

## BOOLEAN ALGEBRA LAWS & RULES

$a + b = b + a$                        $ab = ba$                       **Law 1**                      commutative

$a + (b + c) = (a + b) + c$                        $a(bc) = (ab)c$                       **Law 2**                      associative

$(a + b)(c + d) = ac + ad + bc + bd$                       **Law 3**                      distributive

$a(b + c) = ab + ac$                       **Law 3**                      distributive

$a + bc = (a + b)(a + c)$                       **Law 3**                      distributive

$a*0 = 0$                       Rule 1

$a + a = a$                       Rule 6

$a*1 = a$                       Rule 2

$a*a' = 0$                       Rule 7

$a + 0 = a$                       Rule 3

$a + a' = 1$                       Rule 8

$a + 1 = 1$                       Rule 4

$(a')' = a$                       Rule 9

$a*a = a$                       Rule 5

$a + a'b = a + b$                       Rule 10a

$a' + ab = a + b$                       Rule 10b

$(a + b)' = a'b'$                        $(ab)' = a' + b'$

**DeMorgan**