

## Ma 086 ~ Mathematical Reasoning PreTest Study Guide

For this test, you will have to demonstrate proficiency in the following skills:

- Discerning the difference between conclusions reached by *Deductive Reasoning\** and *Inductive Reasoning\**
- Reasoning inductively (find the pattern in a set of numbers or figures)
- Solving problems that require understanding of the definition of Complementary and Supplementary angles (review) as well as Vertical Angles and sets of angles that form a complete circle
- Finding the perimeter or area of figures even when certain dimensions are left out and must be inferred
- Knowing how to apply the *Angle Addition Postulate\** as well as the *Segment Addition Postulate\**
- Knowing how to apply the *Reflexive\* Property of Equality* and of *Congruence* (same property—just one applies to numbers and the other to shapes), as well as the *Symmetric\** and *Transitive\** properties.
- Knowing how to apply the *Addition Property of Equality\** as well as the *Subtraction\**, *Multiplication\**, and *Division\** properties.
- Correctly interpreting the symbols  $\wedge$ ,  $\vee$ , and  $\neg$  in the context of mathematical reasoning and correctly setting up and using truth tables to determine whether a statement is true or false (Ex: If  $p$  is true and  $q$  is false, what is the value of  $\neg p \wedge q$ ?)
- Knowing the meaning and correct use of the following terms in the context of mathematical reasoning: *Converse\**, *Inverse\** and *Contrapositive\**; *Conjunction\** and *Disjunction\**; *Counterexample\**; and *Biconditional\**
- Correctly identifying the statements that can be put together to form a conclusion that follows the *Law of Syllogism\**
- Correctly identifying the statements that can be put together to form a conclusion that follows the *Law of Detachment\**
- Applying any of the above to a real-world situation

*\*You may look up and write down the definitions/theorems needed for these problems and have that paper with you when you take the test. A good source is right in CatchupMath. Click the Search symbol and type in the term or theorem you want to look up. This option is not available if you are taking a quiz.*

