

# Fundamentals of Algebra

Algebra · Answer Key · 15 Questions

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1. Who is historically recognized as the 'father of algebra' for his 9th-century treatise on solving linear and quadratic equations?

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

2. In the context of the fundamental theorem of algebra, how many complex roots does a polynomial of degree 'n' have?

- A)  $n-1$
- B)  $n$**
- C)  $n+1$
- D)  $2n$

3. What is the value of 'x' in the equation  $2x + 5 = 15$ ?

- A) 5**
- B) 10
- C) 7.5
- D) 2.5

4. Which property of algebra states that  $a(b + c) = ab + ac$ ?

- A) Associative property
- B) Commutative property
- C) Distributive property**
- D) Identity property

5. What is the result of squaring a binomial  $(a + b)^2$ ?

- A)  $a^2 + b^2$
- B)  $a^2 + ab + b^2$
- C)  $a^2 + 2ab + b^2$**
- D)  $a^2 - 2ab + b^2$

6. In algebraic geometry, what is the geometric representation of a linear equation of the form  $ax + by = c$ ?

- A) A parabola
- B) A hyperbola
- C) A circle
- D) A straight line**

7. Which mathematical symbol is used to represent the set of all real numbers?

- A) N
- B) Z
- C) Q
- D) R**

8. What is the solution to the quadratic equation  $x^2 - 4 = 0$ ?

- A) 2 and -2**
- B) 4 and -4
- C) 1 and -1
- D) 0 and 4

9. What is the term for a polynomial with exactly two terms?

- A) Monomial
- B) Binomial**
- C) Trinomial
- D) Polynomial

10. According to the order of operations (PEMDAS/BODMAS), which operation is performed first?

- A) Addition
- B) Multiplication
- C) Parentheses**
- D) Exponents

11. What does the discriminant ( $b^2 - 4ac$ ) of a quadratic equation indicate about its roots?

- A) The sum of roots
- B) The nature of roots**
- C) The y-intercept
- D) The degree of the polynomial

12. What is the value of any non-zero number raised to the power of zero?

- A) 0
- B) 1**
- C) The number itself
- D) Undefined

**13. Which algebraic structure consists of a set equipped with an operation that combines two elements to form a third?**

**A) Group**

B) Vector

C) Matrix

D) Scalar

**14. In a Cartesian coordinate system, what does the variable 'm' usually represent in the slope-intercept form  $y = mx + b$ ?**

A) Y-intercept

B) X-coordinate

**C) Slope**

D) Origin

**15. What is the result of  $x^a * x^b$ ?**

**A)  $x^{(a+b)}$**

B)  $x^{(a-b)}$

C)  $x^{(ab)}$

D)  $(x^a)^b$