

Writing, Evaluating and Simplifying Algebraic Expressions

Grade 6 math · Worksheet · Standards: 6.EE.A.2, 6.EE.A.3, 6.EE.A.4

Name: _____ Date: _____ Class: _____

These 20 problems follow standards 6.EE.A.2, 6.EE.A.3 and 6.EE.A.4. Students name the parts of an expression, translate phrases, evaluate expressions and formulas, and write equivalent expressions with the distributive property and like terms.

The last six problems are word problems about costs, gardens and gift boxes. Write the expression first, simplify it, and only then substitute a value.

Standards: 6.EE.A.2, 6.EE.A.3, 6.EE.A.4 · **Level:** Grade 6

Problem 1 Parts of an expression (easy)

Name the terms, the coefficient and the constant in $6n + 9$.

Problem 2 Words to expressions (easy)

Write an expression for each phrase.

- a. 9 more than a number y
- b. a number k decreased by 4
- c. the product of 8 and w
- d. a number t divided by 5

Problem 3 Evaluate $4x + 3$ (easy)

Evaluate $4x + 3$ when $x = 6$.

Problem 4 Evaluate $20 - 2n$ (easy)

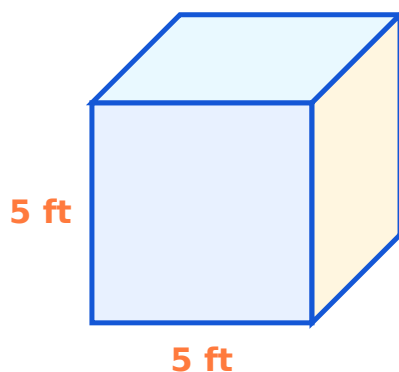
Evaluate $20 - 2n$ when $n = 7$.

Problem 5 Evaluate with a fraction (easy)

Evaluate $\frac{m}{3} + 8$ when $m = 15$.

Problem 6 Storage bin (medium)

A cube-shaped bin has edge $s = 5$ ft. Use $V = s^3$ and $A = 6s^2$ to find its volume and surface area.



A cube-shaped storage bin with edge 5 ft.

Problem 7 Two variables (medium)

Evaluate $6m + 4n$ when $m = 3$ and $n = 8$.

Problem 8 Evaluate with a power (medium)

Evaluate $x^2 - 3x$ when $x = 8$.

Problem 9 Harder phrases (medium)

Write an expression for each phrase.

- a. 5 less than the product of 3 and n
- b. twice the sum of m and 7

Problem 10 Equivalent or not (medium)

Which of these expressions are equivalent to $3(x + 2)$? (a) $3x + 2$ (b) $3x + 6$ (c) $6 + 3x$ (d) $x + 6$

Problem 11 Expanding (medium)

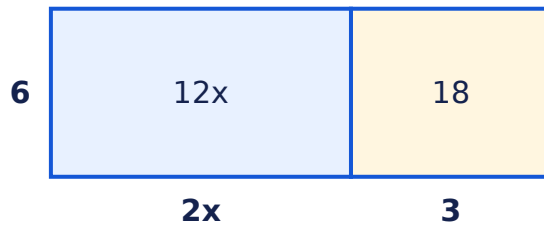
Use the distributive property to expand $7(n + 4)$ and $5(2y - 3)$.

Problem 12 Combining like terms (medium)

Simplify: (a) $6x + 4x$ (b) $9y - 5y$ (c) $3a + 7 + 2a + 5$.

Problem 13 Factoring with the GCF (medium)

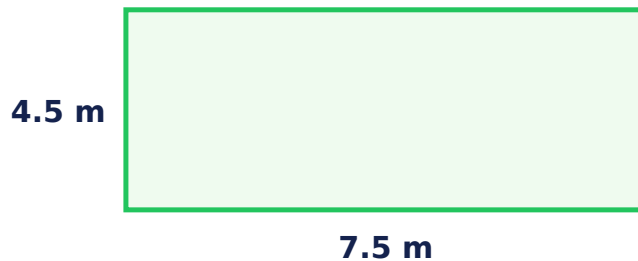
Write $12x + 18$ as a product of the GCF and a sum.



Areas $12x$ and 18 share the height 6.

Problem 14 Perimeter of a rectangle (medium)

The perimeter of a rectangle is $2(l + w)$. Find it for $l = 7.5$ m and $w = 4.5$ m.



Rectangle for the perimeter formula $2(l + w)$.

Problem 15 Concert tickets (medium)

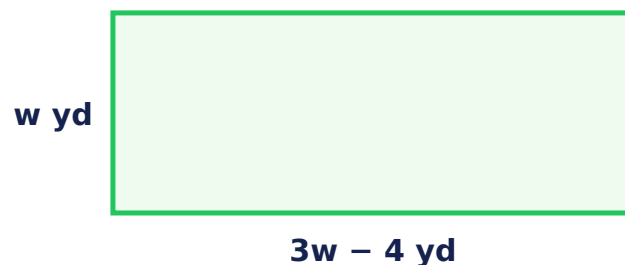
Tickets cost \$14 each and there is a \$3 online fee for the whole order. Write an expression for the cost of t tickets, then find the cost of 6 tickets.

Problem 16 Taxi ride (medium)

A taxi charges \$4 to start and \$2.50 for each mile. Write an expression for a ride of m miles and evaluate it for 8 miles.

Problem 17 Vegetable bed (hard)

A rectangular vegetable bed has width w yards, and its length is 4 yards less than three times the width. Write an expression for the length, then simplify an expression for the perimeter. Evaluate the perimeter for $w = 6$.



Bed: width w , length $3w - 4$.

Problem 18 Sticker packs (hard)

Ava buys 5 packs with s stickers each and has 8 extra stickers. Ben buys 3 packs with s stickers each and has 12 extra. Write and simplify an expression for their combined stickers, then evaluate it when $s = 10$.

Problem 19 Equivalent test (hard)

A student says $4(x + 3)$ and $4x + 3$ are equivalent. Test both with $x = 2$, decide whether the student is right, and write an expression equivalent to $4(x + 3)$.

Problem 20 Tiny gift box (hard)

A cube-shaped gift box has edge $\frac{1}{2}$ ft. Find its volume with $V = s^3$ and its surface area with $A = 6s^2$.