

3 Linear Functions

In this chapter you will:

- Identify linear equations, intercepts, and zeros.
- Graph and write linear equations.
- Use rate of change to solve problems.

Graphing Linear Equations (Lesson 3-1)

- The standard form of a linear equation is $Ax + By = C$, where $A \geq 0$, A and B are not both zero, and A , B , and C are integers whose greatest common factor is 1.

Solving Linear Equations by Graphing (Lesson 3-2)

- Values of x for which $f(x) = 0$ are called zeros of the function f . A zero of a function is located at an x -intercept of the graph of the function.

Rate of Change and Slope (Lesson 3-3)

- If x is the independent variable and y is the dependent variable, then rate of change equals

$$\frac{\text{change in } y}{\text{change in } x}$$

- The slope of a line is the ratio of the rise to the run.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Direct Variation (Lesson 3-4)

- A direct variation is described by an equation of the form $y = kx$, where $k \neq 0$.

Arithmetic Sequences (Lesson 3-5)

- The n th term a_n of an arithmetic sequence with first term a_1 and common difference d is given by $a_n = a_1 + (n - 1)d$, where n is a positive integer.

Proportional and Nonproportional Relationships

(Lesson 3-6)

- In a proportional relationship, the graph will pass through $(0, 0)$.
- In a nonproportional relationship, the graph will not pass through $(0, 0)$.

Key Vocabulary



arithmetic sequence (p. 189)	rate of change (p. 172)
common difference (p. 189)	root (p. 163)
constant (p. 155)	sequence (p. 189)
constant of variation (p. 182)	slope (p. 174)
deductive reasoning (p. 196)	standard form (p. 155)
direct variation (p. 182)	terms of the sequence (p. 189)
inductive reasoning (p. 196)	x -intercept (p. 156)
linear equation (p. 155)	y -intercept (p. 156)
linear function (p. 163)	zero of a function (p. 163)