

Syllogism Master Cheat Sheet

A **Syllogism** is a logical argument that applies deductive reasoning to arrive at a conclusion based on two or more propositions that are asserted or assumed to be true.

1. Standard Categorical Propositions

Type	Name	Statement Form	Venn Diagram	Meaning
Affirmative	All A are B	$A \subseteq B$		**A** Universal
Negative	No A are B	$A \cap B = \emptyset$		**E** Universal
Affirmative	Some A are B	$A \cap B \neq \emptyset$		**I** Particular
Negative	Some A are not B	$A \setminus B \neq \emptyset$		**O** Particular

2. Conversion Rules

Conversion means interchanging the Subject and Predicate terms without changing the quality or truth value.

* ****A**** $\rightarrow$ ****I**** (All A are $B \Rightarrow$ Some B are A) *
 * ****E**** $\rightarrow$ ****E**** (No A are $B \Rightarrow$ No B are A) * ****I****
 $\rightarrow$ ****I**** (Some A are $B \Rightarrow$ Some B are A) * ****O****
 $\rightarrow$ *No valid conversion*

3. Standard Rule of Thumb (150-100 Method)

Assign values to terms based on proposition type and affirmative/negative nature:

* ****Universal Affirmative (A):**** Subject = 100, Predicate = 50
 * ****Universal Negative (E):**** Subject = 100, Predicate = 100
 * ****Particular Affirmative (I):**** Subject = 50, Predicate = 50
 * ****Particular Negative (O):**** Subject = 50, Predicate = 100

Income and Expenditure Rules: 1. ****Positive Statement (+):**** Predicate takes value 50. 2. ****Negative Statement (-):**** Predicate takes value 100. 3. ****Universal (100):**** Subject takes value 100. 4. ****Particular (50):**** Subject takes value 50.

> **Golden Rule:** If income is 50, expenditure cannot be 100. Positive statements give positive conclusions; negative statements give negative conclusions.

4. Possibility Cases

* ****Direct rule:**** If a certain relation is definitely true, its possibility is ****False****. * If a certain relation has no direct information (doubtful), its possibility is ****True****. * ****"All A are B " is a possibility"** $\Rightarrow$ Valid if A and B do not explicitly contradict.

5. Either-Or ($\vee$) Conditions

An Either-Or case is triggered when both conclusions are individually wrong (doubtful), but together they form a complementary pair.

Valid Complementary Pairs: 1. ****A + O**** (All + Some Not) 2. ****I + E**** (Some + No) 3. ****I + O**** (Some + Some Not)

> **Note:** ****A + E**** ("All + No") does *not* form a valid Either-Or pair because both can be false simultaneously if terms overlap partially.