

Spotlight On: Rough Draft Talk

Throughout *Inspiring Connections*, students will engage in rough draft talk, where they are encouraged to share ideas and brainstorm even if their initial methods are incorrect. It is common for students to feel that being wrong in mathematics is a bad thing when, in fact, it is an asset and is one way to build deeper conceptual understanding over time. Some of the ways rough draft talk is encouraged in the course are through Number Talks and Dot Talks, where students make observations about an open problem where there are multiple ways to arrive at the correct answer.

The Big Picture

Growing From

Multiple representations

Working On

Linear and nonlinear functions

Growing To

Functions

Need Help?

Methods & Meanings boxes are included in the Mathematician's Notebook as reference.

8.1.1: The Converse of the Right Triangle Theorem

8.2.1: Functions

Try This at Home!

Much of the work with functions that students do in this chapter centers around problem solving. Strengthen their problem-solving skills (and your own) by playing games together that involve strategy, problem solving, and logic. Examples include Mastermind, Blokus, chess, and checkers.

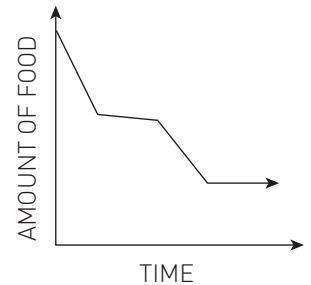


Current Topics

In previous courses, students explored situations, graphs, tables, and equations of proportional relationships. Earlier in this course, students extended their understanding of proportional relationships to linear relationships. This chapter brings together what students know about linear and nonlinear relationships to develop their understanding of a function as a rule that assigns exactly one output to each input. Students have been thinking about functions throughout this course, but the idea is refined and named for the first time in this chapter.

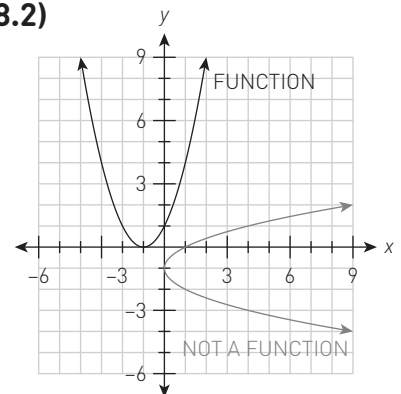
Introduction to Functions (Section 8.1)

In this section, students start learning about functions. They begin by using function tables to understand how inputs and outputs relate, with examples like code-breaking. Students also study graphs of linear and nonlinear functions by connecting them to everyday situations like eating habits and having food over time, as shown. They use both tables and graphs to solve real-world problems. Students play a game called "Guess My Rule," in which they figure out functions from given inputs and outputs. The section ends with an exploration of the different representations of relationships.



Characteristics of Functions (Section 8.2)

In this section, students continue building on their understanding of functions. They learn to recognize examples and non-examples of functions from tables and graphs. This helps them refine their idea of what functions are, considering factors like linearity, rates of change, smoothness, and continuity. Students practice graphing different functions in various scenarios, including a recurring context in this course: tile patterns.



Linear and Nonlinear Functions (Section 8.3)

The chapter wraps up by having students explore linear and nonlinear relationships in real-life situations. Students also explore functions that describe the area and perimeter of common shapes, as well as the surface area and volume of prisms and cylinders. These lessons set the stage for deeper explorations into volume in Chapter 9.

