



Lesson: Solving of 'x' using multiplication and division.

Sixth Grade Objective: 5.03 Solve simple one and two step equations or inequalities

Lesson

An equation is a mathematical statement where two quantities are equivalent.

For example:

$$4 + 1 = 3 + 2$$

$$5 = 5$$

$$50 - 35 = 15$$

$$15 = 15$$

$$5 \cdot 9 = 100 - 55$$

$$45 = 45$$

This simple concept is the key to solving for x. You always have to keep both sides of the equation equal. To do this you must add, subtract, multiply and divide both sides of the equation so that you end up with a single variable on one side and a single number on the other side. As long as you **always** do the same thing to BOTH sides of the equation, and do the operations in the correct order, you will get to the solution.

Remember- If you divide each side of an equation by the same number the two sides remain equal.

Example 1, Solve for 'x' :

$$2x = 12$$

First, divide both sides by 2:

$$\frac{2x}{2} = \frac{12}{2}$$

Second, simplify both sides

$$x = 6$$

Example 2, Solve for 'x' :

$$2x = 16$$

First, divide both sides by 2:

$$\frac{2x}{2} = \frac{16}{2}$$

Simplify both sides:

$$x = 8$$

Example 3, Solve for 'x' :

Remember- If you multiply each side of an equation by the same number, the two sides remain equal.

$$\frac{x}{9} = 4$$

Multiply both sides by 9:

$$\frac{(9)x}{9} = 4(9)$$

Simplify both sides:

$$x = 36$$

Try these on your own:

1. $3f = 9$
2. $5b = 30$
3. $\frac{X}{3} = 3$

Check your answers

1. $3f = 9$
First, divide by 3 to isolate the variable
 $\frac{3f}{3} = \frac{9}{3}$
Then simplify
 $f = 3$
2. $5b = 30$
First, divide by 5 to isolate the variable
 $\frac{5b}{5} = \frac{30}{5}$
Then simplify
 $b = 6$
3. $\frac{X}{3} = 3$
First, multiply by 3 to isolate the variable
 $(3)\frac{X}{3} = 3(3)$
Then simplify
 $X = 9$

Quiz yourself

1. $\frac{n}{4} = 3$

2. $3(y) = 24$

3. $2x = 20$

Check your answers!

1. $\frac{n}{4} = 3$

4

First, multiply by 4 to isolate the variable

$$(4)\frac{n}{4} = 3(4)$$

4

Simplify

$$n = 12$$

2. $3(y) = 24$

First, divide by 3 to isolate the variable

$$\frac{3y}{3} = \frac{24}{3}$$

3 3

Simplify

$$y = 8$$

3. $2x = 20$

First, divide by 2 to isolate the variable

$$\frac{2x}{2} = \frac{20}{2}$$

2 2

Simplify

$$x = 10$$