

Boolean Algebra

Use the + operator to represent the OR operator and use * to represent the AND operator.
Complete the following truth tables:

A B	A + B	A B	B + A	A B	A * B	A B	B * A
00		00		00		00	
01		01		01		01	
10		10		10		10	
11		11		11		11	

Conclusion:

Complete the following truth tables:

A B C	A + (B * C)	A B C	(A + B) * (A + C)
000		000	
001		001	
010		010	
011		011	
100		100	
101		101	
110		110	
111		111	

Conclusion:

Complete the following truth tables:

A B C	$A * (B + C)$
0 0 0	
0 0 1	
0 1 0	
0 1 1	
1 0 0	
1 0 1	
1 1 0	
1 1 1	

A B C	$(A * B) + (A * C)$
0 0 0	
0 0 1	
0 1 0	
0 1 1	
1 0 0	
1 0 1	
1 1 0	
1 1 1	

Conclusion:

Complete the following truth tables:

a	$a + 0$
0	
1	

a	$a * 1$
0	
1	

a	$a + \bar{a}$
0	
1	

a	$a * \bar{a}$
0	
1	

Conclusion:

Additional Laws

Idempotent Laws

$$a + a = a$$

$$a * a = a$$

Boundless Laws

$$a + 1 = a$$

$$a * 0 = 0$$

Absorption Laws

$$a + (a * b) = a$$

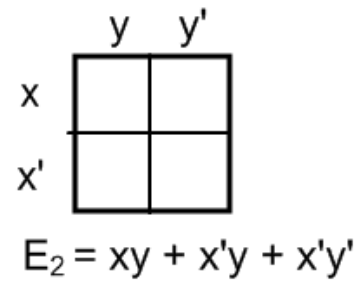
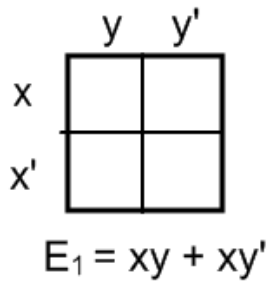
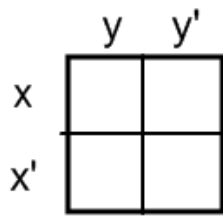
$$a * (a + b) = a$$

Associative Laws

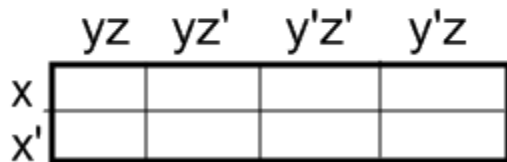
$$(a + b) + c = a + (b + c)$$

$$(a * b) * c = a * (b * c)$$

Karnaugh Maps



Three variables x, y, z



Four variables x, y, z, t

