

4 Equations of Linear Functions

In this chapter, you will:

- Write and graph linear equations in various forms.
- Use scatter plots and lines of fit, and write equations of best-fit lines using linear regression.
- Find inverse linear functions.

Slope-Intercept Form (Lessons 4-1 and 4-2)

- The slope-intercept form of a linear equation is $y = mx + b$, where m is the slope and b is the y -intercept.
- If you are given two points through which a line passes, use them to find the slope first.

Point-Slope Form (Lesson 4-3)

- The linear equation $y - y_1 = m(x - x_1)$ is written in point-slope form, where (x_1, y_1) is a given point on a nonvertical line and m is the slope of the line.

Parallel and Perpendicular Lines (Lesson 4-4)

- Nonvertical parallel lines have the same slope.
- Lines that intersect at right angles are called perpendicular lines. The slopes of perpendicular lines are opposite reciprocals.

Scatter Plots and Lines of Fit (Lesson 4-5)

- Data with two variables are called bivariate data.
- A scatter plot is a graph in which two sets of data are plotted as ordered pairs in a coordinate plane.

Regression and Median-Fit Lines (Lesson 4-6)

- A graphing calculator can be used to find regression lines and median-fit lines.

Inverse Linear Functions (Lesson 4-7)

- An inverse relation is the set of ordered pairs obtained by exchanging the x -coordinates with the y -coordinates of each ordered pair of a relation.
- A linear function $f(x)$ has an inverse function that can be written as $f^{-1}(x)$ and is read *f of x inverse* or *the inverse of f of x*.

Key Vocabulary

best-fit line (p. 255)	linear interpolation (p. 249)
bivariate data (p. 247)	linear regression (p. 255)
constant function (p. 217)	line of fit (p. 248)
constraint (p. 228)	median-fit line (p. 258)
correlation coefficient (p. 255)	parallel lines (p. 239)
identity function (p. 224)	perpendicular lines (p. 240)
inverse function (p. 264)	point-slope form (p. 233)
inverse relation (p. 263)	scatter plot (p. 247)
linear extrapolation (p. 228)	slope-intercept form (p. 216)