Rule 2. Distribute the middle term in at least one premise.

All priests follow scientology.
All Logicians follow scientology.
Therefore, all Logicians are priests.
Problem?

Recall distributed vs. undistributed term with respect to a proposition?
A term in a proposition will be distributed.... if the proposition refers to all members of the class designated by that term. Otherwise the term is undistributed.

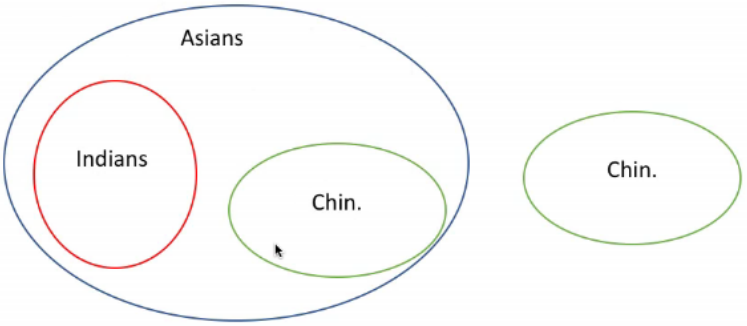
Is priests a distributed term? Look at the proposition where the term occurs.
Is Logicians a distributed term?

The fallacy of undistributed middle = Fallacy committed when the middle term is not distributed in any of the premises.

Rule 3. Any term that is distributed in conclusion, must be distributed in premises.

All Indians are Asians.
No Chinese are Indians.
Therefore, no Chinese are Asians.

Two interpretations:



It may seem obvious to you. But it gets quickly confusing when you replace some of the terms in:

All dogs are mammals.
No cats are dogs.
Therefore, no cats are mammals.

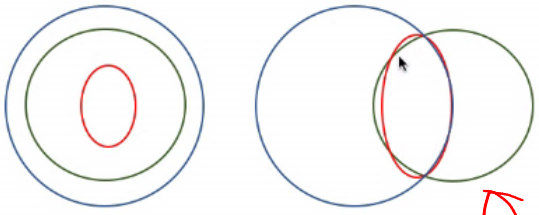
with:

All puppies are dogs.
No cats are puppies.
Therefore, no cats are dogs.

Valid? Don't use common sense!!
'All puppies are dogs' is given. But what you are sneaking in is the hidden premise that 'All dogs are/were also puppies'. But this information is not given anywhere in the argument! You assume it to be true from common sense. Don't do that. This argument is invalid!

This was about major term. Let's look at the minor term.

All Indians are Asians.
All Indians are humans.
Therefore, all humans are Asians.



This is a faulty conclusion. It does not have to be true all the time.

Three interpretations possible.

1. Superset Asians, subset humans whose subset Indians.
2. Superset Humans, subset Asians, whose subset Indians.
3. Indians is the subset of both Asians and Humans (shown in figure)

Fallacy of illicit process, term dist in Conclusion but not in any premise

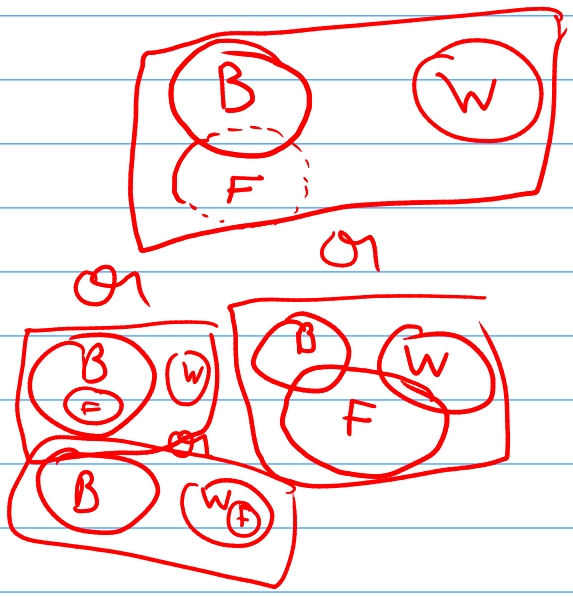
Sub Categories illicit major illicit minor

Rule 4. Avoid two negative premises.

No whales are BITSIANS.
Some BITSIANS are not females.
Therefore, some females are not whales.

True?

But is it valid? Draw a Venn diagram.



No whales are BITSIANs
No BITSIANS are cats.
Therefore, some cats are whales? No cats are whales? Some cats are not whales?

The premises provide no information about the relationship between the cats and whales. Therefore, you cannot conclude anything about the relationship between the cats and whales.

So, what's going on?

Two negative premises cannot provide a valid conclusion.

This is because negative premises only deny the inclusion of major and middle AND inclusion of minor and middle.
They do not state anything about the inclusion of major and minor.

X is not Y. X is not Z. We cannot say whether Y is/isn't Z.

Rule 4. Avoid two negative premises.

Fallacy of exclusive premises = The fallacy committed when drawing a conclusion on the basis of two negative premises.

Rule 5. If any of the premises is negative, the conclusion cannot be affirmative.

No BITSIANs are politicians
Some girls are BITSIANs
Therefore, some girls are politicians.

Problem?

Affirmative conclusion says that some or all of S is in P.

This is only possible when you have established that all or some of S is in middle and that all or some of middle is in P.

This requires making affirmative propositions. Negative propositions cannot establish this relationship.

This is called the fallacy of affirmative conclusion from a negative premise.

Rule 6. From two universal premises, no particular conclusion can be drawn.

Equine is the family of horses (like feline is the family of cats and canine is the family of dogs).

All equines are horses.
All unicorns are equines.
Therefore, some unicorn is horse.

Valid or not?

no existential import

The syllogism is invalid because of existential fallacy = Fallacy committed when drawing a particular conclusion from two universal premises.

All-None type statements have no existential import.
So they can be true, and yet do not have to be about things that exist.
All kookoo are baba.
Is that a true statement?
Yes. Because you cannot find any kookoo or baba. Because they do not exist.
So, you cannot deny the statement.

So, all-none type statements are always true in Boolean interpretation.