U3D4_T_Solving Multi-Step Equations

Monday, March 5, 2018   10:51 AM

U3D4_T_So
lving Mult...

U3D$\overset{2}{4}$ Unit 3 - Equations
      Day $\overset{2}{4}$ - <u>Solving Multi - Step Equations</u>
<u>QUIZ</u>
<u>Warm-Up</u>: Solve the following equation.

$3x - 5 = 9$

$3x - 5 + 5 = 9 + 5$

$3x = 14$

$\dfrac{3x}{3} = \dfrac{14}{3}$

$x = \dfrac{14}{3}$

Step 1:	Isolate the variable term
Step 2:	Isolate the variable.

Example 1: Solve the following:

a) $3x - 5 + 2x = 20$

$5x - 5 + 5 = 20 + 5$

$\dfrac{5x}{5} = \dfrac{25}{5}$

$x = 5$

Step 1:	Collect Like Terms
Step 2:	Isolate Variable Term
Step 3:	Isolate Variable

b) $2x + 5 = 6 + x$

$$2x + 5 - x = 6 + x - x$$

$$x + 5 - 5 = 6 - 5$$

$$x = 1$$

Khan Academy Method

$$\begin{cases} 2x + 5 = 6 + x \\ -x - 5 \quad -5 - x \\ x \quad = 1 \end{cases}$$

c) $7 - 5x = \boxed{2x} - 14$

$$7 - 5x - 2x = 2x - 14 - 2x$$

$$7 - 7x = -14$$

$$7 - 7x - 7 = -14 - 7$$

$$-7x = -21$$

$$\frac{-7x}{-7} = \frac{-21}{-7}$$

$$x = 3$$

d) $2(x + 7) = 4$

$$2x + 14 = 4$$

$$2x + 14 - 14 = 4 - 14$$

$$2x = -10$$

$$\frac{2x}{2} = \frac{-10}{2}$$

$$\boxed{x = -5}$$

* When there are BRACKETS, EXPAND FIRST.

e) $3(2x - 1) - 2(x + 1) = 5$

$$6x - 3 - 2x - 2 = 5$$

$$4x - 5 = 5$$

$$4x - 5 + 5 = 5 + 5$$

$$4x = 10$$

$$\frac{4x}{4} = \frac{10}{4}$$
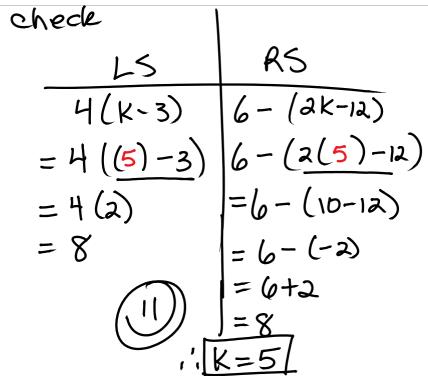
$$x = \frac{5}{2}$$

Example 2: Solve the following equation. Express the answer in lowest terms. Check your solution.

$4(k - 3) = 6 - (2k - 12)$

$$4k - 12 = 6 - 2k + 12$$

$$4k - 12 = 18 - 2k$$

$$4k - 12 + 2k = 18 - 2k + 2k$$

$$6k - 12 + 12 = 18 + 12$$

$$6k = 30$$

$$\frac{6k}{6} = \frac{30}{6}$$

$$\boxed{k = 5}$$

Step 1: Expand to eliminate the brackets.

Step 2: Collect Like Terms

Step 3: Isolate the Variable term

Step 4: Isolate the Variable

Now check your solution.

check

LS	RS
$4(k-3)$	$6-(2k-12)$
$= 4((5)-3)$	$6-(2(5)-12)$
$= 4(2)$	$= 6-(10-12)$
$= 8$	$= 6-(-2)$
	$= 6+2$
	$= 8$

$\therefore \boxed{k=5}$

U3D4 Practice: Pg. 200-202 #2, 4 ("root" just means "solution"), 5a, 6a, 8, 9, 10, 13 **Challenge Page 203 #18-21**