

## Writing Algebraic Expressions Worksheet Answer Key PDF

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### Part 1: Building a Foundation

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**What is a variable in algebra?**

undefined. A) A fixed numerical value

**undefined. B) A symbol representing an unknown number ✓**

undefined. C) A mathematical operation

undefined. D) A specific equation

A variable is a symbol representing an unknown number.

**Which of the following are considered constants? (Select all that apply)**

**undefined. A) 5 ✓**

undefined. B)  $x$

**undefined. C) 3.14 ✓**

undefined. D)  $y$

Constants are fixed values that do not change.

**Explain the difference between a variable and a constant in your own words.**

**A variable can change and represent different values, while a constant remains the same.**

**List two examples of variables and two examples of constants.**

1. Variables:

\_\_\_\_\_, \_\_\_\_\_

2. Constants:

\_\_\_\_\_, \_\_\_\_\_

Examples of variables could be  $x$  and  $y$ , while constants could be 5 and 10.

**Which operation is indicated by the word "product"?**

undefined. A) Addition

undefined. B) Subtraction

**undefined. C) Multiplication ✓**

undefined. D) Division

The word 'product' indicates multiplication.

## Part 2: Comprehension and Application

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**Which of the following expressions correctly translates the phrase "five more than a number  $x$ "?**

undefined. A)  $x - 5$

undefined. B)  $5x$

**undefined. C)  $x + 5$  ✓**

undefined. D)  $5 - x$

The correct expression is  $x + 5$ .

**Translate the phrase "the difference between a number  $y$  and seven" into an algebraic expression.**

**The expression is  $y - 7$ .**

**Identify the operation and write the expression for "twice the sum of a number  $z$  and three."**

1. Operation:

\_\_\_\_\_

2. Expression:

\_\_\_\_\_

The operation is addition, and the expression is  $2(z + 3)$ .

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

**undefined. A)  $x + 12$  ✓**

undefined. B)  $x + 4$

undefined. C)  $3x + 4$

undefined. D)  $5x + 12$

The simplified expression is  $x + 12$ .

**Simplify the expression  $2(a + 5) + 3(a - 2)$  and explain each step.**

**The simplified expression is  $5a + 16$ , explained step by step.**

### Part 3: Analysis, Evaluation, and Creation

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**Which of the following expressions is the simplified form of  $2x + 3x - x$ ?**

**undefined. A)  $4x$  ✓**

undefined. B)  $5x$

undefined. C)  $6x$

undefined. D)  $3x$

The simplified form is  $4x$ .

**Analyze the expression  $5y - 3 + 2y + 8$  and identify the like terms. Then, simplify the expression.**

**The like terms are  $5y$  and  $2y$ , and the simplified expression is  $7y + 5$ .**

**Which of the following expressions are equivalent to  $3(a + b) + 2a$ ? (Select all that apply)**

**undefined. A)  $3a + 3b + 2a$  ✓**

**undefined. B)  $5a + 3b$  ✓**

undefined. C)  $3a + b + 2a$

undefined. D)  $3a + 3b + a$

The equivalent expressions are  $3a + 3b + 2a$  and  $5a + 3b$ .

**Evaluate the expression  $4n + 7$  for  $n = 3$  and explain the steps involved in your calculation.**

The evaluation gives 19, calculated by substituting  $n$  with 3.

Create an algebraic expression for the scenario: "The total cost is the sum of twice the price of item A and three times the price of item B."

1. Expression:

\_\_\_\_\_

The expression is  $2A + 3B$ .

If the expression  $5x + 2$  represents the perimeter of a rectangle, which of the following could represent one of its sides?

undefined. A)  $2.5x + 1$

undefined. B)  $5x$

**undefined. C)  $x + 1$  ✓**

undefined. D)  $5x + 1$

One possible side could be  $x + 1$ .