

Baronett, *Logic* (4th ed.)  
Chapter Guide

Chapter 6: Categorical Syllogisms

A. Standard-form Categorical Syllogisms

A **categorical syllogism** is an argument containing three categorical propositions: two premises and one conclusion.

A syllogism in **standard-form** looks like this:

Major premise (contains the major term and the middle term, in either order)

Minor premise (contains the minor term and the middle term, in either order)

Minor term, copula, major term

Note that the **major premise** contains the **major term**, which is the predicate of the conclusion.

The **minor premise** contains the **minor term**, which is the subject of the conclusion.

The premises also contain the **middle term**, which appears once in each premise but not in the conclusion.

B. Mood and Figure

When a syllogism is in standard-form, the middle term can appear in four possible ways, reflecting the **figure** of the syllogism:

MP	PM	MP	PM
<u>SM</u>	<u>SM</u>	<u>MS</u>	<u>MS</u>
SP	SP	SP	SP

*Figure 1   Figure 2   Figure 3   Figure 4*

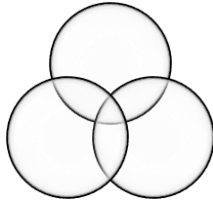
In addition, each proposition in a syllogism has a specific mood. For example, the premises and conclusion can all be **A**-propositions; in this case, its **mood** is **AAA**. Thus, **AAA-1** represents a syllogism in which the premises and conclusion are **A**-propositions and the middle term is in Figure 1:

All M are P.  
All S are M.  
All S are P.

Together, the mood and figure tell us everything we need to know to test a standard-form categorical syllogism for validity.

### C. Diagramming in the Modern Interpretation

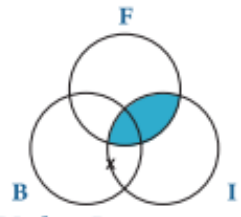
Whereas individual categorical propositions contain two classes of things, a categorical syllogism contains **three classes**. That means that we use **three circles** to create a Venn diagram for a categorical syllogism:



When you diagram a categorical syllogism, the goal is to see whether or not the premises support the conclusion in such a way as to yield a valid argument. Testing a categorical syllogism by way of a Venn diagram involves diagramming **only** the premises. Once you diagram the premises, you look to see if the conclusion is represented. If not, the argument is invalid.

Here are the steps for diagramming the premises of a categorical syllogism in the modern interpretation:

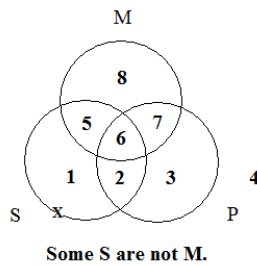
1. If one of the premises is a universal proposition, diagram it first. (If both premises are universal, it does not matter which one you diagram first.) This is because you want to eliminate any place where an  $x$ , which represents a particular proposition, cannot go.
2. Diagram the premise without regard to the third circle, since this is not relevant to the premise at issue.
3. Place an  $x$  only in an area where it is possible for there to be an object.
4. If it is not clear where an  $x$  is to be placed, it should straddle the line connecting two circles:



5. Never place an  $x$  on a portion of a line that does not relate two and only two circles.

Figure 5

Incorrect



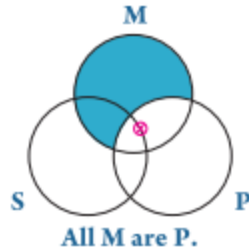
#### D. Rules and Fallacies in the Modern Interpretation

There are six rules a standard-form categorical syllogism must meet to be valid. If it fails to meet any one of these rules, it is invalid. Each rule has an accompanying fallacy that alerts us to the specific way in which a categorical syllogism can be invalid.

1. The middle term must be distributed at least once. (When the middle term is not distributed in either premise, the argument commits the *Fallacy of Undistributed Middle*.)
2. If a term is distributed in the conclusion, it must also be distributed in its corresponding premise. (If this rule is broken, the argument commits the *Fallacy of Illicit Major* or the *Fallacy of Illicit Minor*.)
3. A categorical syllogism cannot have two negative premises. (When this rule is broken, the argument commits the *Fallacy of Exclusive Premises*.)
4. A negative premise must have a negative conclusion. (When this rule is broken, the argument commits the *Fallacy of Affirmative Conclusion/Negative Premise*.)
5. A negative conclusion must have a negative premise.
6. Two universal premises cannot have a particular conclusion. (An argument that breaks this rule commits the *Existential Fallacy*.)

#### E. Diagramming in the Traditional Interpretation

The only difference between diagramming a categorical syllogism in the traditional interpretation and diagramming a categorical syllogism in the modern interpretation is that, since the former assumes existential import, any diagram of a universal proposition will also include the designation for an assumption of existence:



We can tell from the shading and encircled x that we have a universal affirmative (“All M are P”).

#### F. Rules and Fallacies Under the Traditional Interpretation

Only Rule 6 is different under the traditional interpretation, since universal propositions assert existential import. A syllogism can be **provisionally valid** with two universal premises and a particular conclusion; this means that we need to determine whether or not the term needed to make the conclusion true denotes actually existing objects. If it does, then the syllogism is valid; otherwise it is invalid.

#### G. Ordinary Language Arguments

Ordinary language arguments can be analyzed either by Venn diagram or the rules of the syllogism. First, however, several guidelines must be followed:

1. If there are more than three classes of objects (three terms) in the argument, the terms must be reduced.
2. Eliminate superfluous words to reveal the categorical structure, quantity, and quality of the argument.
3. Identify synonyms, and replace them with the terms appearing elsewhere in the argument.
4. Use conversion, obversion, and contraposition to begin the process of rewriting the argument in standard-form.
5. Eliminate prefixes as needed.

#### H. Enthymemes

We saw in Section G that some categorical arguments contain too many terms. There are also arguments, called **enthymemes**, which are incomplete. That is, the argument may contain only one premise and a conclusion, only two premises, and so forth. In these cases, the goal is to make the argument complete, so that it can be rewritten as necessary in standard-form.

#### I. Sorites

Still another type of incomplete argument (enthymeme) is the **sorites**. This is a chain of premises that lack intermediate conclusions, in which the goal is to establish a complete categorical syllogism that can be tested for validity. If any syllogism in the chain is invalid, the sorites is invalid.

The first step in the process is to rewrite the argument so that the premises appear one on top of another, with a line demarcating the chain of premises from the conclusion:

Premise<sup>1</sup>  
Premise<sup>2</sup>  
Premise<sup>3</sup>  
Conclusion

The first two premises are used to yield an intermediate conclusion, which then becomes a premise in the next sequence:

Premise<sup>1</sup>  
Premise<sup>2</sup>  
Intermediate Conclusion  
Premise<sup>3</sup>  
Conclusion