

Algebraic Milestones and Figures

Algebra · Answer Key · 18 Questions

1. Which mathematician is credited with the first systematic treatment of algebra in his book 'Kitab al-Jabr wa al-Muqabala', published around the year 820 CE?

- A) Euclid
- B) Pythagoras
- C) Muhammad ibn Musa al-Khwarizmi**
- D) Diophantus

2. In what year did René Descartes publish 'La Géométrie', introducing coordinate geometry and algebraic notation that is still widely used today?

- A) 1537
- B) 1637**
- C) 1737
- D) 1837

3. The concept of the imaginary unit 'i' (where $i^2 = -1$) was significantly explored by Leonhard Euler in which century?

- A) 16th century
- B) 17th century
- C) 18th century**
- D) 19th century

4. Who is often referred to as the 'father of algebra' for his groundbreaking work on solving cubic and quartic equations in the 16th century?

- A) Galileo Galilei
- B) Fermat
- C) Cardano**
- D) Newton

5. The development of abstract algebra owes much to the work of Évariste Galois. In what year was he tragically killed in a duel?

- A) 1828
- B) 1832**
- C) 1836
- D) 1840

6. Sir Isaac Newton's 'Principia Mathematica', which utilized algebraic methods extensively, was first published in which year?

- A) 1667
- B) 1687**
- C) 1707
- D) 1727

7. The term 'algebra' itself is derived from the Arabic word 'al-jabr' in the title of which influential book?

- A) Almagest
- B) Kitab al-Jabr wa al-Muqabala**
- C) Elements
- D) The Republic

8. Which ancient Greek mathematician, in his work 'Arithmetica', introduced symbolic methods for solving algebraic problems, predating al-Khwarizmi by centuries?

- A) Archimedes
- B) Apollonius
- C) Diophantus**
- D) Ptolemy

9. Augustin-Louis Cauchy, a key figure in the development of abstract algebra and analysis, was born in what year?

- A) 1775
- B) 1789
- C) 1795**
- D) 1801

10. The concept of a matrix, fundamental to linear algebra, was independently developed by Arthur Cayley and James Joseph Sylvester in the mid-19th century. Approximately when did Cayley publish his seminal paper on matrices?

- A) 1840
- B) 1857**
- C) 1872
- D) 1885

11. What was the approximate year that Emmy Noether published her groundbreaking paper 'Non-commutative Algebras' which revolutionized abstract algebra?

- A) 1920
- B) 1927**
- C) 1933
- D) 1940

12. The notation for variables like 'x' and 'y' as commonly used in algebra was popularized by which French mathematician in the 17th century?

- A) Pierre de Fermat
- B) Blaise Pascal
- C) René Descartes**
- D) Gilles de Roberval

13. The formalization of group theory, a major branch of abstract algebra, is largely attributed to the work of Niels Henrik Abel and Évariste Galois. Abel died at the young age of 26 in what year?

- A) 1802
- B) 1815
- C) 1829**
- D) 1835

14. What number is the degree of the polynomial equation $x^5 + 3x^2 - 7 = 0$?

- A) 1
- B) 2
- C) 3
- D) 5**

15. The concept of Boolean algebra, crucial for computer science, was developed by George Boole in the mid-19th century. In what year was his influential book 'An Investigation of the Laws of Thought' published?

- A) 1847
- B) 1854**
- C) 1860
- D) 1867

16. The development of the symbolic notation '+' for addition and '-' for subtraction is often attributed to the work of which German mathematician around the late 15th century?

- A) Johannes Gutenberg
- B) Adam Riese
- C) Michael Stifel**
- D) Regiomontanus

17. Who introduced the concept of the discriminant for quadratic equations and made significant contributions to the theory of equations in the 17th century?

- A) Gottfried Wilhelm Leibniz
- B) Christiaan Huygens
- C) Gabriel Cramer**
- D) Colin Maclaurin

18. In what year did John Venn publish his work on Venn diagrams, a graphical representation of logical relationships often used in set theory and algebra?

- A) 1860
- B) 1870
- C) 1880**
- D) 1890