

1.1

Evaluate Expressions

Goal • Evaluate algebraic expressions and use exponents.

Your Notes

An algebraic expression is also called a variable expression.

VOCABULARY

Variable A letter used to represent one or more numbers

Algebraic expression A collection of numbers, variables, and operations

Evaluating an expression Substituting a number for the variable, performing the operation(s), and simplifying the result if necessary

Power An expression that represents repeated multiplication of the same factor

Base The number or expression that is used as a factor in repeated multiplication

Exponent A number or expression that represents the number of times the base is used as a factor

ALGEBRAIC EXPRESSIONS

Algebraic Expression	Meaning	Operation
$7t$	7 times t	<u>Multiplication</u>
$\frac{x}{20}$	<u>x divided by 20</u>	Division
$y - 8$	<u>y minus 8</u>	<u>Subtraction</u>
$12 + a$	<u>12 plus a</u>	<u>Addition</u>

Your Notes

✔ **Checkpoint** Write the power in words and as a product.

<p>5. 7^5</p> <p>seven to the fifth power</p> <p>$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$</p>	<p>6. $\left(\frac{1}{3}\right)^2$</p> <p>one third to the second power, or one third squared</p> <p>$\frac{1}{3} \cdot \frac{1}{3}$</p>	<p>7. $(1.4)^3$</p> <p>one and four tenths to the third power, or one and four tenths cubed</p> <p>$(1.4)(1.4)(1.4)$</p>
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Example 3 Evaluate powers

Evaluate the expression.

a. y^3 when $y = 3$

b. a^5 when $a = 1.2$

Solution

a. $y^3 = \underline{3^3}$
 $= \underline{3 \cdot 3 \cdot 3}$
 $= \underline{27}$

Substitute 3 for y .

Write factors.

Multiply.

b. $a^5 = \underline{1.2^5}$
 $= \underline{(1.2)(1.2)(1.2)(1.2)(1.2)}$
 $= \underline{2.48832}$

Substitute 1.2 for a .

Write factors.

Multiply.

✔ **Checkpoint** Evaluate the expression.

<p>8. t^2 when $t = 3$</p> <p>9</p>	<p>9. m^5 when $m = \frac{1}{2}$</p> <p>$\frac{1}{32}$</p>	<p>10. x^3 when $x = 4$</p> <p>64</p>
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Homework