

Algebra 1

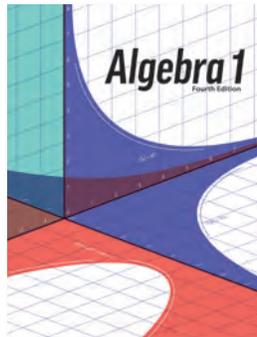
EDITION COMPARISON

NEW

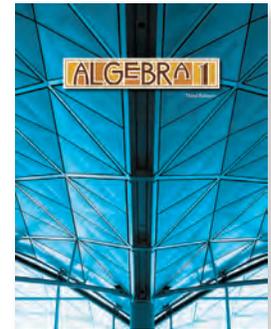
Updates

This edition reflects multiple significant changes from the previous edition. These revisions include multiple textual changes, newly integrated teaching strategies, condensed textbook chapters, updated visual elements, and updated student activities. The student edition page count has increased from 625 to 704. Course objectives have been refined, and biblical worldview shaping themes have been integrated into each chapter.

Because of the extensive nature of these changes, this edition is not compatible with its predecessor.



4th Edition



3rd Edition

Content Updates

- Integrated four-step teaching cycle of engage, instruct, apply, and assess
- Reworded course objectives for specificity
- Added essential questions and simplified learning targets to each chapter section
- Added STEM lessons in the student activities book
- Added special sections on differentiated instruction
- Added on-page step-by-step solutions to the activities answer key
- Added key concept summaries and biblical worldview shaping objectives to each chapter review
- Added appendix lessons to address state standards regarding statistics
- Removed opening course review section and condensed the first three chapters into two
- Repurposed Dominion Modeling problems as Application Problems at the end of each chapter
- Updated guidelines for the current TI-84 Plus family of calculators
- Upgraded arithmetic sequence special feature to a full chapter section in Chapter 4
- Upgraded geometric sequence special feature to a full chapter section in Chapter 7
- Removed bulletin board ideas and select student activities

Special Features

- Essential questions and simplified learning targets at the beginning of each section
- QR codes for access to instructional videos and practice problems
- Highlighted reviews for essential questions and key mathematical practices
- Skill checks for formative assessment
- Exercises grouped by degree of difficulty

Textbook Snapshot

4.6 DIRECT & INVERSE VARIATIONS

What is the significance of defining natural language related to direct and inverse variations?

After completing this section, you will be able to:

- identify a function as direct, inverse, or neither
- find the constant of variation for direct and inverse variations
- write equations modeling direct and inverse variations to solve real-world problems
- explain the significance of using algebraic notation

Donna rides her bike at a constant rate of 22 ft/sec, as indicated by each ordered pair listed in the table. This relationship can be expressed using the equation $y = 22x$. The distance traveled (y) is a function of the amount of time (x) for spent riding. Notice that the ratio $\frac{y}{x} = 22$ for every ordered pair.

Time (min)	Distance (ft)
0	0
2	44
4	88
6	132
8	176

DEFINITION

- A **direct variation** is a function in which the ratio of variables is a constant constant k . That is, $\frac{y}{x} = k$ for values of x . The equation can be written in slope-intercept form as $y = kx$. The constant k is called the **constant of variation** or the **constant of proportionality**.

A direct variation can also be stated using the general equation $y = kx + b$, for $b = 0$. The graph of a variable in a constant multiple of the other. Most applications of direct variations involve a positive constant of proportionality ($k > 0$), in which an increase in one of the variables causes an increase in the other variable.

EXAMPLE 6: Determining a Direct Variation

Check the table to represent a direct variation. If so, find the constant of variation and write the function rule.

a.

x	y
1	2
2	4
3	6
4	8
5	10

b.

x	y
1	4
2	16
3	36
4	64
5	100

Answers

a. The table represents a direct variation since the ratio $\frac{y}{x} = 2$ for each ordered pair. The constant of variation is 2 and the function rule is $f(x) = 2x$.

b. The table does not represent a direct variation since the ratio $\frac{y}{x}$ is not a constant.

192 CHAPTER 4 Functions