

*The Common Denominator*  
*A Family Math Newsletter*  
*Mathematics 6 GT Unit 8: Multiplication in Algebra*

Unit at a Glance:

Suggested Length of Unit: 14 days (45 minutes), 7 days (90 minutes)

- Multiplication as Shortcut Addition
- The Rate-Factor Model for Multiplication
- Multiplication with Negative Numbers
- Multiplying Probabilities
- Combining Percents
- Solving  $ax = b$
- Graphing  $y = ax + b$
- Solving  $ax + b = c$
- Solving  $ax + b < c$

Resources

- Textbook Resource: Viktora, Steven S, et al. Transition Mathematics. Wright Group/McGraw-Hill, 2008, pp. 484-551.
- Homework Help/Online book (teacher-provided code needed): [Online Textbook Portal](#)

Exploring Chapter 8

By the time students may not have encountered the multiplication of positive and negative numbers. They are likely to have solved some one-step equations involving multiplication of whole numbers but tend to be uncomfortable when dealing with any other rational numbers. The purpose of this chapter is to cinch many of these ideas while also providing bridges to algebra.

Whereas Chapter 7 was driven by the area model for multiplication and its uses, this chapter is organized around the two other most important models for multiplication: the rate-factor model and the size-change model. Each of these models is quite general, with applications to fractions, decimals and negative numbers.

The chapter begins with a short lesson reviewing multiplication as a shortcut for addition using the generalized algebraic properties. Collecting like terms is brought back to emphasize the difference between *like* and *unlike* terms. Lessons 8-2 and 8-3 introduce and utilize the rate-factor model to explain why multiplication by negative numbers has the properties it has. The size-change model is used in Lesson 8-3 to provide still another justification for the multiplication of negative numbers

Lessons 8-4 and 8-5 discuss the multiplication of probabilities and working with percents, respectively. Lesson 8-6 provides methods of solving equations in the form  $ax = b$ . The new learning is the use of the *multiplicative* inverse (the Property of Reciprocals) to isolate a variable with a coefficient. Lesson 8-7 presents graphing equations in the form of  $y = ax + b$ . Finally, Lessons 8-8 and 8-9 supply methods of solving  $ax + b = c$  and related equations and inequalities.

Quote

One of the most endlessly alluring aspects of mathematics is that its thorniest paradoxes have a way of blooming into beautiful theories.” -Phillip J. Davis