

Chapter Menu

Lesson 1-1 Variables and Expressions

Lesson Menu

Main Ideas and Vocabulary

California Standards

Example 1: Write Algebraic Expression

Example 2: Evaluate Powers

Example 3: Write Verbal Expressions



Main Ideas

- Write mathematical expressions for verbal expressions.
- Write verbal expressions for mathematical expressions.

New Vocabulary

- variables
- algebraic expression
- factors
- product
- power
- base
- exponent
- evaluate





CALIFORNIA STANDARDS




Reinforcement of Standard 7AF1.1 Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A). (CAHSEE)



EXAMPLE**Write Algebraic Expression**

- 1** **A.** Write an algebraic expression for 5 less than a number c .

The words *less than* suggest subtraction.

a number c	less	five
		
c	$-$	5

Answer: The algebraic expression is $c - 5$.

EXAMPLE**Write Algebraic Expression**

- 1 B.** Write an algebraic expression for 9 plus the product of 2 and the number d .

Plus implies add, and *product* implies multiply.

Answer: $9 + 2d$.



EXAMPLE Write Algebraic Expression

- 1 C. Write an algebraic expression for two thirds of the original volume v .

The word *of* implies multiply.

Answer : The expression can be written as $\frac{2}{3}v$.



EXAMPLE**Write Algebraic Expression**

- 1 D.** Write an algebraic expression for the product of $\frac{3}{4}$ and a to the seventh power.

The word *product* implies multiplication.

Answer : The expression can be written as $\frac{3}{4}a^7$.

 **CHECK** Your Progress

1 **A.** Write an algebraic expression for nine more than a number h .

A. $9 - h$

B. $9h$

C. $9 + h$

D. $h - 9$



 **CHECK Your Progress**

1 B. Write an algebraic expression for the difference of 6 and 4 times a number x .

A. $6 - 4x$

B. $(6 - 4)x$

C. $6 + 4x$

D. $6x - 4$



 **CHECK Your Progress**

1 C. Write an algebraic expression for one half the size of the original perimeter p .

A. $2p$

B. $\frac{1}{2}p$

C. p^2

D. $p^{\frac{1}{2}}$



 **CHECK Your Progress**

1 **D.** Write an algebraic expression for the product of 6 and x to the fifth power.

A. $6x^5$

B. $30x$

C. $6(5x)$

D. $5x^6$



EXAMPLE Evaluate Powers

2 Evaluate 3^4 .

$$3^4 = 3 \bullet 3 \bullet 3 \bullet 3$$

Use 3 as a factor 4 times.

$$= 81$$

Multiply.

Answer: 81



 CHECK Your Progress

2 Evaluate 5^4 .

A. 625

B. 20

C. 54

D. 50

EXAMPLE Write Verbal Expressions

- 3 A. Write a verbal expression for $\frac{8x^2}{5}$.

Answer: the quotient of 8 times x squared and 5



EXAMPLE Write Verbal Expressions

3 B. Write a verbal expression for $y^5 - 16y$.

Answer: the difference of y to the fifth power and 16 times y



 **CHECK Your Progress**

- 3** A. Write a verbal expression for the algebraic expression $7a^4$.
- A. 7 times a
- B. 7 times the product of 4 and a
- C.** 7 times a to the fourth power
- D. 4 times a to the seventh power

 **CHECK** Your Progress

- 3** B. Write a verbal expression for the algebraic expression $x^2 + 3$.
- A. the sum of 3 and x
 - B. the product of x squared and 3
 - C. the sum of x and 3 squared
 - D.** the sum of x squared and 3

