Algebra 1.1

Write verbal expressions for algebraic expressions
Write algebraic expressions for verbal expressions

algebraic expression
variable
term
factor
product
power
exponent base

the sum of 5 times a number and -3. $5n-3 = 5n+-3$

$3x + \frac{1}{2}y$

Key Concept For Your FOLDABLE

Translating Verbal to Algebraic Expressions

Operation	Verbal Phrases
Addition	more than, sum, plus, increased by, added to
Subtraction	less than, subtracted from, difference, decreased by, minus
Multiplication	product of, multiplied by, times, of
Division	quotient of, divided by

Check Your Progress

2A. the product of p and 6

2B. one third of the area a

An expression like x^n is called a **power** and is read "x to the nth power." The variable x is called the **base**, and n is called the **exponent**. The exponent indicates the number of times the base is used as a factor.

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Symbols	Words	Meaning
3^1	3 to the first power	3
3^2	3 to the second power or 3 squared	$3 \cdot 3$
3^3	3 to the third power or 3 cubed	$3 \cdot 3 \cdot 3$
3^4	3 to the fourth power	$3 \cdot 3 \cdot 3 \cdot 3$
$2b^6$	2 times b to the sixth power	$2 \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b$
x^n	x to the nth power	$\underbrace{x \cdot x \cdot x \cdot \ldots \cdot x}_{n \text{ factors}}$

By definition, for any nonzero number x, $x^0 = 1$.

$2 \cdot 2 = 2^2$

$2 \cdot 2 \cdot 2 \cdot 2 = 16$

$2 \cdot 2 \cdot 2 = 2^3$

2^4

$2 + 2 + 2 + 2 + 2 = 10$

$2 \cdot 5 = 10$

Study Tip

Reading Math

When no exponent is shown, it is understood to be 1. For example, $a = a^1$.

Example 2 Write Algebraic Expressions with Powers

Write each expression algebraically.

a. the product of 7 and m to the fifth power

$7m^5$

b. the difference of 4 and x squared

$4 - x^2$

$7 \cdot m^5$

$(7m)^5$

(4) − (x^2)

$x^2 - 4$

To **evaluate** an expression means to find its value.

Example 3 Evaluate Powers

Evaluate each expression.

a. $2^6 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 64$

$6^2 = 6 \cdot 6 = 36$

$2 \cdot 6 = 12$

Whiteboards

Write an algebraic expression for each verbal expression.

11. the sum of 35 and z $35+z$
12. the sum of a number and 7 $n+7$
13. the product of 16 and p $16p$
14. the product of 5 and a number $5n$
15. 49 increased by twice a number $49+2n$
16. 18 and three times d $18+3d$
17. two-thirds the square of a number $\frac{2}{3}n^2$
18. one-half the cube of n $\frac{1}{2}n^3$

Evaluate each expression.

21. 6^2 = 66 = 36
22. 8^2 64
23. 3^4 81
24. 6^3 216
25. 3^5 243
26. 15^3 = 3375
27. 10^6
28. 100^3

3·3·3·3·3

15·15·15 =

1,000,000

1,000,000

8^{15} =

Matching activ