) $\frac{3}{2}x - 2 = 7$</p> $x = 6$	<p>9) $3.5x + 2.7 - 1.4x = 17.4$</p> $2.1x + 2.7 = 17.4$ $2.1x = 14.7$ $x = 7$