

Algebra 2 - Unit 2 Lesson 2: Two Step Equations

Day 1: Basic Operations

Day 2: Radicals and Exponents

Day 3: Logarithms and Exponentials

Solving harder equations requires that you know which order to move terms around. This order is most oftentimes the "Order of operations" but backwards.

Solve the equations.

$$-5x + 9 = 4$$

$$-9 \quad -9$$

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

$$x = 1$$

PEMDAS

Notice we have two choices. Following the order of operations backwards we need to subtract before we divide.

$$-2 + 3x = 7$$

$$+2 \quad +2$$

$$\frac{3x}{3} = \frac{9}{3}$$

$$x = 3$$

Solve: $-2 - \frac{x}{3} = 6$

+2 +2

$$-3 \cdot -\frac{x}{3} = 8 \cdot -3$$

$$x = -24$$

$$\frac{x}{4} + 5 = -1$$

-5 -5

$$4 \cdot \frac{x}{4} = -6 \cdot 4$$

$$x = -24$$

Here we will need to add the 2 before we multiply by -3

Solve: $\frac{2}{3}x + 5 = -1$

-5 -5

$$\frac{3}{2} \cdot \frac{2}{3}x = -6 \cdot \frac{3}{2}$$

$$x = -\frac{18}{2} = -9$$

Once again you'll need to subtract before we multiply by the reciprocal to get rid of the fraction.

$$-\frac{6}{7}x - 2 = -1$$

+2 +2

$$-\frac{7}{6} \cdot -\frac{6}{7}x = 1 \cdot -\frac{7}{6}$$

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

Solve: $-2(x-4) = -8$

multiply \nearrow
 Parentheses \uparrow

PEMDAS
 2nd 1st

$$\frac{-2(x-4)}{-2} = \frac{-8}{-2}$$

$$x-4 = 4$$

$$+4 \quad +4$$

$$x = 8$$

$$\frac{5}{1} \cdot \frac{1}{5}(9+x) = -2 \cdot 5$$

$$9+x = -10$$

$$-9 \quad -9$$

$$x = -19$$

For this one, do the parentheses LAST. Don't distribute in. Instead divide by the -2 first.

Solve: ~~5~~ $\frac{(-10+x)}{5} = 3$

$$-10 + x = 15$$

+10 +10

$$x = 25$$

Any time you see multiple terms on the top or bottom of a fraction, consider that part as parentheses, and do that part last if possible.

$$2 \cdot \frac{x-5}{2} = 0 \cdot 2$$

$$x-5 = 0$$

+5 +5

$$x = 5$$

Solve: $x \cdot \frac{7}{x} = 4 \cdot x$

$$\frac{7}{4} = \frac{4x}{4}$$

$$x = \frac{7}{4}$$

The most consistently correct way to do these problems is to multiply by x first, then divide by 4.

$$x \cdot \frac{9}{x} = 3 \cdot x$$

$$\frac{-9}{3} = \frac{3x}{3}$$

$$x = -3$$

Homework: Unit 2 Lesson 2 Day 1 Worksheet