

TOPIC: TRUTH TABLES FOR IF-THEN STATEMENTS

Truth Tables for If-Then Statements

◆ In a truth table for $p \rightarrow q$, consider all possible combinations of truth values of p & q , & how they _____ $p \rightarrow q$.

New

Truth Tables for Conditional Statements

p : You do the homework. q : You pass the class. $p \rightarrow q$: If _____, then _____.

p	q	$p \rightarrow q$
T	T	
T	F	
F	T	
F	F	

Is $p \rightarrow q$ true when:

You ___ the homework and _____ the class.

You ___ the homework and _____ the class.

You _____ the homework and _____ the class.

You _____ the homework and _____ the class.

◆ A conditional statement is only **false** when the antecedent is _____ and the consequent is _____.

PRACTICE

A bus stop sign says "If you are late, you will miss the bus." Is that true when:

(A) You are late and you miss the bus.

[TRUE | FALSE]

(B) You are late and you catch the bus.

[TRUE | FALSE]

(C) You are on time and miss the bus

[TRUE | FALSE]

(D) You are on time and catch the bus.

[TRUE | FALSE]

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EXAMPLE

Create a truth table for $\sim p \rightarrow q$.

EXAMPLE

Create a truth table for $\sim q \rightarrow \sim p$. Is it true when p is true and q is false?

EXAMPLE

Create a truth table for $(p \wedge q) \rightarrow (p \vee q)$.

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EXAMPLE

Create a truth table for $(\sim p \rightarrow q) \vee (r \rightarrow p)$.

EXAMPLE

Represent the following statement in symbols and create a truth table for it: If it is cold and raining, then I will bring a jacket to school.