Writing Algebraic Expressions Worksheet

An **algebraic expression** is a mathematical phrase made up of **numbers, variables, and operations**. Expressions **do not** contain an equal sign (=).

Common Words and Their Operations:

Words	Operation
Sum, increased by, more than, plus.....	Addition (+)
Difference, minus, decreased by, less than..	Subtraction (−)
Product, times, multiplied by, of.....	Multiplication (×)
Quotient, divided by, per.....	Division (÷)

Important Vocabulary

- **Variable:** A letter that represents an unknown number (usually x, y, or n).
- **Coefficient:** The number multiplied by a variable.
- **Constant:** A number by itself.

Example 1. Write an expression for: "The sum of a number and 8."
Step 1. Let the unknown number be **x**.
Step 2. The phrase "**sum of**" means **add**.
Expression: x + 8

Example 2 . Write an expression for: "Five less than a number."
Step 1. Let the number be **x**.
Step 2. The phrase "**less than**" means subtract **from** the number.
Expression: x - 5

Example 3. Write an expression for: "Three times a number increased by 7."
Step 1. Let the number be **x**.
Step 2. "Three times a number" 3x
Step 3. "Increased by 7"
Expression: 3x + 7

Part A – Write an Algebraic Expression - Use **x** for the unknown number.

1. The sum of a number and 9

   _____

2. Seven more than a number

   _____

3. Four times a number

   _____

4. A number divided by 6

   a) x + 6 **b)** $\frac{x}{6}$ **c)** 6 - x

5. Eight less than a number

   _____

6. The product of 12 and a number

   _____

7. A number decreased by 15

   _____

8. The quotient of a number and 4

   a) $\frac{x}{4}$ **b)** 4 + x **c)** x - 4

9. Ten added to a number

   _____

10. Twice a number

    _____

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Part B – Translate into Algebraic Expressions

11. Five more than twice a number

_____

12. Three less than four times a number

_____

13. The product of 8 & a number increased by 2

_____

14. Nine divided by a number

a) 9 – x **b)** $\frac{9}{x}$ **c)** 9x

15. One-half of a number

a) $\frac{x}{2}$ **b)** 2x **c)** 2 + x

16. Seven times the sum of a number and 5

_____

17. The difference between a number and 11

_____

18. Four more than the quotient of a number and 8

a) $\frac{x}{8} + 4$ **b)** 4 + x **c)** x - 4

19. The product of 6 and the difference of a number and 3

_____

20. The quotient of the sum of a number and 10 and 5

a) $\frac{x+10}{5}$ **b)** 10 – x **c)** 10x

Part C – Choose the Correct Expression

Circle the correct expression.

21. Five less than a number

A. $5 - x$

B. $x - 5$

C. $5 + x$

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22. Three times a number plus 2

A. $3(x + 2)$

B. $3x + 2$

C. $2x + 3$

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23. The quotient of a number and 7

A. $\frac{7}{x}$

B. $\frac{x}{7}$

C. $7x$

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24. The difference between twice a number and 4

A. $2x - 4$

B. $4 - 2x$

C. $2(x - 4)$

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25. Eight more than half a number

A. $\frac{x+8}{2}$

B. $\frac{x}{2} + 8$

C. $8x + 2$

Part D – Word Problems

Write an algebraic expression for each situation.

26. Sarah has **x** dollars. She earns **15** more dollars.

Expression: a) x + 15 b) 15x c) 15 - x

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27. A rectangle has a length of **x** feet and a width of **8** feet. Write an expression for the perimeter.

Expression: a) 2x + 8 b) 2(x + 8) c) $\frac{x}{5}$ + 2

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28. A movie ticket costs **$12**. A snack costs **x** dollars.

Expression: a) 12x b) 12 + x c) 12 - x

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29. There are **x** students. They are divided equally into **5** groups.

Expression: a) $\frac{x}{5}$ b) 5 – x c) 5x

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30. A plumber charges **$60** plus **$25** for each hour worked. Let **h** represent the number of hours.

Expression: a) 60 – h b) 60 + 25h c) 60h

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