

Chapter 1

Expressions, Equations, and Functions

Lesson 1.1
Variables and Expressions

- Objectives:
 - Write verbal expressions for algebraic expressions.
 - Write algebraic expressions for verbal expressions.

Bell Work!

- Find the following values:
 1. 3 more than 5
 2. The difference of 12 and 9
 3. $\frac{1}{2}$ of 18
 4. The quotient of 30 and 2
 5. 10 less than 4
 6. The product of -5 and -4
 7. The sum of 8 and -2
 8. 20 divided by -4

Vocabulary

- Algebraic expression—consists of sums and/or products of numbers and variables

$$0.10d \quad 2x + 4 \quad 3 + \frac{z}{6} \quad p \cdot q \quad 4cd \div 3mn$$

- Variables—symbols (usually letters) used to represent unspecified numbers or values
- Term—a number, a variable, or a product or quotient of numbers and variables

The term that contains x or other letters is sometimes referred to as the *variable term*.

$$2x + 4$$

A term that does not have a variable is a *constant term*.

- Exponent (power)—indicates the number of times the base is used as a factor



Translation Keywords

KeyConcept 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

Write Verbal Expressions

Ex 1. Write a verbal expression for $8x^2$.

Answer: eight times x squared

Ex 2. Write a verbal expression for $y^5 - 16y$.

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

Write Verbal Expressions

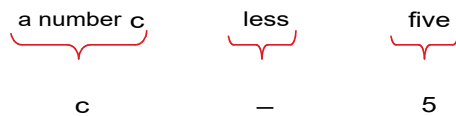
Write a verbal expression for $7a^4$.

Write a verbal expression for $x^2 + 3$.

Write Algebraic Expressions

Ex 1. 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: Thus, the algebraic expression is $c - 5$.

Write Algebraic Expressions

Ex 2. Write an algebraic expression for 9 plus the product of 2 and d .

Plus implies add, and product implies multiply.

Answer: The expression can be written as $9 + 2d$.

Ex 3. Write an algebraic expression for two fifths of the area a .

The word of implies multiply.

Answer: $\frac{2}{5}a$ or $\frac{2a}{5}$

Bell Work!

Write a verbal expression for each:

1) $3x^4 - 10x$

2) $(2x)(x)$

3) Write an algebraic expression for the product of $\frac{2}{7}$ and x .

Write Algebraic Expressions

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

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

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

Real-World Application

Process:

1. Define your variable(s)
2. Key words (which operation?)
3. Write your expression

Ex. 1 Mr. Nehru bought two adult tickets and three student tickets for the planetarium show. Write an algebraic expression that represents the cost of the tickets.

Let a be the cost of each adult ticket and c be the cost of each student ticket. The cost of the adult tickets is represented by $2a$ and the cost of the student tickets is represented by $3c$

Answer: The cost of the tickets is represented by $2a + 3c$.

Real-World Application

Lorenzo bought a bag of peanuts that cost p dollars and he gave the cashier a \$20 bill. Write an expression for the amount of change that he will receive.

Homework

Lesson 1.1 (Pages 7-8)

11-27 Odd, 29, 30, 34, 35