Section 2.1: Inductive and Deductive Reasoning

Key Topics:
• Know the definitions of inductive and deductive reasoning.
• Be able to identify which of the two is being used in a given example.
• Be able to use inductive reasoning to make conjectures.
• Be able to use deductive reasoning to do a simple proof.

Section 2.2: Statements, Connectives and Quantifiers

Key Topics:
• Know the definition of a statement, and the difference between simple and compound statements.
• Be able to determine whether or not an English sentence is logical statement.
• Know the symbols for and meanings of the 5 basic logical operations.
• Be able to translate from English statements to logical symbols and vice versa.
• Know the difference between universal and existential quantifiers.
• Be able to negate logical statements, including those with quantifiers.

Sections 2.3 and 2.4: Truth Tables

Key Topics:
• Memorize the truth tables for the 5 logical connectives.
• Know the difference between "inclusive or" and "exclusive or"
• Know the number or rows in the truth table of a logical eqpression with given number of variables.
• Be able to build the truth table for a given logical expression.
• Know the definition of logical equivalence for two logical statements.
• Be able to use truth tables to determine whether or not two statements are logically equivalent.
• Know DeMorgan's Laws, and be able to use them to rewrite statements.
• Be able to identify the hypothesis and conclusion in a conditional statement.
• Given a conditional statement, be able to write the converse, inverse, and contrapositive of the statement, and know which of these are logically equivalent.

Section 2.5: Verifying Agruments

Key Topics:
• Know the components of a logical arguement: premises and a conclusion.
• Know how to translate an argument from English to symbolic form, and vice versa.
• Know the definition of a tautology.
• Know how to use a truth table to determine whether or not an argument is valid.
• Memorize the forms of the standard Valid arguments: the Law of Detachment, the Law of Contraposition, the Law of Syllogism, and Disjunctive Syllogism, and the Invalid arguments: the Fallacy of the Converse and the Fallacy of the Inverse.
• Be able to determine whether a given argument is valid by translating it into symbolic form and comparing it to the list of standard arguments.

Section 2.6: Using Euler Diagrams to Verify Syllogisms

Key Topics:
• Know how to contruct Euler digrams for a quantified logical statement.
• Know how to analyze the validity of syllogism by drawing Euler diagrams
• Know how to draw all possible Euler diagrams for a given syllogism.

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