

# Table of Contents

## Note to the Teacher

## Further Study of Simple Syllogisms

Chapter 1: Figure in Syllogisms.....	1
Chapter 2: Mood in Syllogisms.....	9
Chapter 3: Reducing Syllogisms to the First Figure.....	19
Chapter 4: Indirect Reduction of Syllogisms.....	29

## Arguments in Ordinary Language

Chapter 5: Translating Ordinary Sentences into Logical Statements.....	37
Chapter 6: Enthymemes.....	47
<i>Case Study: Rene Descartes, "I think, therefore I am"</i>	

## Hypothetical Syllogisms

Chapter 7: Conditional Syllogisms.....	55
<i>Case Study: Plato, The Power of Love</i>	
Chapter 8: Disjunctive Syllogisms.....	69
<i>Case Study: C. S. Lewis, The Trilemma: the Deity of Christ</i>	
Chapter 9: Conjunctive Syllogisms.....	81
<i>Case Study: The Bible, "You cannot serve both God and mammon"</i>	

## Complex Syllogisms

Chapter 10: Polysyllogisms and Aristotelian Sorites.....	91
<i>Case Study: Seneca, "The Life of Virtue"</i>	
Chapter 11: Goclenian Sorites and Conditional Sorites.....	99
<i>Case Study: William Shakespeare, "Thou art in a parlous state, Shepherd"</i>	
Chapter 12: Epicheirema.....	109
<i>Case Study: St. Thomas Aquinas, The Cosmological Argument for the Existence of God</i>	
Chapter 13: The Dilemma.....	119
<i>Case Study: David Hume, The Problem of Evil</i>	

## The Logic of Relations

Chapter 14: The Oblique Syllogism.....	133
<i>Case Study: John Cassian, Is Mary the Mother of God?</i>	
Chapter 15: Review.....	139
<i>Selections from Lewis Carroll, William Shakespeare, St. Paul, and St. Thomas</i>	



“Logic is the anatomy of thought.”

—John Locke

# Figure in Syllogisms

\_\_\_\_\_ **Introduction.** Now that we have mastered the rules of validity for categorical syllogisms, we turn to figures and moods. Categorizing syllogisms according to figure and mood will deepen our understanding of the syllogism and give us a shortcut in determining validity.

The *figure* of the syllogism can be defined as follows:

*The figure of a syllogism is the disposition (or location) of terms in the premises.*

The figure of a syllogism is determined by the position of the middle term. There are four figures in all.

\_\_\_\_\_ **Review of Terms.** In order to properly understand syllogistic figures, we must remember the terms in a syllogism and the letters that designate them. We must remember that the letter *P* designates the major term (which is the predicate of the conclusion). The letter *S* designates the minor term (which is the subject of the conclusion); and the letter *M* designates the middle term (which is the term that appears in both premises, but not in the conclusion).

We must also remember that the premise that contains the major term (which we call the major premise) always comes first. Thus, a typical syllogism might look like this:

All M is P  
All S is M  
Therefore, all S is P

The location of *M* (the middle term) in each premise will tell us what figure the syllogism is in.

\_\_\_\_\_ **The First Figure.** In a syllogism of the *First Figure*, the middle term is the subject in the major premise and the predicate in the minor premise. We call this figure *sub-prae*, which is short for *subjectum-praedicatum*, which

**T**he figure of a syllogism is the disposition (or location) of terms in the premises.



is Latin for *subject-predicate*, the subject being the place of the middle term in the major premise and predicate being the place of the middle term in the minor premise.

An example of a *sub-prae* or *First Figure* syllogism would be:

All human beings<sup>M</sup> are mortal<sup>P</sup>  
 All boys<sup>S</sup> are human beings<sup>M</sup>  
 Therefore, all boys<sup>S</sup> are mortal<sup>P</sup>

**Sub-prae** \_\_\_\_\_



You can see that the middle term is the subject in the major premise and the predicate in the minor premise. Therefore, this syllogism is *sub-prae*.

**We must also remember that the major premise is always put first in a syllogism.**

\_\_\_\_\_ **The Second Figure.** In a syllogism of the *Second Figure*, the middle term is the predicate in the major premise and the predicate in the minor premise.

We term this figure *prae-prae*, which is short for *praedicatum-praedicatum*, which is Latin for *predicate-predicate*, the predicate being the place of the middle term in both premises.

An example of a *prae-prae* or *Second Figure* syllogism would be:

All men<sup>P</sup> are mortal<sup>M</sup>  
 No angels<sup>S</sup> are mortal<sup>M</sup>  
 Therefore, no angels<sup>S</sup> are men<sup>P</sup>

**Prae-prae** \_\_\_\_\_



You can see that the middle term is the predicate in both the major and minor premises of this argument. Therefore, this syllogism is *prae-prae*.

\_\_\_\_\_ **The Third Figure.** In a syllogism of the *Third Figure*, the middle term is the subject in the major premise and also the subject in the minor premise.

We term this figure *sub-sub*, which is short for *subjectum-subjectum*, the subject being the place of the middle term in both premises.

An example of a *sub-sub* or *Third Figure* syllogism would be:

All human beings<sup>M</sup> are mortal<sup>P</sup>  
 Some human beings<sup>M</sup> are boys<sup>S</sup>  
 Therefore, some boys<sup>S</sup> are mortal<sup>P</sup>

**Sub-sub** \_\_\_\_\_



Here, the middle term is the subject in both the major and minor premises of the argument. Therefore, this syllogism is *sub-sub*.



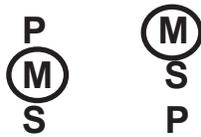
**The Fourth Figure (Indirect First).** There is also what some have called a *Fourth Figure*. However, Fourth Figure syllogisms are actually just another form of the First. They are what we will call the *Indirect First*.

In a *Fourth Figure* syllogism, the middle term is the predicate in the major premise and the subject in the minor premise. In other words, a *prae-sub*. We say it is not a figure in and of itself but only a form of the First because the only difference between it and the First is in the grammar of the syllogism; the arrangement of the words only makes it look different, but logically it is the same.

An example of the *Fourth Figure* would be:

All Romans<sup>P</sup> are men<sup>M</sup>  
All men<sup>M</sup> are mortal<sup>S</sup>  
Therefore, some mortals<sup>S</sup> are Romans<sup>P</sup>

**Prae-sub**



As you can see, the middle term (*men*) is the predicate in the major premise and the subject in the minor premise.

This Fourth Figure is sometimes called the *Galenic* figure because it was Claudius Galen, who lived from A.D. 131

to about A.D. 200, who first considered that it was a separate figure. Galen was considered the chief authority on medicine for over a thousand years. But while Galen and many modern logicians think the Fourth Figure is distinct from the First, Aristotle and all the rest of the ancient logicians thought it was only another form of the First.

We will side with the ancients and concentrate primarily on the first three figures. However, we do encounter syllogisms in this form, so we need to be prepared to handle them.

**How to Remember the Figures.** There are many Latin sayings that logicians in the Middle Ages invented to help us remember certain things in logic. The Latin saying that helps us remember figures goes like this:

***Sub-prae prima, bis prae secunda, tertia sub bis.***

It means, *sub-prae first, prae twice second, sub twice third*. In other words, *sub-prae* is the First Figure, *prae-prae* (*prae twice*) is the Second, and *sub-sub* (*sub twice*) is the Third. By memorizing this saying, you will be able to remember where the middle term is in each of the three figures.

**While Galen and many modern logicians think the Fourth Figure is distinct from the First, Aristotle and all the rest of the ancient logicians thought it was only another form of the First.**



**We identify the figures according to the location of the middle term.**

\_\_\_\_\_ **Summary.** This chapter concerns the *figure* of syllogisms. The figure of a syllogism is defined as *the disposition of terms in the premises*. The terms in a syllogism can be arranged in one of three (some would say four) different ways. We identify the figures according to the location of the middle term.

A syllogism in which the middle term is the subject in the major premise and the predicate in the minor premise is called a *sub-prae* or *First Figure* syllogism. A syllogism in which the middle term is the predicate in the major premise and the predicate in the minor premise is called a *prae-prae* or *Second Figure* syllogism. A syllogism in which the middle term is the subject in the major premise and the subject in the minor premise is called a *sub-sub* or *Third Figure* syllogism.

There is also an *Indirect First Figure*, which some logicians have considered to be another figure altogether—a *Fourth Figure* syllogism. Its middle term appears in the predicate of the major premise and in the subject of the minor premise, making it a *prae-sub*. But it only looks like a different figure and is really just a form of the First.



\_\_\_\_\_ **Exercises for Day 1.** Peruse entire chapter. Then read the introductory section at the very beginning of Chapter I. Read this section carefully and try to understand it as best you can.

1. What are we discussing in this chapter?
2. Explain what the word *figure* means as used in this chapter.
3. How many figures are there?
4. What is *disposition*?

**Read section titled, “The First Figure.” Read it carefully.**

5. What is the Latin term for a syllogism in the First Figure?
6. How do we know a syllogism is in the First Figure?
7. Fill in the following chart:

**First Figure (sub-prae)**

M is the \_\_\_\_\_ (subject or predicate) in the *major* premise

M is the \_\_\_\_\_ (subject or predicate) in the *minor* premise

8. Show, using the symbols *S*, *P*, and *M*, how a *sub-prae* syllogism is constructed.
9. Construct a *sub-prae* syllogism using different terms than the ones in the text.

\_\_\_\_\_ **Exercises for Day 2.** Read section titled, “The Second Figure.” Read the entire section carefully.

10. What is the Latin term for a syllogism in the Second Figure?
11. How do we know a syllogism is in the Second Figure?
12. Fill in the following chart:

**Second Figure (prae-prae)**

M is the \_\_\_\_\_ in the *major* premise

M is the \_\_\_\_\_ in the *minor* premise

13. Show, using the symbols *S*, *P*, and *M*, how a *prae-prae* syllogism is constructed.
14. Construct a *prae-prae* syllogism using different terms than the ones in the text.

## Daily Exercises for Chapter 1

---



Read section titled, “The Third Figure.” Read it carefully.

15. What is the Latin term for a syllogism in the Third Figure?
16. How do we know a syllogism is in the Third Figure?
17. Fill in the following chart:

**Third Figure (sub-sub)**

M is the \_\_\_\_\_ in the *major* premise

M is the \_\_\_\_\_ in the *minor* premise

18. Show, using the symbols *S*, *P*, and *M*, how a *sub-sub* syllogism is constructed.
19. Construct a *sub-sub* syllogism using different terms than the ones in the text.

\_\_\_\_\_ **Exercises for Day 3.** Read section titled, “The Fourth Figure (Indirect First).” Read the entire section carefully.

20. What is the Latin term for a syllogism in the Fourth Figure?
21. How do we know a syllogism is in the Fourth Figure?
22. Fill in the following chart:

**Fourth Figure-Indirect First (prae-sub)**

M is the \_\_\_\_\_ in the *major* premise

M is the \_\_\_\_\_ in the *minor* premise

23. Show, using the symbols *S*, *P*, and *M*, how a *prae-sub* syllogism is constructed.
24. Construct a *prae-sub* syllogism using different terms than the ones in the text.
25. Fourth Figure syllogisms are just another form of what?
26. What is the Fourth Figure sometimes called?

Read section titled, “How to Remember the Figures.”

27. What is the Latin saying invented to help remember the figures?
28. What does this saying mean?



Exercises for Day 4.

29. Identify the terms, identify the position of the middle term, and determine the figure of each syllogism.

No liberals are conservatives  
Allen is a conservative  
Therefore, Allen is not a liberal

M= \_\_\_\_\_ (*sub* or *prae*)  
M= \_\_\_\_\_ (*sub* or *prae*)

**S:** \_\_\_\_\_  
**P:** \_\_\_\_\_  
**M:** \_\_\_\_\_

■ First ■ Second ■ Third ■ Fourth

All Democrats are big spenders  
President Clinton is a Democrat  
Therefore, President Clinton is a big spender

M= \_\_\_\_\_  
M= \_\_\_\_\_

**S:** \_\_\_\_\_  
**P:** \_\_\_\_\_  
**M:** \_\_\_\_\_

■ First ■ Second ■ Third ■ Fourth

Some men are physicists  
All physicists are brilliant  
Therefore, some brilliant things are men

M= \_\_\_\_\_  
M= \_\_\_\_\_

**S:** \_\_\_\_\_  
**P:** \_\_\_\_\_  
**M:** \_\_\_\_\_

■ First ■ Second ■ Third ■ Fourth

No beggars can be choosers  
That man is a beggar  
Therefore, that man cannot be a chooser

M= \_\_\_\_\_  
M= \_\_\_\_\_

**S:** \_\_\_\_\_  
**P:** \_\_\_\_\_  
**M:** \_\_\_\_\_

■ First ■ Second ■ Third ■ Fourth

No men are gods  
All men are mortal  
Therefore, some mortals are not gods

M= \_\_\_\_\_  
M= \_\_\_\_\_

**S:** \_\_\_\_\_  
**P:** \_\_\_\_\_  
**M:** \_\_\_\_\_

■ First ■ Second ■ Third ■ Fourth

