

Welcome to Algebra!

Algebra is a branch of mathematics that deals with variables and their relationships. In this introduction, we will explore the basics of algebra and variables, and learn how to solve simple equations.

Algebra has many real-world applications, including science, engineering, and economics. It is used to solve problems that involve unknown values or relationships between variables.

What are Variables and Constants?

A variable is a letter or symbol that represents a value that can change. A constant is a number that does not change.

- Variable: x , y , z
- Constant: 2, 3, 4

What is the difference between a variable and a constant? _____

Algebraic Expressions

An algebraic expression is a combination of variables, constants, and mathematical operations.

Example: $2x + 3$

Write an example of an algebraic expression: _____

Simplifying Algebraic Expressions

To simplify an algebraic expression, we combine like terms.

Example: $2x + 2x = 4x$

Simplify the expression: $3x + 2x =$ _____

Solving Linear Equations

A linear equation is an equation in which the highest power of the variable is 1.

Example: $2x + 3 = 5$

To solve a linear equation, we need to isolate the variable.

Example: $2x + 3 = 5$

- Subtract 3 from both sides: $2x = 2$
- Divide both sides by 2: $x = 1$

Solve the equation: $x + 2 = 5$, $x =$ _____

Real-World Applications

Algebra has many real-world applications, including science, engineering, and economics.

Example: Calculating the cost of goods or determining the distance traveled.

How can algebra be used in real-world applications? _____

Practice Questions

Simplify the expression: $3x + 2x$

Answer: _____

Solve the equation: $x + 2 = 5$

Answer: _____

Identify the variable and constant in the equation: $2x + 3 = 5$

Variable: _____, Constant: _____

Activity 1: Algebraic Expression Building

Use the following variables and constants to build an algebraic expression: $x, y, 2, 3$

Algebraic Expression: _____

Activity 2: Variable and Constant Sorting

Sort the following terms into variables and constants:

- x
- 2
- y
- 5

Variables: _____

Constants: _____

Activity 3: Solving Linear Equations

Solve the following linear equations:

- $2x + 2 = 6$
- $x - 1 = 3$

Solutions: _____

Conclusion

In this introduction to algebra basics and variables, we learned about variables, constants, algebraic expressions, and linear equations.

We also practiced simplifying expressions and solving equations. Remember that algebra has many real-world applications, and with practice, you can become proficient in solving algebraic problems.

What did you learn from this introduction to algebra? _____

