

## Introduction to Algebraic Expressions

*Algebraic expressions are a fundamental concept in mathematics, used to represent mathematical operations and relationships. This worksheet is designed to evaluate students' understanding of algebraic expressions, including variables, constants, and mathematical operations.*

## Section 1: Multiple Choice Questions

*Choose the correct answer for each question.*

1. What is the value of the expression  $2x + 5$  when  $x = 3$ ?
  - a. 11
  - b. 12
  - c. 13
  - d. 14
2. Which of the following expressions is equivalent to  $3(2x - 1)$ ?
  - a.  $6x - 3$
  - b.  $6x + 3$
  - c.  $5x - 2$
  - d.  $5x + 2$
3. What is the value of the expression  $x - 2$  when  $x = 7$ ?
  - a. 3
  - b. 4
  - c. 5
  - d. 6
4. Which of the following expressions represents the phrase "5 more than 2 times a number"?
  - a.  $2x + 5$
  - b.  $2x - 5$
  - c.  $x + 5$
  - d.  $x - 5$
5. What is the value of the expression  $4x - 2$  when  $x = 2$ ?
  - a. 6
  - b. 8
  - c. 10
  - d. 12

## Section 2: Short Answer Questions

Show your work and explain your reasoning for each question.

1. Simplify the expression  $2x + 3 + 4x - 2$

2. Evaluate the expression  $x^2 + 2x - 3$  when  $x = 4$

3. Write an expression that represents the phrase "the sum of 2 times a number and 5"

4. Simplify the expression  $3(2x - 1) + 2x$

5. Evaluate the expression  $2x - 3$  when  $x = 5$

## Section 3: Interactive Drag-and-Drop Questions

Drag the terms to simplify the expressions.

Introduction to Algebraic Expressions Worksheet

Page

1. Simplify the expression  $2x + 3 + 4x - 2$

2. Evaluate the expression  $x^2 + 2x - 3$  when  $x = 4$

3. Write an expression that represents the phrase "the sum of 2 times a number and 5"

4. Simplify the expression  $3(2x - 1) + 2x$

5. Evaluate the expression  $2x - 3$  when  $x = 5$

## Section 4: Fill-in-the-Blank Questions

Fill in the blank with the correct answer.

1. The expression  $2x + 5$  is an example of a \_\_\_\_\_ expression.

2. The value of the expression  $x - 2$  when  $x = 7$  is \_\_\_\_\_.

3. The expression  $3(2x - 1)$  is equivalent to \_\_\_\_\_.

4. The expression  $x^2 + 2x - 3$  is an example of a \_\_\_\_\_ expression.

5. The value of the expression  $4x - 2$  when  $x = 2$  is \_\_\_\_\_.

## Section 5: Word Problems

Read each problem carefully and show your work.

Introduction to Algebraic Expressions Worksheet

Page

1. Tom has been saving money for a new bike and has \$120 in his savings account. He wants to buy a bike that costs \$180. If he saves \$5 per week, how many weeks will it take him to have enough money to buy the bike? Use an algebraic expression to represent the situation and solve for the number of weeks.

2. A bookshelf has 5 shelves, and each shelf can hold 8 books. If the bookshelf is currently empty, how many books can be placed on it in total? Use an algebraic expression to represent the situation and solve for the total number of books.



## Section 6: Challenge Questions

Challenge yourself with these more difficult questions.

1. Simplify the expression  $(2x + 3)(x - 2)$

2. Evaluate the expression  $x^3 + 2x^2 - 3x - 1$  when  $x = 2$

3. Write an expression that represents the phrase "the product of 2 times a number and 3"

## Answer Key

Multiple Choice Questions:

1. 1. a) 11
2. 2. a)  $6x - 3$
3. 3. b) 5
4. 4. a)  $2x + 5$
5. 5. b) 6

Short Answer Questions:

1. 6.  $6x + 1$
2. 7. 21
3. 8.  $2x + 5$
4. 9.  $8x - 3$
5. 10. 7

Introduction to Algebraic Expressions Worksheet

Fill-in-the-Blank Questions:

Page

1. 16. algebraic
2. 17. 5
3. 18.  $6x - 3$
4. 19. quadratic
5. 20. 6

