CONJUNCTION: $p \wedge q$ "and".

p	q	p∧q
T	T	T
T	F	F
F	T	F
F	F	F

Ex5: Find Conjunction of the propositions
P4 p = "It is raining."
      q = "Today is friday".

$p \wedge q$ = It is raining and Today is friday.

---

let p = $4 < 4$.
     q = $4 = 4$.

$p \wedge q$ = $4 < 4$ and $4 = 4$.
        = $4 \leq 4$.

p	q	r	q∧r	p∧(q∧r)
T	T	T	T	T
T	T	F	F	F
T	F	T	F	F
T	F	F	F	F
F	T	T	T	F
F	T	F	F	F
F	F	T	F	F
F	F	F	F	F

DISJUNCTION: $p \vee q$ "OR"

p	q	p∨q
T	F	T
T	F	T
F	T	T
F	F	F

(HW)
$p \vee q \vee r$?

"OR"

if p then q
implication $p \rightarrow q$

q	p→q
T	T
F	F
T	T
F	T

If I win elections Then I will lower taxes.

Bi-Conditional: $p \longleftrightarrow q$.

P	q	$p \longleftrightarrow q$
T	T	T
T	F	F
F	T	F
F	F	T

$q \rightarrow \neg p$.

$\neg q \rightarrow \neg p$

$\neg(q \wedge p) \rightarrow \gamma$.

15 min { HW.
Find truth tables of
Converse, Inverse, Contrapositive

You take a flight iff you buy a ticket.
$$P \rightarrow q.$$

Converse: $q \rightarrow P$.

$p \rightarrow q$.
$\neg p \rightarrow \neg q$.

Inverse: $\neg P \rightarrow \neg q$.
$\neg q \rightarrow \neg p$.

Contrapositive: $\neg q \rightarrow \neg p$.
$\neg p \rightarrow \neg q$

Precedence
$\neg$
$\wedge$
$\vee$
$\rightarrow$
$\longleftrightarrow$

$p \to \neg q \to r$.

p	q	r	$\neg q$	$\neg q \to r$
T	T	T	F	T
T	T	F	F	T
T	F	T	T	T
T	F	F	(F)	(T)
F	T	T	F	T
F	T	F	F	T
F	F	T	T	T
F	F	F	T	T
				F

$p \to q$

. If p then q
. if p, q
. p implies q
. p is sufficient for q.
. q whenever p.

P-6

Ex #7
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Let p = Maria Learns Dis Math's
q = Maria finds a job.

If today is Friday then $2+3=5$.
       F   T