

Pioneers of Number Theory

Number Theory · Answer Key · 15 Questions

1. Who is credited with the first recorded proof that the square root of two is irrational?

- A) The Pythagorean school**
- B) Archimedes of Syracuse
- C) Euclid of Alexandria
- D) Diophantus of Alexandria

2. Which mathematician first formulated the Prime Number Theorem in a conjecture in 1792?

- A) Leonhard Euler
- B) Carl Friedrich Gauss**
- C) Pierre de Fermat
- D) Bernhard Riemann

3. The 'Chinese Remainder Theorem' first appeared in the work 'Sunzi Suanjing'. During which dynasty was this text likely composed?

- A) Han Dynasty**
- B) Tang Dynasty
- C) Song Dynasty
- D) Ming Dynasty

4. Who was the first mathematician to prove that every positive integer can be represented as a sum of at most four integer squares?

- A) Joseph-Louis Lagrange**
- B) Adrien-Marie Legendre
- C) Isaac Newton
- D) Blaise Pascal

5. In 1736, who solved the 'Seven Bridges of Königsberg' problem, laying the groundwork for graph theory?

- A) Gottfried Wilhelm Leibniz
- B) Leonhard Euler**
- C) Jean le Rond d'Alembert
- D) Daniel Bernoulli

6. The first known description of the 'Sieve of Eratosthenes' for finding prime numbers is attributed to which scholar?

- A) Hypatia
- B) Apollonius of Perga
- C) Eratosthenes of Cyrene**
- D) Ptolemy

7. Which mathematician first introduced the concept of modular arithmetic in his 1801 treatise 'Disquisitiones Arithmeticae'?

- A) Carl Friedrich Gauss**
- B) Augustin-Louis Cauchy
- C) Évariste Galois
- D) Niels Henrik Abel

8. Who was the first to provide a rigorous proof for the Law of Quadratic Reciprocity?

- A) Sophie Germain
- B) Carl Friedrich Gauss**
- C) Joseph-Louis Lagrange
- D) Pierre-Simon Laplace

9. Which 17th-century mathematician first proposed the 'Last Theorem' that remained unproven for over 350 years?

- A) René Descartes
- B) Pierre de Fermat**
- C) Marin Mersenne
- D) Blaise Pascal

10. Who first defined the prime counting function, now denoted as $\pi(x)$?

- A) Bernhard Riemann
- B) Adrien-Marie Legendre
- C) Carl Friedrich Gauss**
- D) Leonhard Euler

11. Which mathematician discovered the first 'amicable numbers' pair (220 and 284) according to ancient tradition?

- A) Pythagoras**
- B) Thales of Miletus
- C) Euclid
- D) Archimedes

12. The 'Pell's Equation' is a misnomer; who was the Indian mathematician that first developed a general solution method (the chakravala method) for it?

- A) Aryabhata
- B) Brahmagupta
- C) Bhaskara II**
- D) Srinivasa Ramanujan

13. Who first published the proof for the Prime Number Theorem in 1896, independently of one another?

- A) Hadamard and de la Vallée Poussin**
- B) Riemann and Hilbert
- C) Poincaré and Klein
- D) Hardy and Littlewood

14. The 'Partition Function' was first studied extensively by which mathematician in the 18th century?

- A) Leonhard Euler**
- B) Joseph Fourier
- C) Carl Jacobi
- D) Augustus De Morgan

15. Which mathematician was the first to prove the existence of transcendental numbers, specifically Liouville numbers?

- A) Charles Hermite
- B) Ferdinand von Lindemann
- C) Joseph Liouville**
- D) Georg Cantor