

Introduction to Logic

Exercises: Categorical Propositions Answers

1 The Square of Opposition

Directions: Assume that the given proposition is *true*, perform the required logical operation, and state the resultant proposition. Then *state the resultant truth value*.

Example: What is the contradictory of "No mass cults are art forms"?

Answer: Some mass cults are art forms. *False*.

1. What is the contrary of "**All nonarctic flora are bromeliads**"?
Answer: No nonarctic flora are bromeliads. *False*.
2. What is the superaltern of "**Some dragsters are not fast cars**"?
Answer: No dragsters are fast cars. *Undetermined*.
3. What is the superaltern of "**Some Rothco paintings are meditative works**"?
Answer: All Rothco paintings are meditative works. *Undetermined*
4. What is the subcontrary of "**Some Wall St. gnomes are not accurate forecasters**"?
Answer: Some Wall St. gnomes are accurate forecasters. *Undetermined*.
5. What is the contrary of "**All logicians are really boring people**"?
Answer: No logicians are really boring people. *False*.
6. What is the contradictory of "**All Malay languages are polynesian derivatives**"?
Answer: Some Malay languages are not polynesian derivatives. *False*.
7. What is the superaltern of "**Some laser shows are mass cults**"?
Answer: All laser shows are mass cults. *Undetermined*
8. What is contradictory of "**Some presidents are smilers**"?
Answer: No presidents are smilers. *False*.

9. What is the subcontrary of "**Some meteor showers are not Geminids**"?

Answer: Some meteor showers are Geminids. Undetermined.

10. What is the subaltern of "**All crises are learning experiences**"?

Answer: Some crises are learning experiences. True.

2 Further Immediate Inferences

Directions: Assume that the given proposition is *true*, perform the required logical operation, and state the resultant proposition. Then *state the resultant truth value*.

Example: What is the converse of "All mass cults are art forms"?

Answer: All art forms are mass cults. *Undetermined*.

1. What is the converse of "**No arctic flora are bromeliads**"?

Answer: No bromeliads are arctic flora. True.

2. What is the obverse of "**Some dragsters are fast cars**"?

Answer: Some dragsters are not non-(fast cars). True.

3. What is the contrapositive of "**Some Rothco paintings are meditative works**"?

Answer: Some non-(meditative works) are non-(Rothco paintings). Undetermined.

4. What is the converse of "**Some Wall St. gnomes are accurate forecasters**"?

Answer: Some accurate forecasters are Wall St. gnomes. True.

5. What is the contrapositive of "**All logicians are really boring people**"?

Answer: All non-(really boring people) are non-logicians. True.

6. What is the obverse of "**No rap is hard rock**"?

Answer: All rap is non-(hard rock). True.

7. What is the converse of "**Some parliments are not two-chambered groups**"?

Answer: Some two-chambered groups are not parliments. Undetermined.

8. What is the obverse of "**Some orchids are *Cattleyas***"?

Answer: Some orchids are not non-*Cattleyas*. True.

9. What is the contrapositive of "**Some soft drinks are not nutritional goods**"?

Answer: Some non-(nutritional goods) are not non-(soft drinks). True.

10. What is the converse of "**Some tillers are TroyBilts**"?

Answer: Some TroyBilts are tillers. True.

3 Successive Immediate Inferences

1. *Directions:* Given the truth of "All splitscreens are practicums" what can be validly inferred about the truth or falsity of "Some non-practicums are splitscreens"? (Cite the proper logical relation and appropriate truth value for each successive inference. You may abbreviate by using "S" and "P" for "splitscreens" and "practicums.")

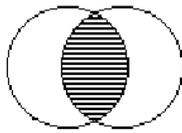
Statement or Proposition	Logical Relation	Truth Value
1. All splitscreens are practicums	given	true
No splitscreens are non-practicums	obversion	true
No non-practicums are splitscreens.	conversion	true
Some non-practicums are splitscreens.	contradiction	false

2. *Directions:* Given the truth of "**All splitscreens are practicums**" what can be validly inferred about the truth or falsity of "**Some non-practicums are not nonsplitscreens**"? (Cite the proper logical relation and appropriate truth value for each successive inference. You may abbreviate by using "S" and "P" for "splitscreens" and "practicums.")

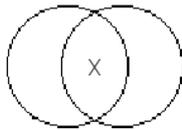
Statement or Proposition	Logical Relation	Truth Value
1. All splitscreens are practicums	given	true
All non-practicums are non-splitscreens	contraposition	true
Some nonpracticums are not nonsplitscreens	contradiction	false

4 Venn Diagrams

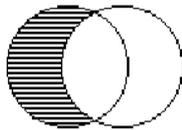
Directions: Diagram the following statements using the conventional symbols of Venn Diagrams.



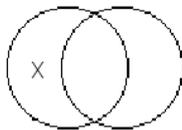
1. No behaviorists are existential psychoanalysts.



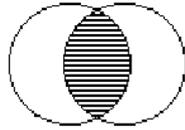
2. Some logicians are mathematicians.



3. All musicians are good programmers.



4. Some orchids are not arctic flora.



5. No soccer players are tennis fans.

5 Optional

Directions: Translate the relevant statements in the following passage to standard-form statements. Prove whether or not the inference is justified by constructing an argument using successive immediate inferences. (5 points)

1. Translate the following statements into standard form: Any strain imposed on the mind will be reflected in the eyes, and similarly anything which rests the mind will benefit them.¹

All mental strains are non-(benefits to the eyes).
All non-(mental strains) are benefits to the eyes.

2. Next, evaluate Price's Reasoning by the technique of successive immediate inferences.

Statement or Proposition	Logical Relation	Truth Value
All mental strains are non-(benefits to the eyes).	given	true
All benefits to the eyes are non-(mental strains).	contraposition	true
All non-(mental strains) are benefits to the eyes.	conversion	undetermined

Be sure you have given the resultant truth values.

Name _____

¹C.S. Price, *The Improvement of Sight* (Cleveland: Sherwood Press, 1946), vi.