

History of Formal Logic

Logic · Answer Key · 18 Questions

1. Who is credited with developing the first formal system of deductive reasoning known as the syllogism?

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

2. In the 19th century, which mathematician introduced the concept of Boolean algebra, laying the foundation for modern computer circuits?

- A) Gottlob Frege
- B) George Boole**
- C) Augustus De Morgan
- D) Bertrand Russell

3. The 'Principia Mathematica', a seminal work attempting to derive all mathematical truths from logical axioms, was co-authored by Alfred North Whitehead and whom?

- A) Ludwig Wittgenstein
- B) Kurt Gödel
- C) Bertrand Russell**
- D) Alan Turing

4. Which 20th-century logician published the 'Incompleteness Theorems', proving that in any consistent formal system, there are statements that cannot be proven or disproven?

- A) David Hilbert
- B) Kurt Gödel**
- C) Alonzo Church
- D) John von Neumann

5. What is the name of the work by Gottlob Frege that introduced the 'Begriffsschrift', often considered the first formal predicate logic?

- A) Concept Notation**
- B) The Laws of Thought
- C) Principia Logica
- D) Analytical Logic

6. Which ancient Greek school of philosophy, founded by Zeno of Citium, made significant contributions to propositional logic?

- A) Epicureans
- B) Peripatetics
- C) Stoics**
- D) Cynics

7. What term did Gottfried Wilhelm Leibniz use for his proposed universal symbolic language that could resolve all logical arguments through calculation?

- A) Characteristica Universalis**
- B) Mathesis Universalis
- C) Calculus Ratiocinator
- D) Ars Combinatoria

8. Who developed the 'Truth Table' method independently of one another in the early 20th century?

- A) Charles Sanders Peirce and Emil Post
- B) Ludwig Wittgenstein and Emil Post**
- C) Bertrand Russell and Gottlob Frege
- D) Alfred Tarski and Kurt Gödel

9. Which philosopher is known for his work on the 'Law of Excluded Middle', a central principle in classical logic?

- A) Aristotle**
- B) Immanuel Kant
- C) René Descartes
- D) Baruch Spinoza

10. The 'Tractatus Logico-Philosophicus', which heavily influenced the Vienna Circle, was written by which philosopher?

- A) Rudolf Carnap
- B) Ludwig Wittgenstein**
- C) Moritz Schlick
- D) A.J. Ayer

11. In 1936, who published a paper introducing the concept of a 'universal machine' capable of computing any computable function?

- A) Alonzo Church
- B) Alan Turing**
- C) Claude Shannon
- D) Norbert Wiener

12. What field of logic, developed by Jan Lukasiewicz, explicitly rejects the 'Law of Excluded Middle'?

- A) Modal logic
- B) Many-valued logic**
- C) Intuitionistic logic
- D) Deontic logic

13. Which influential 17th-century philosopher wrote 'Logique, ou l'art de penser', commonly known as the Port-Royal Logic?

- A) Blaise Pascal and Antoine Arnauld**
- B) René Descartes and Baruch Spinoza
- C) John Locke and Thomas Hobbes
- D) Francis Bacon and Isaac Newton

14. Who is the American logician responsible for the development of 'existential graphs' to represent logical propositions?

- A) William James
- B) Charles Sanders Peirce**
- C) John Dewey
- D) Quine

15. Which fundamental logical principle states that 'it is impossible for a thing to be and not to be at the same time and in the same respect'?

- A) Law of Non-Contradiction**
- B) Law of Identity
- C) Principle of Sufficient Reason
- D) Law of Excluded Middle

16. What specific branch of logic did Alfred Tarski primarily contribute to, formalizing the concept of truth in formalized languages?

- A) Set theory
- B) Model theory**
- C) Proof theory
- D) Constructive logic

17. The 'Liar Paradox'--a statement that references its own falsity--was famously attributed to which ancient figure?

- A) Eubulides of Miletus**
- B) Zeno of Elea
- C) Heraclitus
- D) Pythagoras

18. In formal logic, what is the standard name for the rule of inference 'If P implies Q, and P is true, then Q must be true'?

- A) Modus Tollens
- B) Reductio ad absurdum
- C) Modus Ponens**
- D) Disjunctive Syllogism