#### **Introduction to Logical Reasoning** *Review Session for Exam #3*

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### The Skills You Have Practiced...

- 1. Translating categorical statements,
- 2. Diagramming categorical statements,
- 3. Analyzing categorical statements,
- 4. Assessing categorical syllogisms, and
- 5. Identifying fallacies.

## Categorical Statements

Be sure to practice how to take a categorical statement written in English and identify its categorical structure. You do this by identifying the subject (S) and predicate (P) of the statement, along with that statement's quantity (universal or particular) and quality (affirmative or negative).



#### All logic students are good critical thinkers.

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# Categorical Statements

The four standard forms of categorical statements:









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Generally, everyone seems to understand these general forms, though be on guard against mix-ups. Beyond that, do review some of the trickier nonstandard categorical statements. The ones involving *complements* (i.e., non-*S* and non-*P*) are especially important to remember.

## Examples





# Categorical Statement Analysis

Once you have diagrammed a categorical statement, then you can use the truth or falsity of this statement to determine whether you know anything about other categorical statements. We saw this with the square of opposition, along with the operations of conversion, obversion, and contraposition. Generally people often try to do too much in their heads. Just draw the Venn diagrams for everything. This will make it much easier on you to determine if the truth (or falsity) of one categorical statement tells you whether a second categorical statement is true, false, or undetermined. Suppose that the following statement is true: All logic students are good critical thinkers. Is the following statement true, false, or undetermined?

No non-good critical thinkers are non-logic students.

# Categorical Syllogisms

Remember that a categorical syllogism will always involve only three statements: two premises and a conclusion. The task is to identify the major (P), minor (S), and middle (M) terms, to diagram the premises accordingly, and to finally check whether the conclusion "appears" within that diagram.

#### Common Problems

The most common problems are (1) not shading in areas correctly and (2) not being sure when the dot goes on a line or not. Furthermore, it is often a good idea to draw the conclusion's Venn diagram *separately*, so you can check it against the premises more easily.



#### All logic students are hard workers, and so all logic students are good critical thinkers because some hard workers are good critical thinkers.

# Detecting Fallacies

When trying to figure out what fallacy an argument is making, it is essential to first identify its conclusion, and to then examine the sort of premise(s) to which the argument "appeals". Thinking carefully about this type of appeal should lay bare the fallacy.

#### Common Problems

Trying to remember all the different types of fallacies and too hastily jumping to a conclusion. So be sure to slow down and really go over the argument. Think very carefully about the way in which the argument links premise(s) to conclusion.

### Examples

# EGYPT AFTER MUBARAK: CIVIL WAR OR ISLAMIC REPUBLIC?

The President is lying because nearly everyone in the national poll said they believe he is lying.

Iran cannot prove that it is not making nuclear weapons, and so we must err on the side of caution and assume that it will soon pose a nuclear threat to the region if we do not act.

# Strong Finish Bonus

In order to encourage you to finish strong, I am making the following offer to each of you:

If you score 5.35 (A) or higher on the third exam, then I will bump your final course grade up to the next plus/minus interval.

#### Exam #3 Schedule

Because of the differing final schedules of Carnegie Mellon and Northwestern, the times for **Exam #3** must be split up as follows:

NU-Q Students: Sunday, April 24 from 11:00AM to 12:00PM (noon) in room 2163.

**CMU-Q Students:** Sunday, April 24 from 2:00PM to 3:00PM in classroom 1190.

You *must* attend the exam based on the university with which you are enrolled for this course.

Exam #3 will begin promptly, so show up and be seated by that time.

Be aware that you will be asked to put anything you bring (including cell phone) in the aisle. Plan accordingly.

You will be provided with two pencils, one pen, and plenty of scratch paper.