

2.4 Solving Multi-Step Equations

Order for solving equations

- ★ 1. parenthesis - distributive property
- ★ 2. collect like terms
- 3. Get x (variable) on 1 side
- ★ 4. Undo addition or subtraction
- ★ 5. Undo multiplication or division

You do the reverse order of what is happening to x.

Sep 23-2:42 PM

Collect Like Terms

$$1. \begin{array}{r} 7x - 3x - 8 = 24 \\ \cancel{4x} \quad - 8 = 24 \\ \quad + 8 \quad + 8 \\ \hline 4x \quad = 32 \\ \frac{4}{4} \quad \quad \frac{32}{4} \\ \hline x \quad = 8 \end{array}$$

$$2. \begin{array}{r} 3k - k + 15 = 41 \\ \hline 2k + 15 = 41 \\ \quad - 15 \quad - 15 \\ \hline 2k = 26 \\ \frac{2}{2} \quad \frac{26}{2} \\ \hline k = 13 \end{array}$$

move me

Feb 4-8:07 AM

$$3. \begin{array}{r} 13 = 12t - 5 - 3t \\ \hline 13 = 9t - 5 \\ + 5 \quad + 5 \\ \hline 18 = 9t \\ \frac{18}{9} = \frac{9t}{9} \\ 2 = t \end{array}$$

$$4. \begin{array}{r} -8 + 5a - 2 = 20 \\ \hline -10 + 5a = 20 \\ + 10 \quad + 10 \\ \hline 5a = 30 \\ \frac{5a}{5} = \frac{30}{5} \\ a = 6 \end{array}$$

Feb 4-8:07 AM

SOLVING MULTI-STEP EQUATIONS WITH PARENTHESIS

Now you will have to use the *distributive property* before you can combine like terms.

EXAMPLES: 1. $5(x - 6) = 55$

$$\begin{array}{r} 5x - 30 = 55 \\ + 30 \quad + 30 \\ \hline 5x = 85 \\ \frac{5x}{5} = \frac{85}{5} \\ x = 17 \end{array}$$

Sep 27-8:57 AM

$$2. \begin{array}{r} 7(y - 2) = -56 \\ 7y - 14 = -56 \\ + 14 \quad + 14 \\ \hline 7y = -42 \\ \frac{7y}{7} = \frac{-42}{7} \\ y = -6 \end{array}$$

$$3. \begin{array}{r} 8(3 + k) = 48 \\ 24 + 8k = 48 \\ - 24 \quad - 24 \\ \hline 8k = 24 \\ \frac{8k}{8} = \frac{24}{8} \\ k = 3 \end{array}$$

Sep 27-9:04 AM

$$4. \begin{array}{r} -5(m + 1) = 45 \\ -5m - 5 = 45 \\ + 5 \quad + 5 \\ \hline -5m = 50 \\ \frac{-5m}{-5} = \frac{50}{-5} \\ m = -10 \end{array}$$

$$5. \begin{array}{r} 3(3h + 5) = -24 \\ 9h + 15 = -24 \\ - 15 \quad - 15 \\ \hline 9h = -39 \\ \frac{9h}{9} = \frac{-39}{9} \\ h = -39 \div 9 \\ = \boxed{-\frac{13}{3}} \end{array}$$

Sep 27-9:06 AM

6. $7x + 2(x + 6) = 39$

$$7x + 2x + 12 = 39$$

$$9x + 12 = 39$$

$$9x = 27$$

$$x = 3$$

Sep 27-10:10 AM

7. $6y - 2(y - 5) = 46$

$$6y - 2y + 10 = 46$$

$$4y + 10 = 46$$

$$4y = 36$$

$$y = 9$$

Sep 27-10:10 AM

Multiply by reciprocal.

8. $\frac{2}{3}(3h + 5) = -24$

$$3h + 5 = -16$$

$$3h = -21$$

$$h = -7$$

Sep 27-9:06 AM

Concert Merchandise Martha takes her niece and nephew to a concert. She buys T-shirts and bumper stickers for them. The bumper stickers cost \$1 each. Martha's niece wants 1 shirt and 4 bumper stickers, and her nephew wants 2 shirts but no bumper stickers. If Martha's total is \$67, what is the cost of one shirt?

$S = \text{cost of a shirt}$ bumper sticker = 1

$$S + 4 + 2S = 67$$

$$3S + 4 = 67$$

$$3S = 63$$

$$S = \$21$$

Sep 6-7:52 PM

Classwork: p.100 #4 - 28 even
 Copy the question.
 Show all work.

Final Five

Suppose you want to solve $-4m + 5 + 6m = -3$.

1. What would your first step be?
2. What is the second step?
3. What is the last step?

Aug 31-3:31 PM