Boolean Algebra:

Basic Definitions:

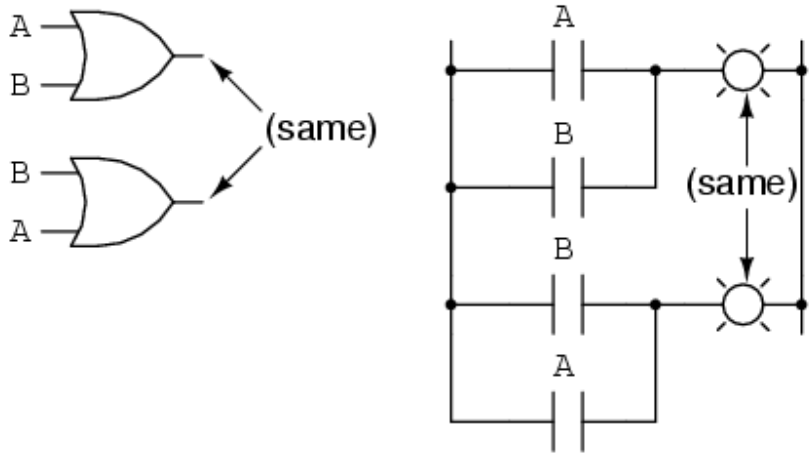
A Boolean algebra is defined with a set of elements, a set of operators, a number of rules, laws, theorems and property. It is formulated by a defined set of elements together with two binary operators +(plus) and .(dot).The most common property used to formulate various algebraic structures are:

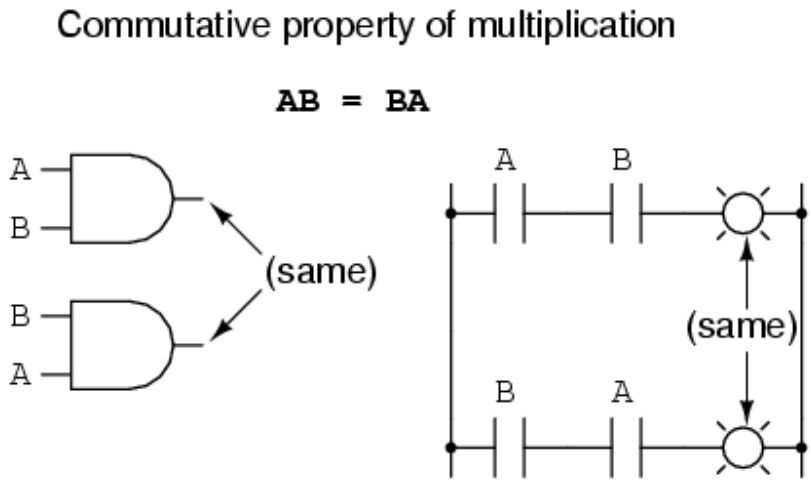
commutative property:

it is applied equally to addition and multiplication. In essence, the commutative property tells us we can reverse the order of variables that are either added together or multiplied together without changing the truth of the expression:

Commutative property of addition

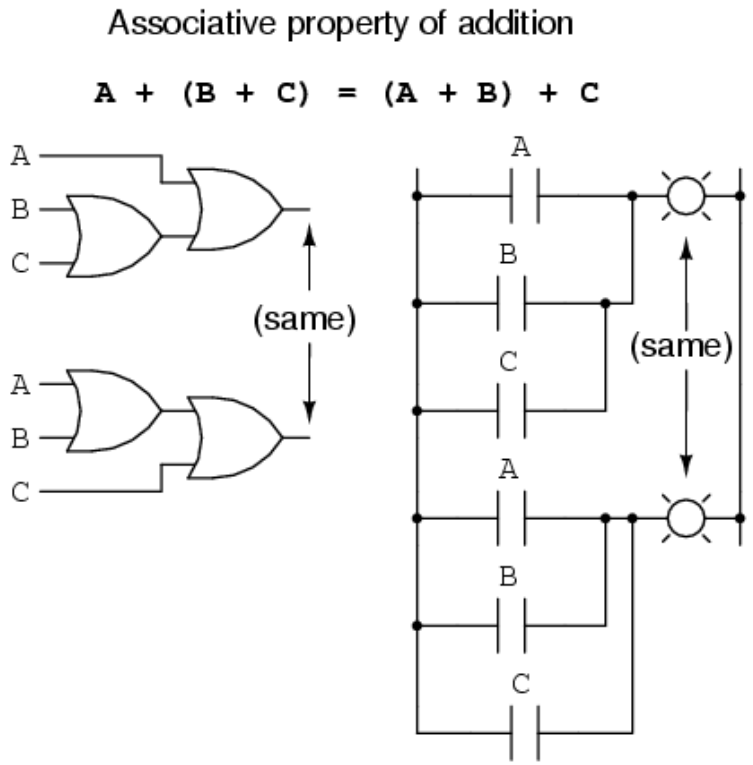
A + B = B + A





Along with the commutative properties of addition and multiplication, we have the associative property, again applying equally well to addition and multiplication. This property tells us we can associate groups of added or multiplied variables together with parentheses without altering the truth of the equations.

Associative property



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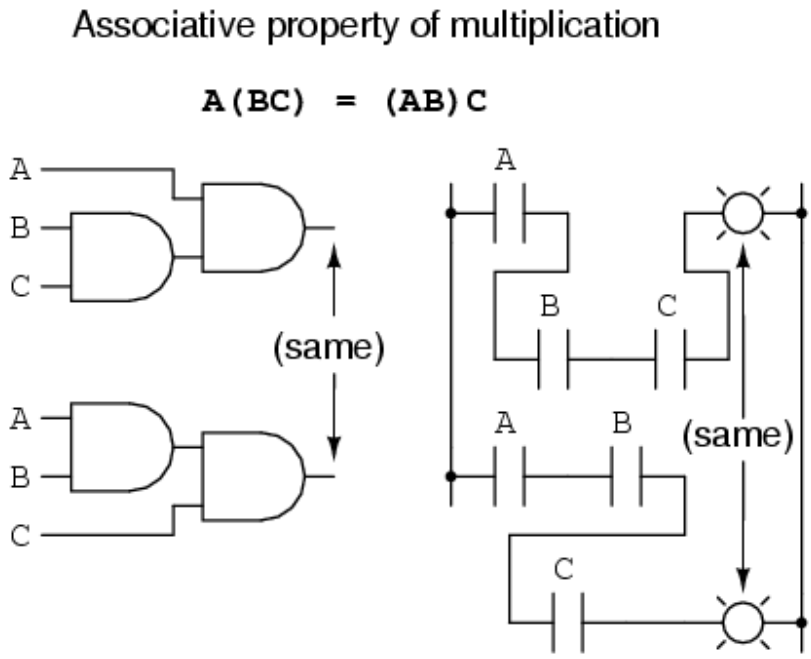

Lastly, we have the distributive property, illustrating how to expand a Boolean expression formed by the product of a sum, and in reverse shows us how terms may be factored out of Boolean sums-of-products:

Distributive property