

Historical Logic: Fact and Foundation

Logic · Answer Key · 18 Questions

1. Which ancient Greek philosopher is credited with the first systematic study of logic, particularly in his work 'Organon'?

- A) Plato
- B) Socrates
- C) Aristotle**
- D) Epicurus

2. The Stoic logicians, such as Chrysippus, are primarily known for their significant advancements in what area of logic?

- A) Syllogistic logic
- B) Propositional logic**
- C) Modal logic
- D) Predicate logic

3. Who is considered the 'father of modern logic' for his development of symbolic logic and the foundational work 'Begriffsschrift' (Conceptual Notation)?

- A) George Boole
- B) Gottlob Frege**
- C) Bertrand Russell
- D) Alfred North Whitehead

4. The paradox known as 'Liar Paradox' ('This statement is false') was extensively discussed by which medieval philosopher in the context of self-referential propositions?

- A) Thomas Aquinas
- B) William of Ockham
- C) Peter Abelard**
- D) John Duns Scotus

5. What significant contribution did George Boole make to logic in the mid-19th century?

- A) Formalization of modal logic
- B) Development of predicate calculus
- C) Creation of Boolean algebra**
- D) Proof of Gödel's incompleteness theorems

6. The *Principia Mathematica*, a monumental work by Alfred North Whitehead and Bertrand Russell, aimed to establish logic as the foundation for what?

A) Psychology

B) Physics

C) Mathematics

D) Linguistics

7. Kurt Gödel's incompleteness theorems, published in 1931, demonstrated fundamental limitations of what formal systems?

A) Every formal axiomatic system

B) Formal systems strong enough to describe arithmetic

C) Formal systems of propositional logic

D) Formal systems of set theory

8. The development of the concept of 'validity' in logic, as opposed to mere truth, is largely attributed to the work of which philosopher?

A) René Descartes

B) Aristotle

C) Gottlob Frege

D) Immanuel Kant

9. Which early 20th-century logician and philosopher, known for his work on the logic of relevance, argued against the 'paradoxes of material implication'?

A) Rudolf Carnap

B) Willard Van Orman Quine

C) C.I. Lewis

D) Alfred Tarski

10. The development of intuitionistic logic, which rejects the law of excluded middle in certain contexts, is most closely associated with which mathematician?

A) David Hilbert

B) L.E.J. Brouwer

C) Henri Poincaré

D) Jules Henri Poincaré

11. What was the primary focus of the logical investigations conducted by the philosophers of the Vienna Circle in the early 20th century?

A) Metaphysical speculation

B) Empirical observation

C) Logical positivism and the analysis of language

D) Existentialist thought

12. The formal system known as 'Natural Deduction', which aims to mimic human reasoning more closely than Hilbert-style axiomatic systems, was independently developed by whom?

- A) Gottlob Frege and Bertrand Russell
- B) Gerhard Gentzen and Stanislaw Jaskowski**
- C) Alfred North Whitehead and David Hilbert
- D) Kurt Gödel and Alonzo Church

13. Who is credited with developing the first comprehensive system of modal logic, distinguishing between necessity and possibility, in his work 'The American[.]'.

- A) Saul Kripke
- B) C.I. Lewis**
- C) David Lewis
- D) Arthur Prior

14. The 'Tarski's Undefinability Theorem', a crucial result in the foundations of mathematics and logic, deals with the undefinability of what concept within formal systems?

- A) Truth**
- B) Proof
- C) Consistency
- D) Completeness

15. Which ancient Indian school of logic, known for its rigorous dialectical method and detailed analysis of fallacies, flourished around the same time as the early Greek logicians?

- A) Yoga
- B) Samkhya
- C) Nyaya**
- D) Vedanta

16. The development of truth-tables as a method for evaluating the validity of propositional arguments is a significant contribution from which period?

- A) Ancient Greek Philosophy
- B) Medieval Scholasticism
- C) Early 20th-century Symbolic Logic**
- D) Renaissance Humanism

17. What was the primary aim of the 'logic bomb' in computer science, a term first used in the context of malicious code deployed in the early days of computing?

- A) To overload a system's processing power
- B) To disrupt or destroy data when specific conditions are met**
- C) To gain unauthorized access to sensitive information
- D) To encrypt all user files permanently

18. The scholastic logicians of the Middle Ages were heavily influenced by and focused on the interpretation and preservation of the logical works of which philosopher?

- A) Plato
- B) Aristotle**
- C) Euclid
- D) Pythagoras