Introduction to Logical Reasoning (ategorical Statements

David Emmanuel Gray

Northwestern University in Qatar Carnegie Mellon University in Qatar

Question

Did you understand what you were supposed to do to solve these problems?



Question 2

Did you receive adequate feedback for solving these problems?



(ategorical Statements—Introduction to Logical Reasoning—David Emmanuel Gray

Question 3

The challenges of solving these problems.



Question 4

Your skills in solving these problems.



(ategorical Statements—Introduction to Logical Reasoning—David Emmanuel Gray

All men are mortal.

No lawyers are honest.

Some students are hard working.

Some professors are not lazy.

A category (or a class) is a collection or set of things.

A categorical statement makes a claim concerning the relationship between two categories of things, the subject term (S) and the predicate term (P).

The **subject** term names the main category the statement is about; the **predicate** term names the category the statement is using to say something about that subject.

A categorical proposition has the following logical form:

[Quantifier] S [copula] P.

When analyzing a categorical statement, there are two questions to ask about it:

1. Quality: Does the proposition *affirm* or *deny* some relationship between *S* and *P*?

2. Quantity: That is does it refer to *all* members of *S*, or only to *some* members of *S*?

Four standard forms of categorical statements are traditionally distinguished:

- 1. Universal Affirmative (\mathbf{A}) : All S is P.
- 2. Universal Negative (**E**): No S is P.
- 3. Particular Affirmative (**I**): Some S is P.
- 4. Particular Negative(\mathbf{O}): Some *S* is not *P*.

Juniversal Affirmative (A)

All men are mortal.

Subject (S): Men.

Predicate (P): Mortals.

So this says, All *S* is *P*.



Universal Affirmative (A)

The quality is *affirmative* because it affirms that *S*'s are also *P*'s. The quantity is *universal* because it is referring to all *S*'s.

». Universal Negative (E)

No lawyers are honest. Subject (S): Lawyers. Predicate (P): Honest people. So this says, No S is P.



». Universal Negative (E)

The quality is *negative* because it denies that *S*'s are also *P*'s. The quantity is *universal* because it is referring to all *S*'s.

Particular Affirmative (I)

Some students are hard working.

Subject (S): Students.

Predicate (*P*): Hard working people.

So this says, Some S is P.



».Particular Affirmative (■)

The quality is *affirmative* because it affirms that at least one *S* is also a *P*. The quantity is *particular* because it is only to referring to some of *S*.

Particular Negative (O)

Some professors are not lazy.

Subject (S): Professors.

Predicate (P): Lazy people.

So this says, Some *S* is not *P*.



Particular Negative (O)

The quality is *negative* because it denies that at least one *S* is a *P*. The quantity is *particular* because it is only to referring to some of *S*.

Just keep in mind, if you can draw a picture of the statement in a Venn diagram, then you can much more easily figure out its logical structure.







(ategorical Statements—Introduction to Logical Reasoning—David Emmanuel Gray



We will see what we can infer from the truth of a single categorical statement. This will give us more practice using Venn diagrams.