

Problem of the Day: Solve the equation.  
 $8 - 16x = -6x + 18$

Plan for the Day: Collect extra credit logic puzzle  
 Integer Quiz and Go over last week's homework  
 Notes on solving equations with rational numbers  
 More practice with solving equations with rationals  
 Objective: We will be able to solve equations with rational coefficients and constants.  
 Good luck JH Volleyball at Rusk!! Today is National Teddy Bear Day!!

6.  $P = 44 \text{ ft}$      $A = 112 \text{ ft}^2$   
 7.  $d = rt$      $245 = 70 \cdot t$      $t = 3.5$   
 8.  $C = 2\pi r$      $d = 10$      $r = 5$      $31.4 \text{ in.}$   
 9. 

Children	4		
total	112	480	160

  
 10. 
$$\begin{array}{r} -3 + 4 - 6 - 2 \\ \underline{1 - 6 - 2} \\ -5 - 2 = \boxed{-7} \end{array}$$

Solving equations with variables on both sides are tricky when you are dealing with rational numbers (fractions and decimals).

Choices when solving an equation with rational numbers:

1. work with the fractions/decimals
2. change the fractions to decimals
3. change the fractions to whole numbers

Example 1: Solve for x.  
 - Method 1: work with fractions - get a common denominator

$$\frac{1}{2}x + 4 = \frac{3}{4}x - 6$$

$10 = \frac{1}{4}x$      $\frac{1}{4} \cdot \frac{4}{1} = \frac{4}{4}$   
 $40 = 1x$   
 $40 = x$

$\frac{2}{4}x + 4 = \frac{3}{4}x - 6$   
 $-\frac{2}{4}x$      $-\frac{3}{4}x$   
 $4 = \frac{1}{4}x - 6$   
 $+6$      $+6$

Example 1: Solve for x.  
 - Method 2: change fractions to decimals

$$\frac{1}{2}x + 4 = \frac{3}{4}x - 6$$

$5x + 4 = 75x - 6$   
 $-5x$      $-50x$   
 $4 = 25x - 6$   
 $+6$      $+6$   
 $10 = 25x$   
 $\cdot 25$      $\cdot 25$

$25 \overline{) 1000}$   
 $\underline{-1000}$   
 $00$   
 $x = 40$

Example 1: Solve for x.  
 - Method 3: change fractions to whole numbers

$$\frac{1}{2}x + 4 = \frac{3}{4}x - 6$$

Example 2: Solve for x.

$$\frac{1x + 11}{5} = \frac{3x}{4}$$

Example 3: Solve for x.

$$31.2 - 0.12x = 28.62 - 0.08x$$

Example 4: Solve for x.

$$1.2 + 0.45x = 0.85 + 0.5x$$

Example 5: Solve for x.

$$\frac{7x + 1}{12} = \frac{3}{2} + \frac{x}{4} + \frac{x}{3}$$

Try the following equation.

$$\frac{4}{5}x + 6 = \frac{9}{10}x + 7$$