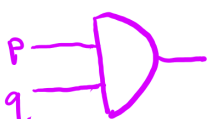
AND

p	q	
T	T	T
T	F	F
F	T	F
F	F	F

"both p and q are true"

$p \wedge q$

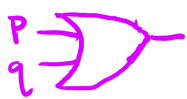


OR

p	q	
T	T	T
T	F	T
F	T	T
F	F	F

"at least 1 of p and q is true"

$p \vee q$



NOT

p	
T	F
F	T

"the opposite of p"

$\neg p$

XOR

p	q	
T	T	F
T	F	T
F	T	T
F	F	F

"exactly 1 of p and q is true"

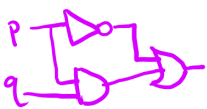
$p \oplus q$

IF-THEN

p	q	
T	T	T
T	F	F
F	T	T
F	F	T

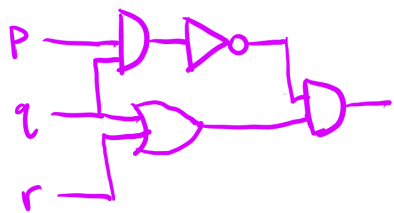
"if p is true, then q must be true"

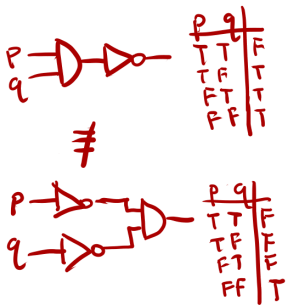
$p \rightarrow q$



$\neg(p \wedge q) \wedge (q \vee r)$

p	q	r	
T	T	T	F
T	T	F	F
T	F	T	T
T	F	F	F
F	T	T	T
F	T	F	T
F	F	T	T
F	F	F	F





$\equiv (\neg p \wedge \neg q)$ DeMorgan's Law

$\neg(p \vee q) \wedge (q \vee r) \equiv \neg p \wedge \neg q \wedge (q \vee r) \equiv \neg p \wedge \neg q \wedge r$

F

p	q	r	
T	T	T	F
T	T	F	F
T	F	T	F
T	F	F	F
F	T	T	F
F	T	F	F
F	F	T	T
F	F	F	F