

Syllogistic Logic and Venn Diagrams

Syllogisms are slightly more complex than single premise arguments. They can be defined as follows:

Standard Form Categorical Syllogism: any formal argument consisting of exactly three categorical propositions (two premises and one conclusion) containing exactly three categorical terms, each of which is used exactly twice in exactly two categorical propositions.

They are arguments with two premises, where the first premise is called the *major* premise, the second premise is called the *minor* premise, and both are followed by the conclusion.

Major premise: is the premise that contains the major term.

Major term: the predicate of the conclusion

Middle term: the term that occurs once in each premise but does not occur in the conclusion.

Minor premise: the premise that contains the minor term

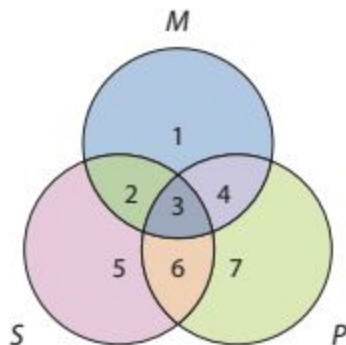
Minor term: the subject of the conclusion

Example:

1. All mammals are animals. 2. All animals are mortal. ----- 3. All mammals are mortal.	Major term: Mortal Minor term: Mammals Middle term: Animals
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Note: We will *not* be looking at either the mood, nor the figure, of syllogistic arguments.

Given that we are now dealing with two-premise arguments, the associated Venn diagrams for the arguments is more complicated.



The following table explains the different extensions represented by the different sections:

Region Number	S - minor term	P - major term	M - middle term
1	No	No	Yes
2	Yes	No	Yes
3	Yes	Yes	Yes
4	No	Yes	Yes
5	Yes	No	No
6	Yes	Yes	No
7	No	Yes	No

The actual mechanics of filling three-circle Venn diagrams is nearly identical to the filling of the two-circle diagrams we looked at last week. One thing to remember is when filling in the three-circled diagrams, always start with the universal premise(s). Then, if there are any, fill in the particular premise. Doing this helps limit where Xs can go for the particular.

Sadly, the easiest way to both understand the process of creating three-circle Venn diagrams and to explain it is to do a lot of them. The following website has some animations to help visualize the three-circle diagram being composed of the diagrams for each premise:

http://www.butte.edu/resources/interim/wmwu/iLogic/2.5/iLogic_2_5.html