

Exercises for Reading 6

Section 1 – Exercises Review the entire reading. Then read the introductory section at the beginning.

1. What are we discussing in this reading?
2. Fill out the following chart showing the three aspects of logic (review).

<u>Mental Act</u>	<u>Verbal Expression</u>
Simple apprehension	Term
Judgment	Proposition
Deductive Inference	Syllogism

Read “Reasoning.”

3. What is the definition of *reasoning*?
Reasoning is the act by which the mind acquires new knowledge by means of what it already knows.
4. What are the two kinds of reasoning?
Deduction
Induction
5. Which of these (the two kinds of reasoning in question 4) are we talking about in these readings?
Deduction
6. Give a brief explanation of the three steps involved in the reasoning process.
Perceive the first premise as being true
Perceive the second premise as being true. (Antecedent)
Deductive inference (conclude)
7. What are the first two steps together called?
Antecedent
8. What is the last step in the reasoning process called?
Consequent or Conclusion
9. Why is the conclusion of a syllogism called a conclusion?
Our mind stops.

What is the definition of **deductive inference**?

Deductive inference is the act by which the mind establishes a connection between the antecedent and the consequent.

10.

What is the definition of **syllogism**?

A syllogism is a group of propositions in orderly sequence, one of which (the consequent) is said to be necessarily inferred from the others (the antecedent).

11.

12. Identify the antecedents and the consequents in the following syllogism (Keep in mind that every premise is considered an antecedent and that the consequent is the same as the conclusion):

For each, the first two sentences are the antecedent, and the third sentence is the consequent (conclusion).

All men are mortal
Socrates is a man
Therefore, Socrates is mortal

No men are gods.
Socrates is a man.
Therefore, Socrates is not a god.

C1 All birds are able to fly.
The ostrich is a bird.
Therefore, the ostrich is able to fly.

All kings are men.
Peter is a king.
Therefore, Peter is a man.

C2 All fish can live out of water.
A dog is a fish.
Therefore, a dog can live out of water.

C1 All men are sinners.
My dog Spot is a man.
Therefore, my dog Spot is a sinner.

C1 No ducks are birds.
A mallard is a duck.
Therefore, a mallard is not a bird.

C2All reptiles can fly.
A horse is a reptile.
Therefore, a horse can fly.

Read "Validity."

13. What is the Essential Law of Argumentation?

If the antecedent (premises or reasons) is true, the consequent (conclusion) must also be true.

14. What is the first corollary to the Essential Law of Argumentation?

If the syllogism is valid and the consequent is false, then the antecedent (i.e. one or both of the two premises) must be false.

15. What is the second corollary to the Essential Law of Argumentation?

In a valid syllogism with a true consequent, the antecedent is not necessarily true (i.e. one or both of the premises may still be false).

16. Go back to the arguments listed in Question 12 and write **C1** next to the arguments which are examples of Corollary 1, and **C2** next to those that are examples of Corollary 2

Read "Terms in a Syllogism"

17. What are the three terms in a syllogism?

major, minor, middle

18. Explain how to distinguish each of the following: Major term, Minor term, Middle term.

Major term: The major term is the predicate of the conclusion.

Minor term: The minor term is the subject of the conclusion.

Middle term: The middle term is the term that appears in both premises, but not in the conclusion.

19. In a syllogism, which premise is the major premise?

The major premise is the premise which contains the major term.

20. In a syllogism, which premise is the minor premise?

The minor premise is the premise which contains the minor term.

21. In the following syllogisms, indicate which is the major premise and the minor premise by writing major or minor next to the appropriate premise. Indicate also the minor, major, and middle terms by writing them out and writing an S next to the minor term, a P next to the major term and an M next to the middle term.

All men^M are mortal^P. Major premise

Socrates^S is a man^M. **Minor premise**
Therefore, Socrates^S is mortal^P.

All logic problems^M are difficult^P. **Major premise**
This problem^S is a logic problem^M. **Minor premise**
This problem^S is difficult^P.

All good basketball players can shoot well. **Major premise**
Steph Curry is a good basketball player. **Minor premise**
Therefore, Steph Curry^S can shoot well^P.

No men^M are gods^P. **Major premise**
Socrates^S is a man^M. **Minor premise**
Therefore, Socrates^S is not a god^P.

All kings^M are men^P. **Major premise**
Peter^S is a king^M. **Minor premise**
Therefore, Peter^S is a man^P.

Read “Principles of the Syllogism.”

22. What is the Principle of Reciprocal Identity?

Two terms that are identical with a third term are identical to each other.

23. What is the Principle of Reciprocal Non-Identity?

Two terms, one of which is identical with a third term and the other of which is nonidentical with that third term, are nonidentical to each other.

24. What is the *Dictum de Omni*?

What is affirmed universally of a certain term, is affirmed of every term that comes under that term.

25. What is the *Dictum de Nullo*?

What is denied universally of a certain term is denied of every term that comes under that term.

26. Indicate whether the following syllogisms illustrate the Principle of Reciprocal Identity (PRI) or the Principle of Reciprocal Non-Identity (PRNI) and the Dictum de Omni (DO) or the Dictum de Nullo (DN) by circling the appropriate answer (or changing it to **bold**). (Be aware that a syllogism can illustrate both PRI or PRNI (but not both) and DO or DN (but not both). In other words, you could circle PRI and DO, but not PRI and PRNI):

All men are mortal.	PRI	DO
Socrates is a man.	PRNI	DN
Therefore, Socrates is mortal.		

All logic problems are difficult.	PRI	DO
This problem is a logic problem.	PRNI	DN
This problem is difficult.		

No men are gods	PRI	DO
Socrates is a man.	PRNI	DN
Therefore, Socrates is not a god.		

All kings are men.	PRI	DO
Peter is a king.	PRNI	DN
Therefore, Peter is a man.		

27. In the following syllogisms, indicate which is the major premise and the minor premise by writing 'major' or 'minor' next to the appropriate premise. Indicate also the minor, major, and middle terms by writing them out and writing an S next to the minor term, a P next to the major term, and an M next to the middle term:

All mammals ^M are things that breathe oxygen ^P .	Major Premise
A horse ^S is a mammal ^M .	Minor Premise
Therefore, a horse ^S is a thing that breathes oxygen ^P .	

All Americans ^M are brave ^P .	Major Premise
George Washington ^S is an American ^M .	Minor Premise
Therefore, George Washington ^S is brave ^P .	

All horses ^M are fast ^P .	Major Premise
Secretariat ^S is a horse ^M .	Minor Premise
Therefore, Secretariat ^S is fast ^P .	

All wars ^M are bloody ^P .	Major Premise
The War of the Roses ^S was a war ^M .	Minor Premise
Therefore, the War of the Roses ^S was bloody ^P .	

28. True or False (Circle the T or F or make the correct answer **bold**.)

- a. T **F** Reasoning is the act of the mind by which we create new knowledge out of nothing.
- b. **T** F The two kinds of reasoning are deduction and induction.
- c. T **F** A syllogism contains three premises and a conclusion.
- d. **T** F In a valid argument, if the premises are true, the conclusion must be true.

- e. **T** F The minor term is the subject of the conclusion and the major term is the predicate of the conclusion.
- f. **T** F The major premise is the premise that contains the major term.
- g. T **F** The middle term is the term that does not appear in either premise.
- h. **T** F If S is identical with M and P is identical with M, then S is identical *with P* (The last two words were missing.)