

## Laws of propositional logic (contd.)

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- Verifying DeMorgan's law using truth table

P	Q	$p \vee q$	$\neg(p \vee q)$	$\neg p$	$\neg q$	$\neg p \wedge \neg q$
T	T	T	F	F	F	F
T	F	T	F	F	T	F
F	T	T	F	T	F	F
F	F	F	T	T	T	T

- Laws of proposition hold under substitution, meaning substituting any prop. formula for any prop. variable.
- Example: Substituting  $(r \wedge s)$  for  $p$  in DeMorgan's law  
$$\neg((r \wedge s) \vee q) \equiv \neg(r \wedge s) \wedge \neg q.$$