

# Writing Algebraic Expressions Worksheet Questions and Answers PDF

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## Part 1: Building a Foundation

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**What is a variable in algebra?**

*Hint: (Select the correct answer)*

- A) A fixed numerical value
- B) A symbol representing an unknown number ✓
- C) A mathematical operation
- D) A specific equation

■ A variable is a symbol representing an unknown number.

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

*Hint: (Select all correct answers)*

- A) 5 ✓
- B) x
- C) 3.14 ✓
- D) y

■ Constants are fixed values that do not change.

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

*Hint: (Write your answer below)*

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

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

*Hint: (Provide your answers below)*

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"?**

*Hint: (Select the correct answer)*

- A) Addition
- B) Subtraction
- C) Multiplication ✓
- 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  $x$ "?

Hint: (Select the correct answer)

- A)  $x - 5$   
 B)  $5x$   
 C)  $x + 5$  ✓  
 D)  $5 - x$

■ The correct expression is  $x + 5$ .

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

Hint: (Write your expression below)

■ The expression is  $y - 7$ .

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

Hint: (Provide your answers below)

1. Operation:

■ \_\_\_\_\_

2. Expression:

| \_\_\_\_\_

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

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

*Hint: (Select the correct answer)*

- A)  $x + 12$  ✓
- B)  $x + 4$
- C)  $3x + 4$
- D)  $5x + 12$

| The simplified expression is  $x + 12$ .

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

*Hint: (Write your explanation and simplified expression below)*

| 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  $2x + 3x - x$ ?**

*Hint: (Select the correct answer)*

- A)  $4x$  ✓
- B)  $5x$
- C)  $6x$
- D)  $3x$

| The simplified form is  $4x$ .

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

*Hint: (Write your analysis and simplified expression below)*

| **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)**

*Hint: (Select all correct answers)*

- A)  $3a + 3b + 2a$  ✓**
- B)  $5a + 3b$  ✓**
- C)  $3a + b + 2a$
- 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.**

*Hint: (Write your evaluation and explanation below)*

| **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."**

*Hint: (Provide your expression below)*

1. Expression:

| \_\_\_\_\_

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| 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?**

*Hint: (Select the correct answer)*

- A)  $2.5x + 1$
- B)  $5x$
- C)  $x + 1$  ✓
- D)  $5x + 1$

| One possible side could be  $x + 1$ .