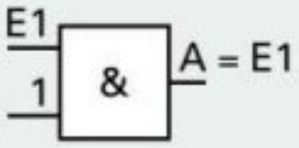
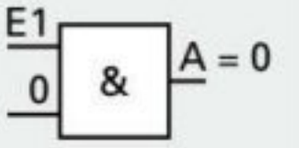
Tabelle 1: Regeln der Schaltalgebra

Vereinfachung der UND-Verknüpfung

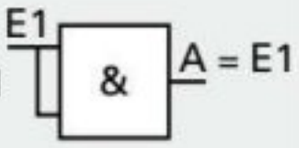
$E1 \wedge 1 = E1$



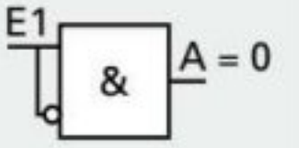
$E1 \wedge 0 = 0$

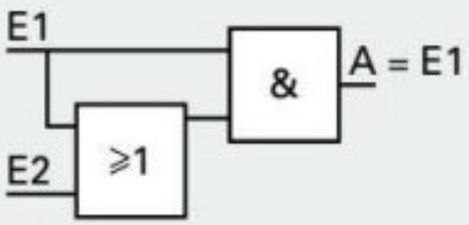


$E1 \wedge E1 = E1$



$E1 \wedge \overline{E1} = 0$

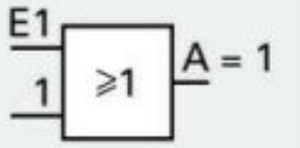




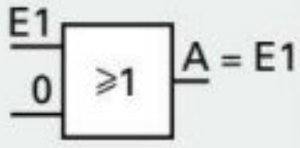
$E1 \wedge (E1 \vee E2) = E1$

Vereinfachung der ODER-Verknüpfung

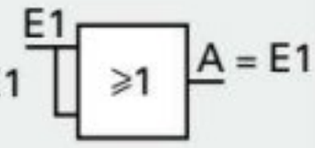
$E1 \vee 1 = 1$



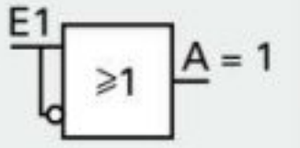
$E1 \vee 0 = E1$

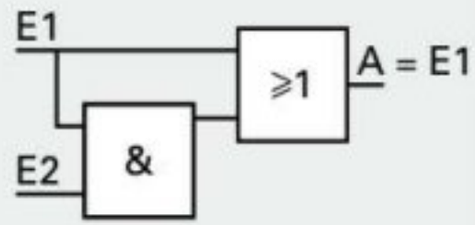


$E1 \vee E1 = E1$



$E1 \vee \overline{E1} = 1$



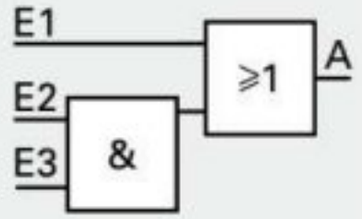


$E1 \vee (E1 \wedge E2) = E1$

Gesetze der Schaltalgebra

UND vor ODER

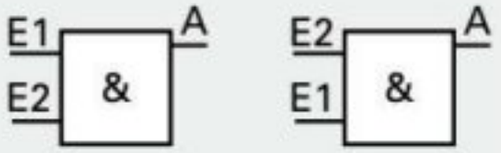
$E1 \vee E2 \wedge E3 = E1 \vee (E2 \wedge E3)$



Kommutativ Gesetz

$E1 \wedge E2 = E2 \wedge E1$

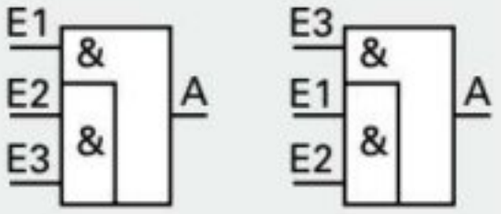
$E1 \vee E2 = E2 \vee E1$



Assoziativ Gesetz

$E1 \wedge (E2 \wedge E3) = (E1 \wedge E2) \wedge E3$

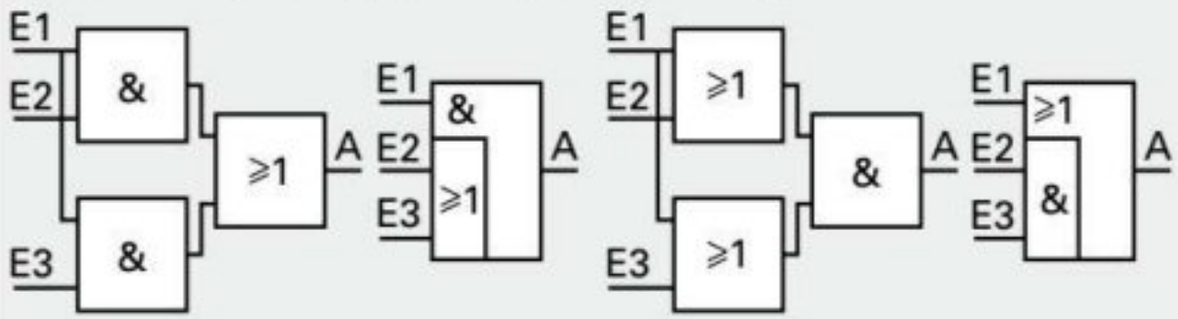
$E1 \vee (E2 \vee E3) = (E1 \vee E2) \vee E3$



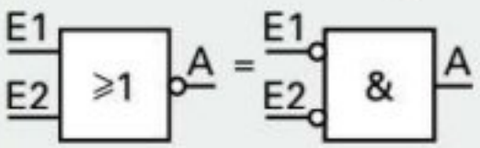
Distributiv Gesetz

$(E1 \wedge E2) \vee (E1 \wedge E3) = E1 \wedge (E2 \vee E3)$

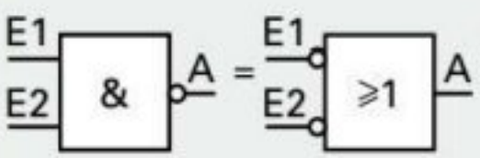
$(E1 \vee E2) \wedge (E1 \vee E3) = E1 \vee (E2 \wedge E3)$



Gesetze von De Morgan

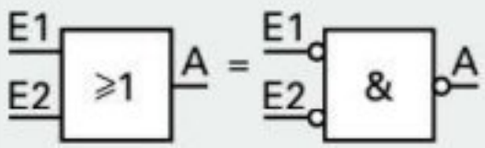


$\overline{E1 \vee E2} = \overline{E1} \wedge \overline{E2}$



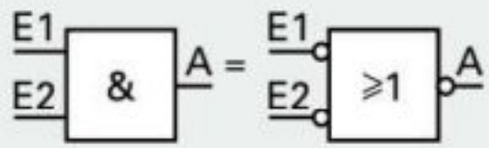
$\overline{E1 \wedge E2} = \overline{E1} \vee \overline{E2}$

NAND ersetzt ODER



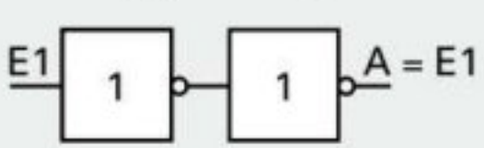
$E1 \vee E2 = \overline{\overline{E1} \wedge \overline{E2}}$

NOR ersetzt UND



$E1 \wedge E2 = \overline{\overline{E1} \vee \overline{E2}}$

Doppelte Negation



$\overline{\overline{E1}} = E1$

Durch die angegebenen Gesetze lässt sich jede logische Schaltung nur mit einem Gatter-Typ z. B. mit NAND-Gattern aufbauen.