**PLANIT TEACHERS**

## 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 algebraic expressions and variables.*

Algebraic expressions and variables are used in various real-life scenarios, such as:

- Calculating the cost of items on sale
- Determining the area of a room for painting
- Understanding simple interest on savings

## What are Variables and Algebraic Expressions?

*A variable is a letter or symbol that represents an unknown value or a value that can change. An algebraic expression is a combination of variables, numbers, and mathematical operations.*

## Practice Time!

*Try to simplify the following expressions:*

1. 2x + 3x
2. 5x - 2x
3. x + 2 + 3x

Answers:

1. 5x
2. 3x
3. 4x + 2

## Word Problems

*Solve the following word problems:*

1. Tom has $15 to spend on video games that cost $2 each. How many games can he buy if he also wants to buy a $5 accessory?
2. A bookshelf has 5 shelves, and each shelf can hold 3x books, where x is the number of books per row. If the bookshelf is currently empty, how many books can be placed on it in terms of x?

Answers:

1. Let x be the number of games Tom buys. The total cost is 2x + 5. Since Tom has $15, we can set up the equation 2x + 5 = 15. Solving for x, we get x = 5.
2. The total number of books the bookshelf can hold is 5 * 3x = 15x.

## Quiz Time!

Test your understanding with the following quiz:

1. What is a variable in algebra?
2. Simplify the expression 2x + 3x.

Answers:

1. A letter or symbol that represents an unknown value or a value that can change.
2. 5x

## Conclusion

In this introduction to algebraic expressions and variables, we have covered the basics of variables, algebraic expressions, and their real-life applications. We have also practiced simplifying expressions and solving word problems.

**Individual Reflection:**

1. What was the most surprising thing you learned today?

2. How will this learning change your actions in the future?

3. What questions do you still have about algebraic expressions and variables?

## Extension Activity

*Design a theme park and calculate the total cost of building different attractions. Each attraction has a base cost plus an additional cost per visitor. Create algebraic expressions to represent the total cost for each attraction based on the number of visitors.*

### Get creative and have fun!

[Space for creative work]

## Glossary

*Review the key terms:*

- Variable: A letter or symbol that represents an unknown value or a value that can change.
- Algebraic Expression: A combination of variables, numbers, and mathematical operations.