

Grade 6 · Writing and Evaluating Algebraic Expressions · Worksheet

Common Core 6.EE.A.2, 6.EE.A.3, 6.EE.A.4 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

These 20 problems practice writing, evaluating, and rewriting algebraic expressions from Common Core 6.EE.A.2, 6.EE.A.3, and 6.EE.A.4. Early problems name the parts of an expression and translate phrases; middle problems use exponents, formulas, the distributive property, and like terms.

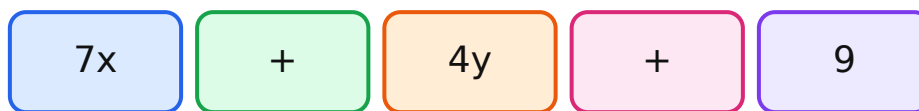
Problems 15 through 20 are word problems about pay, profit, prices, fencing, area, and a gift box. Write each step of your substitution so that the work is easy to check.

Grade 6 Common Core: 6.EE.A.2 · 6.EE.A.3 · 6.EE.A.4

Problem 1: Parts of an Expression

Use the expression $7x+4y+9$ to answer each question.

- How many terms does it have?
- What is the coefficient of x ?
- What is the coefficient of y ?
- Which term is the constant?



Expression $7x+4y+9$.

Problem 2: Writing Simple Expressions

Write an algebraic expression for each phrase.

- 8 more than n
- 6 less than y
- the product of 5 and m
- k divided by 4

Problem 3: Naming Operations

Classify each expression as a sum, a difference, a product, or a quotient.

- a. $t+7$
- b. $9w$
- c. $\frac{y}{5}$
- d. $12-k$

Problem 4: Writing Longer Expressions

Write an algebraic expression for each phrase.

- a. twice the sum of x and 7
- b. 3 times a , decreased by 2
- c. the quotient of 20 and p
- d. 9 less than the product of 4 and t

Phrase	Think
twice	$\times 2$
sum of	add, use ()
less than	subtract
quotient	divide

Hints for translating phrases.

Problem 5: Evaluating Expressions

Evaluate each expression when $x=6$.

- a. $x+9$
- b. $4x$
- c. $\frac{30}{x}$
- d. $3x-5$

Problem 6: Two Variables

Evaluate each expression when $a=4$ and $b=5$.

- a. $a+b$
- b. $3a+2b$

- c. $ab-6$
- d. $2(a+b)$

Problem 7: Exponents First

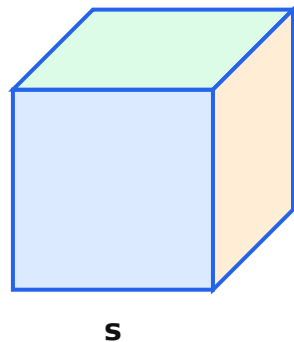
Evaluate each expression when $x=3$. Follow the order of operations.

- a. $2x^2+1$
- b. $(x+5)^2$
- c. $4x^2-3x$
- d. $60-2x^3$

Problem 8: Exponents and Formulas

Evaluate each expression or formula.

- a. n^2 when $n=7$
- b. $5x^2-10$ when $x=4$
- c. $V=s^3$ when $s=5$ ft
- d. $A=6s^2$ when $s=\frac{1}{2}$ in



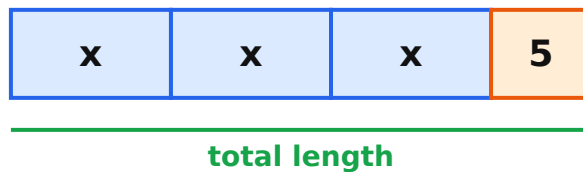
all edges equal

Cube with edge s .

Problem 9: Tape Diagram Expression

The tape diagram shows a ribbon cut into three equal pieces of length x inches and one extra piece that is 5 in long.

- a. Write an expression for the total length of the ribbon.
- b. Evaluate the expression when $x=7$.
- c. Evaluate the expression when $x=2.5$.

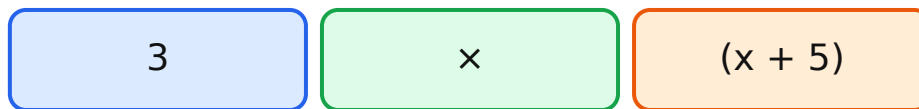


A ribbon made of three pieces of length x and one 5-inch piece.

Problem 10: Distributive Property

Apply the distributive property to write an equivalent expression.

- a. $3(x+5)$
- b. $4(2y+1)$
- c. $6x+9$ as a product of 3 and a sum
- d. $10+15m$ as a product of 5 and a sum

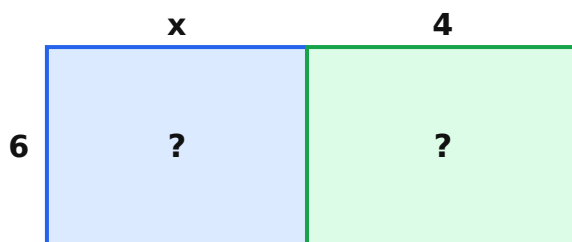


A number multiplied by a sum.

Problem 11: Area Model for Expanding

A rectangle is 6 units tall. Its width is split into a part of length x and a part of length 4.

- a. Write the total area as a product of 6 and a sum.
- b. Write the total area as the sum of the areas of the two smaller rectangles.
- c. Rewrite $8y+20$ as a product of 4 and a sum.
- d. Expand $9(k+3)$.



Total width: $x + 4$. Height: 6.

Problem 12: Combining Like Terms

Simplify each expression by combining like terms.

- a. $7a+3a$

- b. $9b - 4b$
- c. $2x + 5 + 6x + 1$
- d. $3y + 4 + y + 2y$

$7a$

$3a$

Like terms share the same variable part.

Problem 13: Like Terms with Two Variables

Simplify each expression by combining like terms.

- a. $5x + 3y + 2x + y$
- b. $8a + 3 - 2a + 9$
- c. $9m + 6n - 4m - n$
- d. $4(2p + 3) + p$

Problem 14: Equivalent or Not

For each pair, evaluate both expressions at the given value of the variable. Then decide whether the expressions are equivalent.

- a. $2(x + 3)$ and $2x + 6$, when $x = 5$
- b. $3x + 4x$ and $7x^2$, when $x = 2$
- c. $5(y - 1)$ and $5y - 1$, when $y = 4$

$2(x + 3)$

$=?$

$2x + 6$

$x = 5$

$3x + 4x$

$=?$

$7x^2$

$x = 2$

$5(y - 1)$

$=?$

$5y - 1$

$y = 4$

Substitute the given value into both sides.

Problem 15: Dog Walking Pay

Ethan earns \$12 for each hour he walks dogs and gets a \$5 tip. Write an expression for his total pay for h hours, then evaluate it when $h = 6$.

Problem 16: Cupcake Profit

Priya sells cupcakes at the school bake sale for \$1.50 each. She spent \$12 on ingredients.

- Write an expression for her profit, in dollars, after selling c cupcakes.
- Evaluate the expression when $c = 40$.
- Evaluate the expression when $c = 8$ and explain what the result means.

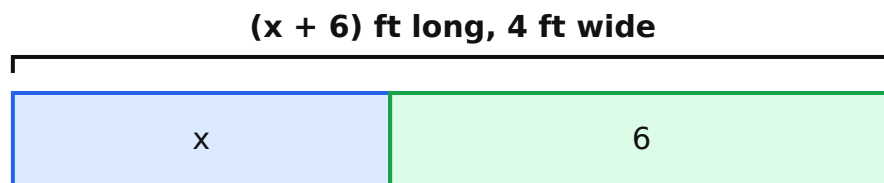
Problem 17: Pizza Shop Prices

Jamal compares two pizza shops. Shop A charges \$8 per pizza plus a \$15 delivery fee. Shop B charges \$10 per pizza plus a \$5 delivery fee.

- Write an expression for the cost at each shop for p pizzas.
- Evaluate both expressions for $p = 4$, $p = 5$, and $p = 6$.
- Determine which shop is cheaper for 6 pizzas and by how much.

Problem 18: Flower Bed Area

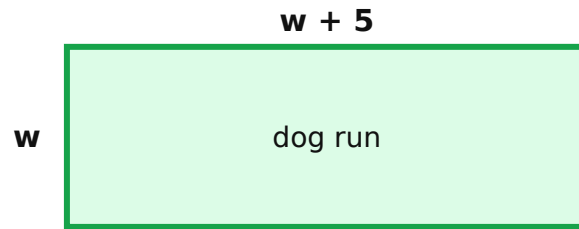
A rectangular flower bed is 4 ft wide and $(x+6)$ ft long. Write two equivalent expressions for its area, then show that they have the same value when $x = 3$.



Problem 19: Dog Run Fencing

Maya builds a rectangular dog run that is w feet wide and $(w+5)$ feet long. Fence panels cost \$3.25 per foot.

- Write two equivalent expressions for the perimeter of the run.
- Find the perimeter when $w = 12$.
- Find the cost of the fence when $w = 12$.



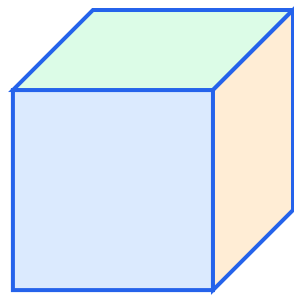
Fence goes around all four sides.

A rectangular dog run.

Problem 20: Gift Box

Sofia wraps a cube-shaped gift box with edges of 8 in. Wrapping paper costs \$0.02 per square inch.

- Find the volume of the box using $V = s^3$.
- Find the surface area using $A = 6s^2$.
- Find the cost of the paper needed to cover the whole box.



all edges equal

8 in

Gift box with 8 in edges.