

Syllogism Rules and Deduction: Summary

(For Predicates **G**, **H**, **I**, and Name **a**)

A. Basic Deductive Rules

(1A) Switching (S): Universal Sentences

All G are H
All non-H are non-G

All non-G are non-H
All H are G

All G are non-H
All H are non-G

All non-G are H
All non-H are G

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(1B) Switching (S): Existential Sentences

Some G are H
Some H are G

(2) Linking (L)

<u>All G are H</u> <u>All H are I</u>	\Leftarrow Linking Premise \Rightarrow	<u>Some G are H</u> <u>All H are I</u>
All G are I		Some G are I

Linking must obey the following two *restrictions*:

- ✓ The **linking premise** must be **universal**.
- ✓ The **conclusion** must have the **same quantity** as **the other** (non-linking) **premise**. (If the other premise is universal, the conclusion must universal; if the other premise is existential, the conclusion must be existential.)

(3) Existence (E)

Some G are H

Some G are G

B. Indirect Deduction**Indirect Deduction**

To deduce a conclusion indirectly, assume the opposite (the contradictory) of that conclusion, and deduce a contradiction (a sentence of the form “Some G are non-G”).

(Premises)

Opposite of Conclusion

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Some G are non-G

Get: Conclusion (ID)

AID

Conclusion

Indirect Deductions only require **limited** forms of the **deductive rules**.

Limited Switching (LimS)

$$\frac{\text{All G are H}}{\text{All non-H are non-G}}$$

$$\frac{\text{All non-G are non-H}}{\text{All H are G}}$$

$$\frac{\text{All G are non-H}}{\text{All H are non-G}}$$

$$\frac{\text{All non-G are H}}{\text{All non-H are G}}$$

Limited Linking (LimL)

$$\text{Linking Premise} \Rightarrow \frac{\begin{array}{l} \text{Some G are H} \\ \text{All H are I} \end{array}}{\text{Some G are I}}$$

C. One-Term Categorical Sentences: Tautology and Contradiction

One Term Categorical Form:

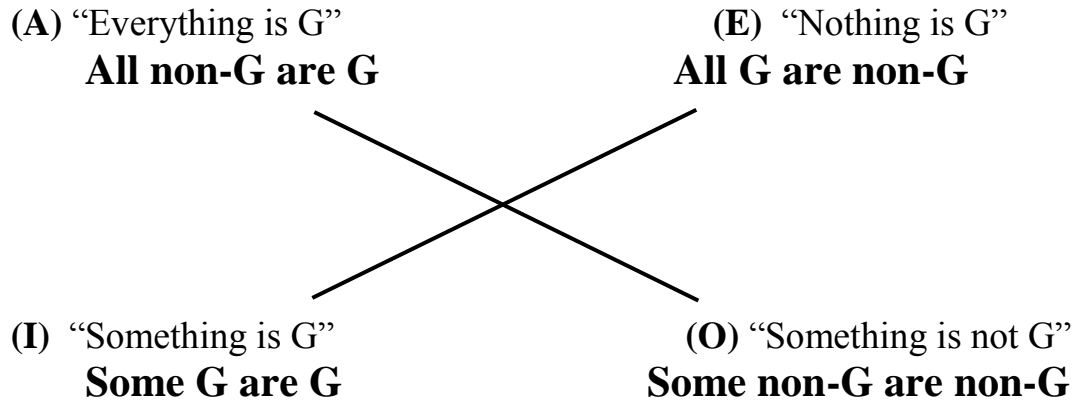
To claim that **everything is G**: All non-G are G

To claim that **nothing is G**: All G are non-G

To claim that **something is G**: Some G are G

To claim that **something is non-G**: Some non-G are non-G

One-Term Square of Opposition

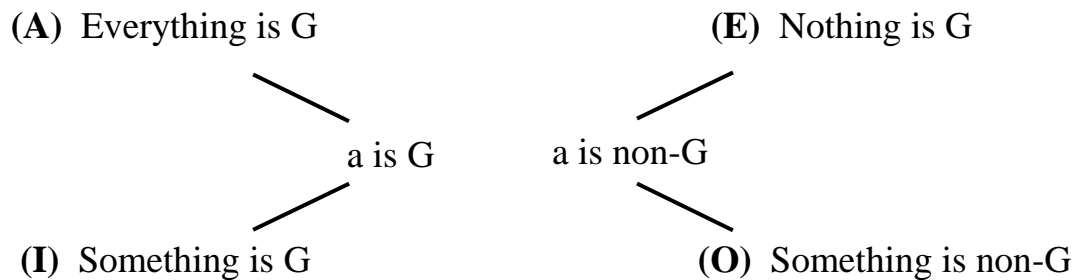


Tautology: any sentence of the form "All G are G".

Contradiction: any sentence of the form "Some G are non-G"

D. Categorical Sentences with Names.

Hourglass of Opposition



(So in Indirect Deduction, the opposite of "a is G" is "a is non-G" (and vice versa).

Name Linking (NL)

$$\frac{\begin{array}{c} a \text{ is } G \\ a \text{ is } H \end{array}}{\text{Some } G \text{ are } H}$$
Derived Rules:**Existential Intro (Some Intro)**

$$\frac{a \text{ is } G}{\text{Some } G \text{ are } G}$$
Universal Elim (All Elim)

$$\frac{\text{All non-}G \text{ are } G}{a \text{ is } G}$$
Extended Linking (L)

$$\frac{\begin{array}{c} a \text{ is } G \\ \text{All } G \text{ are } H \end{array}}{a \text{ is } H}$$