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Logic: Propositional Logic (Quickstudy: Academic)

WORLD'S #1 ACADEMIC OUTLINE
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LOGIC
THE BASIC PRINCIPLES OF PROPOSITIONAL & SYLLOGISTIC LOGIC - PLUS QUANTIFICATION THEORY

PROPOSITIONAL LOGIC

BASIC ELEMENTS

EQUIVALENT NAMES
Propositional Logic: Symbolic Logic
Book: Formal Logic: Symbolic Logic

SYMBOLS
• Sentence Variables: A, B, C, \dots
• Propositional Connectives: (Reading: Read)
• Operators: "and", "or", "not", "if...then", "if and only if"
• Quantifiers: "all", "some"

1. Negation
Read as "not", "is not", "is not true"
• Symbol: \neg
• Example: $\neg A$
• Truth Table: $A \quad \neg A$

2. Disjunction
Read as "or", "or else", "or else not"
• Symbol: \vee
• Example: $A \vee B$
• Truth Table: $A \quad B \quad A \vee B$

3. Conjunction
Read as "and", "and only", "and only not"
• Symbol: \wedge
• Example: $A \wedge B$
• Truth Table: $A \quad B \quad A \wedge B$

4. Implication
Read as "if...then", "if...then not", "if...then or", "if...then and", "if...then not and", "if...then not or"
• Symbol: \supset
• Example: $A \supset B$
• Truth Table: $A \quad B \quad A \supset B$

5. Biconditional
Read as "if and only if", "if and only if not", "if and only if not not"
• Symbol: \equiv
• Example: $A \equiv B$
• Truth Table: $A \quad B \quad A \equiv B$

6. Conditional Translation
"If...then" is $A \supset B$
"if and only if" is $A \equiv B$
"and only" is $A \wedge B$
"or else" is $A \vee B$
"not and" is $\neg(A \wedge B)$
"not or" is $\neg(A \vee B)$
"not if...then" is $\neg(A \supset B)$
"not if and only if" is $\neg(A \equiv B)$

7. Well-Formed Formulas (WFF)
• If A is a WFF, then $\neg A$ is a WFF.
• If A and B are WFFs, then $(A \wedge B)$, $(A \vee B)$, $(A \supset B)$, and $(A \equiv B)$ are WFFs.

TRUTH-TABLE METHOD

OUTLINE OF METHOD
An inference is correct if and only if its conclusion is a tautology in the final column of a truth-table. A correct inference is a tautology in the final column of a truth-table. If the purpose for generating a truth-table is to determine validity, then there is no need to complete the table or even to a single "F" in the final column of a truth-table. If the purpose is to determine validity, then there is no need to complete the table or even to a single "F" in the final column of a truth-table.

INFERENCES: PREMISES & CONCLUSION
An inference is correct if and only if its conclusion is a tautology in the final column of a truth-table. A correct inference is a tautology in the final column of a truth-table. If the purpose for generating a truth-table is to determine validity, then there is no need to complete the table or even to a single "F" in the final column of a truth-table.

TRUTH-TREE METHOD

OUTLINE OF METHOD
An inference is correct if and only if its conclusion is a tautology in the final column of a truth-table. A correct inference is a tautology in the final column of a truth-table. If the purpose for generating a truth-table is to determine validity, then there is no need to complete the table or even to a single "F" in the final column of a truth-table.

SHORTER TRUTH-TABLE METHOD

OUTLINE OF METHOD
An inference is correct if and only if its conclusion is a tautology in the final column of a truth-table. A correct inference is a tautology in the final column of a truth-table. If the purpose for generating a truth-table is to determine validity, then there is no need to complete the table or even to a single "F" in the final column of a truth-table.

Truth Function	A	B	$A \wedge B$	$A \vee B$	$A \supset B$	$A \equiv B$
True	T	T	T	T	T	T
	T	F	F	T	F	F
	F	T	F	T	T	F
	F	F	F	F	T	T

EXAMPLES
1. Valid Inference: $(A \wedge B) \supset A$
2. Invalid Inference: $(A \wedge B) \supset B$
3. Valid Inference: $(A \supset B) \wedge (B \supset C) \supset (A \supset C)$
4. Invalid Inference: $(A \supset B) \wedge (A \supset C) \supset (A \supset (B \wedge C))$



Synopsis

This 4-page study guide contains fundamental logic definitions and analysis which is specifically designed to aid science students.

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Customer Reviews

Read with an introduction to logic, this BarChart fits well with the student who wishes to 'think-straight,' a task which seems harder to do in this age when ideology and dogma clutter the open-ness of mind which is the requisite of reality-based progress. I carry this chart with me in my back-pack and refer to it often as a corrective to 'boners' and lapses in sound reason. Would that everyone who is patsy for demagogues could do the same! For the price and for the reward of clear address to problem-solving, this chart is certainly 'well worth the price.' --Vernon Lynn Stephens

I completed a Logic class about a year ago and having this Quickstudy is a good reference instead of digging into my notes or textbook .

I bought this for my son's first logic class at Alabama, and it really helped to define some of the basic principles. Good item !

Durable, may be punched to fit a ring binder, fit in standard binder cover pockets, and good for

skim-studying or memory refreshing on a topic.

cool... though i don't understand it yet... haha... plan on keeping it as a reference.

High quality and delivered on time.

Chart arrived in good conditon.

great.

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