M260 2.2

P. Staley   Conditional Statements

Deductive reasoning procedes from a _____ to a _____.

If p then q is false only when _____.

Truth table for "If p then q."

p	q	p→q

"If p then q" is <u>vacuously true</u> when _____.

The order of operations for our logical operators is first_____,
then_____, and finally_____.

Truth table for $p \lor \sim q \to \sim p$:

Restate the following as an English statement:
$p \lor q \to r \equiv (p \to r) \land (q \to r)$

_____

_____ _.

Truth table showing $p \to q \equiv \sim p \lor q$

The negation of the conditional p →q is

~(p → q) ≡ _____.

For the conditional p → q, fill in the blanks and connect those which are equivalent:

Conditional p → q

Contrapositive _____.

Converse _____.

Inverse _____.

Give a specific conditional then write its contrapositive, converse, and inverse:

Conditional: _____.

_____

Contrapositive: _____.

_____ _____

Converse: _____.

_____

Inverse: _____.

_____

Rewrite the only if statement using equivalent if then statements:

John will break the world's record for the mile only if he runs the mile in under four minutes.

_____ _____

_____

_____

Rewrite the following as the conjunction of two if-then statements:
"This computer program is correct if, and only if, it produces the correct answer for all possible sets of input data."

_____

_____ ____

_____

Rewrite the following statement in the if-then form:
"Pia's birth on U.S. soil is a sufficient condition for her to be a U.S. citizen."

_____ _____

_____

Rewrite the following statement in the if-then form:
"George's attaiuning age 35 is a necessary condition for his being the president of the United States."

_____

_____