WARM - UP

2/20/2014

1) If "p" is true and "q" is false. What is the truth value for: ~(p∧~q), without creating a truth table?

2) Create a truth table for the following ~(~p∧~q)

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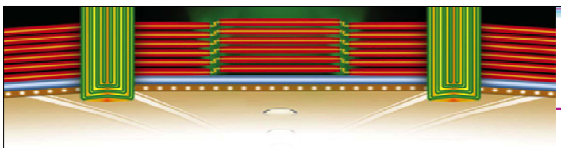

Section 3-3

The Conditional

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Conditionals

A **conditional** statement is a compound statement that uses the connective *if…then*.

The conditional is written with an arrow, so "if p then q" is symbolized

$$p \rightarrow q.$$

We read the above as "p implies q" or "if p then q." The statement p is the **antecedent (hypothesis)**, while q is the **consequent (conclusion)**.

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Truth Table for The Conditional, If *p*, then *q*.

If *p*, then *q* $p \rightarrow q$
p* implies *q

p	q	$p \rightarrow q$

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Truth Table for Biconditional, *p* if and only if *q*.

p* if and only if *q $p \longleftrightarrow q$
p* iff *q

p	q	$p \quad q$

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Example: Determining Whether a Conditional Is (T)rue or (F)alse

a) $T \rightarrow (4 < 2)$ b) $(8 = 1) \rightarrow F$

Solution
a) False
b) True

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Example: Finding Truth Values with a Truth Table

Find the truth value of $(\sim p \Rightarrow \sim q) \Rightarrow (\sim p \wedge q)$.

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Example: Finding Truth Values without creating a Truth Table

Given that p, q, and r are false. Find the truth value of $(p \Rightarrow \sim q) \Rightarrow (\sim r \Rightarrow q)$.

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p. 124
2-8 even
27-31 odd
42-52 even
56-64 even
67, 68

P. 126 69-74

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Tautology

A statement that is always true, no matter what the truth values of the components, is called a **tautology**. They may be checked by forming truth tables. Last column is all "T".

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