Get out your homework and start checking your answers.

Classwork - One Step Equations with Simplifying

$x + 9 = 21$
$-9 \quad -9$
$x = 12$

$4 \cdot \dfrac{x}{4} = 12 \cdot 4$
$x = 48$

$-8x = -32$
$\dfrac{}{-8} \quad \dfrac{}{-8}$
$x = 4$

$x - 15 = -20$
$+15 \quad +15$
$x = -5$

$2x = 18$
$\dfrac{}{2} \quad \dfrac{}{2}$
$x = 9$

$b - 21 = 16$
$+21 \quad +21$
$b = 37$

$m + 11 = -10$
$-11 \quad -11$
$m = -21$

$8x = -20$
$\dfrac{}{8} \quad \dfrac{}{8}$
$x = -2.5$

$$25 = n + 8$$
$$-8 \qquad -8$$
$$\overline{17 = n}$$

$$7 \cdot \frac{x}{7} = -6 \cdot 7$$
$$x = -42$$

$$-12x = 0$$
$$\overline{-12} \quad \overline{-12}$$
$$x = 0$$

$$-15 + j = -5$$
$$+15 \qquad +15$$
$$\overline{j = 10}$$

$$-12x = -60$$
$$\overline{-12} \quad \overline{-12}$$
$$x = 5$$

$$-6 = n - 8$$
$$+8 \qquad +8$$
$$\overline{2 = n}$$

$$-12 \cdot \frac{g}{-12} = -3 \cdot 12$$
$$g = 36$$

$$-11x = 66$$
$$\overline{-11} \quad \overline{-11}$$
$$x = -6$$

1) Solve the following one-step equations. Make sure to show inverse operations on BOTH sides and WORK DOWN. SHOW ALL WORK. Guess and Check is not a method to use anymore.

Example:
$$x + 5 = -4$$
$$x + 5 = -4$$
$$\underline{-5 \qquad -5}$$
$$\boxed{x = -9}$$

Check Your Work!
Put your solution into the original equation to check if the left side of the equation is equal to the right side of the equation.

→→→

Example
$$x = -9$$
$$(-9) + 5 = -4$$
$$-4 = -4$$
$$x = -9 \text{ is correct}$$

A) $x + 6 = 5$
$$-6 \quad -6$$
$$\boxed{x = -1}$$

B) $\dfrac{x}{10} = 4 \bullet 10$
$$\boxed{x = 40}$$

C) $2x = 30$
$$\dfrac{}{2} \quad \dfrac{}{2}$$
$$\boxed{x = 15}$$

$2(15) = 30$
$30 = 30$
✓

D) $x - 12 = -4$
$$+12 \quad +12$$
$$\boxed{x = 8}$$

E) $7x = -49$
$$\div 7 \quad \div 7$$
$$\boxed{x = -7}$$

F) $b - 18 = 13$
$$+18 \quad +18$$
$$\boxed{b = 31}$$

G) $2 = m + 9$
$$-9 \quad -9$$
$$\boxed{-7 = m}$$

H) $-20 = 8x$
$$\dfrac{}{8} \quad \dfrac{}{8}$$
$$\boxed{-2.5 = x}$$

I) $4 \bullet \dfrac{x}{-4} = 14 \bullet -4$
$$\boxed{x = -56}$$

J) $x - 9 = -10$

$+9 \quad +9$

$\boxed{x = -1}$

K) $\dfrac{x}{-3} = -7$ $\bullet -3$

$\boxed{x = 21}$

L) $-14 = x + 6$

$-6 \quad -6$

$\boxed{-20 = x}$

M) $-4 + x = 8$

$+4 \quad +4$

$\boxed{x = 12}$

N) $\dfrac{x}{8} = -9$ $\bullet 8$

$\boxed{x = -72}$

O) $-7 = x - 8$

$+8 \quad +8$

$\boxed{1 = x}$

P) $x - 15 = 23$

$+15 \quad +15$

$\boxed{x = 38}$

Q) $-6n = -66$

$\overline{-6} \div -6$

$\boxed{n = 11}$

R) $-9 = x + 3$

$-3 \quad -3$

$\boxed{-12 = x}$

Simplifying Equations Before You Solve

Before you solve equations, you need to make sure that both sides of equation are completely simplified first. When simplifying equations you follow the order of operations in the usual order. Then after we have simplified both sides of the equation and are solving, we need to work in the **reverse of the order of operations** since we're working backwards to solve for the variable.

Simplifying ↓

P ARENTHESES
E XPONENTS
M ULTIPLY
D IVIDE
A DD
S UBTRACT
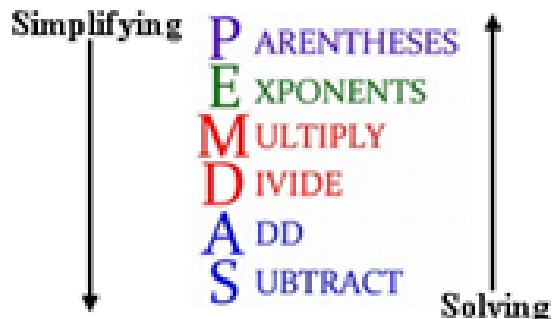
Solving ↑

Example: Solve the equation $-6x - 2x = 24$

$$(-6x) - (2x) = 24$$

Simplifying:
1) Identify like terms by circling or boxing them → Include the sign
2) Simplify both sides of the equation by combining like terms

$$\frac{-8x}{-8} = \frac{24}{-8}$$

$$\boxed{\begin{array}{c} 1x = -3 \\ \text{or} \\ x = -3 \end{array}}$$

Solving:
3) Use inverse operations to <u>undo</u> what's acting on the variable on <u>BOTH SIDES</u>
4) Simplify the equation until you solve for x or 1x
5) Check your solution! ────────────→

Check it!

$x = -3$

$-6(-3) - 2(-3) = 24$

$18 + 6 = 24$

$24 = 24$

$x = -3$ is correct

2) Simplify and THEN solve the following one-step equations. Make sure to show inverse operations on BOTH sides and WORK DOWN. SHOW ALL WORK. Guess and Check is not a method to use anymore.

A) $x + 5 + 6 = 19$

$$X + 11 = 19$$
$$\underline{-11 \quad -11}$$
$$\boxed{x = 8}$$

B) $\frac{x}{9} = 7 + 3$

$$\frac{x}{9} = 10 \cdot 9$$
$$\boxed{y = 90}$$

C) $-4x + 8x = -24$

$$\frac{4x}{4} = \frac{-24}{4}$$
$$\boxed{x = -6}$$

$$-4(-6) + 8(-6) = -24$$
$$24 + (-48) = -24$$
$$-24 = -24 \checkmark$$

D) $x - 8 + 3 = -4$

$x - 5 = -4$
$ +5 \quad +5$
_____
$\boxed{x = 1}$

E) $-x - 8x = -81$

$\dfrac{-9x}{-9} = \dfrac{-81}{-9}$

$\boxed{x = 9}$

F) $b + 2 - 10 = 8$

$b - 8 = 8$
$ +8 \quad +8$
_____
$\boxed{b = 16}$

G) $-m + 6m = -12 + 2$

$\dfrac{5m}{\div 5} = \dfrac{-10}{\div 5}$

_____
$\boxed{m = -2}$

H) $-40 - 2 = 6x - 13x$

$\dfrac{-42}{-7} = \dfrac{-7x}{-7}$

$\boxed{6 = x}$

I) $\dfrac{x}{7} = -3 - 9$

$7 \cdot \dfrac{x}{7} = -12 - 7$

$\boxed{x = -84}$