

Number Theory Quiz PDF

Number Theory Quiz PDF

Disclaimer: *The number theory quiz pdf was generated with the help of StudyBlaze AI. Please be aware that AI can make mistakes. Please consult your teacher if you're unsure about your solution or think there might have been a mistake. Or reach out directly to the StudyBlaze team at max@studyblaze.io.*

Explain the concept of a prime number and provide an example.

Discuss the significance of the Fundamental Theorem of Arithmetic in mathematics.

What is Fermat's Little Theorem and how is it used in number theory?

How does modular arithmetic apply to modern cryptography? Provide an example.

Describe the Euclidean algorithm and its purpose in number theory.

Which mathematicians made significant contributions to number theory?

- Euclid
- Newton
- Fermat
- Gauss

What is the greatest common divisor (GCD) of 24 and 36?

- 4
- 6
- 8
- 12

Which of the following are prime numbers?

- 11
- 14
- 17
- 20

Which of the following statements are true about modular arithmetic?

- It is used in cryptography.
- It only applies to even numbers.
- It involves congruences.
- It can solve linear equations.

Which of the following is a quadratic residue modulo 7?

- 2
- 3
- 4
- 5

Which of the following are methods to find the GCD of two numbers?

- Prime factorization
- Euclidean algorithm
- Sieve of Eratosthenes
- Division method

What is the value of Euler's totient function $\phi(9)$?

- 2
- 3
- 4
- 6

Which of the following is an example of a Diophantine equation?

- $x + y = 10$
- $x^2 + y^2 = 25$
- $2x + 3y = 6$
- $x/y = 2$

Which number is not divisible by 3?

- 18
- 21
- 25
- 27

Which of the following are applications of number theory in cryptography?

- RSA algorithm
- Caesar cipher
- Diffie-Hellman key exchange
- Hill cipher

Which of the following numbers is a prime number?

- 15
- 21
- 23
- 28

Explain the process of solving a simple Diophantine equation with an example.

What is the remainder when 17 is divided by 5?

- 1
- 2
- 3
- 4

Which theorem states that every integer greater than 1 is either a prime or can be factored into prime numbers?

- Fermat's Little Theorem
- Euclidean Algorithm
- Fundamental Theorem of Arithmetic
- Chinese Remainder Theorem

Which of the following are properties of integers?

- Communtativity
- Associativity
- Distributivity
- Transitivity