

## Rearranging Equations

If you change one side of an equation, you must change the other side in the same way to keep the equality.

The goal in rearranging equations is to get a variable (x, y, m, k etc.) by itself with no other terms (isolate).

You can eliminate a term from one side of an equation by doing the OPPOSITE operation.

### Eliminating Addition / Subtraction Terms

*To eliminate an added term, subtract it.*

*To eliminate a subtracted term, add it.*

Example:

$$x + y = 10$$

Subtract y from the BOTH sides to get x by itself.

$$x + y - y = 10 - y$$

The y term is now gone from the left hand side.

$$x = 10 - y \text{ is the final answer.}$$

### When x is multiplied or divided by a number or variable

*To eliminate a multiplied term, divide it.*

*To eliminate a divided term, multiply it.*

Example:

$$ab = 12$$

Divide ALL terms by b:

$$ab/b = 12/b$$

Since  $b/b = 1$  the equation becomes

$$a = 12/b$$

Example:

$$rs + t = 8 \quad \text{Divide ALL terms by s}$$

$$rs/s + t/s = 8/s$$

$$r + t/s = 8/s \quad \text{Now eliminate t/s to the right side}$$

$$r = 8/s - t/s$$

### Squares and Square Roots

*To eliminate a squared term, take the square root*

*To eliminate a square rooted term, square it.*

The square root of a square is just the number (or variable).

A square root squared is just the number (or variable).

Example:

$$x^2 = y$$

$$\sqrt{x^2} = \sqrt{y}$$

The square root of “something” squared is just the “something”

$$x = \sqrt{y}$$

Example:

$$\sqrt{a} = b$$

$$(\sqrt{a})^2 = b^2$$

Squaring the square root of something is just the “something”

$$a = b^2$$

NOTE: You must take the square root or square the ENTIRE side.

Example:

$$x = (y + z)^2$$

$$\sqrt{x} = y + z$$

$$r = \sqrt{s + t}$$

$$r^2 = s + t$$