Three Acts of the Mind

- Mental Act:
  - Simple Apprehension
  - Judgment
  - Deductive Inference

- Verbal Expression:
  - Term
  - Proposition
  - Syllogism

What is deductive inference?
- Reasoning
- Validity
- Terms in a syllogism
- Proper logical form
- Principles of a syllogism
The definition of reasoning

Reasoning is the act by which the mind acquires new knowledge by means of what it already knows.

The two kinds of reasoning

- Deductive
- Inductive
The parts of an argument

\[
\begin{align*}
\text{Antecedent} & \quad \text{All men are mortal} \\
& \quad \text{Socrates is a man} \\
\text{Consequent} & \quad \text{Therefore, Socrates is mortal}
\end{align*}
\]

The definition of deductive inference

*Deductive inference* is the act by which the mind establishes a connection between the antecedent and the consequent.
The definition of syllogism

A syllogism is a group of propositions in orderly sequence, one of which (the consequent) is said to be necessarily inferred from the others (the antecedent).

The Essential Law of Argumentation

If the antecedent is true, the consequent must also be true.
The Essential Law of Argumentation: an Example

Antecedent: All men are mortal
Socrates is a man

Consequent: Therefore, Socrates is mortal

Two corollaries to the Essential Law of Argumentation

If the syllogism is valid and the consequent is false, then the antecedent (i.e. one or both of the premises may still be false).

In a valid syllogism with a true consequent, the antecedent is not necessarily true (i.e. one or both of the premises may still be false).
An example of the First Corollary

All men are sinners
My dog Spot is a man
Therefore, my dog Spot is a sinner

An example of the Second Corollary

All vegetables are philosophers
Socrates is a vegetable
Therefore, Socrates is a philosopher
Three terms in a syllogism

- **Major term**: the predicate of the conclusion
- **Minor term**: the subject of the conclusion
- **Middle term**: the term that appears in both premises, but not in the conclusion

Three terms in a syllogism: an example

- All men\(^\text{M}\) are mortal\(^\text{P}\)
- Socrates\(^\text{S}\) is a man\(^\text{M}\)
- Therefore, Socrates\(^\text{S}\) is mortal\(^\text{P}\)
The major and minor premises

- *Major premise*: the premise which contains the major term
- *Minor premise*: the premise that contains the minor term

**An example**

**Major Premise**
- All men\(^M\) are mortal\(^P\)

**Minor Premise**
- Socrates\(^S\) is a man\(^M\)

Therefore, Socrates\(^S\) is mortal\(^P\)
Proper formation of a syllogism

In a properly formed syllogism, the major premise comes first, then the minor premise and conclusion.

Principles of the Syllogism

- **The Principle of Reciprocal Identity:** Two terms that are identical with a third term are identical to each other.

- **The Principle of Reciprocal Non-Identity:** Two terms, one of which is not identical with a third term (and one of which is identical to a third), are non-identical to each other.
Example of the Principle of Reciprocal Identity

All men\(^M\) are mortal\(^P\)

Socrates\(^S\) is a man\(^M\)

Therefore, Socrates\(^S\) is mortal\(^P\)

Example of the Principle of Reciprocal Non-Identity

No men\(^M\) are angels\(^P\)

Socrates\(^S\) is a man\(^M\)

Therefore, Socrates\(^S\) is not an angel\(^P\)
The Dictum de Omni

What is affirmed universally of a certain term is affirmed of every term that comes under that term.

Example of the Dictum de Omni

All men\(^M\) are mortal\(^P\)
Socrates\(^S\) is a man\(^M\)
Therefore, Socrates\(^S\) is mortal\(^P\)
The Dictum de Nullo

What is denied universally of a certain term is denied of every term that comes under that term.

Example of the Dictum de Nullo

No man\textsuperscript{M} is God\textsuperscript{P}
Socrates\textsuperscript{S} is a man\textsuperscript{M}
Therefore, Socrates\textsuperscript{S} is not God\textsuperscript{P}