

1 Expressions, Equations, and Functions

In this chapter, you will:

- Write algebraic expressions.
- Use the order of operations.
- Solve equations.
- Represent and interpret relations and functions.
- Use function notation.
- Interpret the graphs of functions.

Key Concepts

Order of Operations (Lesson 1-2)

- Evaluate expressions inside grouping symbols.
- Evaluate all powers.
- Multiply and/or divide in order from left to right.
- Add or subtract in order from left to right.

Properties of Equality (Lessons 1-3 and 1-4)

- For any numbers a , b , and c :
 - Reflexive: $a = a$
 - Symmetric: If $a = b$, then $b = a$.
 - Transitive: If $a = b$ and $b = c$, then $a = c$.
 - Substitution: If $a = b$, then a may be replaced by b in any expression.
 - Distributive: $a(b + c) = ab + ac$ and $a(b - c) = ab - ac$
 - Commutative: $a + b = b + a$ and $ab = ba$
 - Associative: $(a + b) + c = a + (b + c)$ and

Solving Equations (Lesson 1-5)

- Apply order of operations and the properties of real numbers to solve equations.

Relations, Functions, and Interpreting Graphs of Functions (Lessons 1-6 through 1-8)

- Relations and functions can be represented by ordered pairs, a table, a mapping, or a graph.
- Use the vertical line test to determine if a relation is a function.
- End behavior describes the long-term behavior of a function on either end of its graph.
- Points where the graph of a function crosses an axis are called intercepts.
- A function is positive on a portion of its domain where its graph lies above the x -axis, and negative on a portion where its graph lies below the x -axis.

Key Vocabulary

algebraic expression (p. 5)	ordered pair (p. 40)
base (p. 5)	order of operations (p. 10)
coefficient (p. 28)	origin (p. 40)
coordinate system (p. 40)	power (p. 5)
dependent variable (p. 42)	range (p. 40)
domain (p. 40)	reciprocal (p. 17)
end behavior (p. 57)	relation (p. 40)
equation (p. 33)	relative maximum (p. 57)
exponent (p. 5)	relative minimum (p. 57)
function (p. 47)	replacement set (p. 33)
independent variable (p. 42)	simplest form (p. 27)
intercept (p. 56)	solution (p. 33)
like terms (p. 27)	term (p. 5)
line symmetry (p. 57)	variables (p. 5)
mapping (p. 40)	vertical line test (p. 49)