❯ Read and share with your student.

CARNEGIE LEARNING

How to support your student as they learn about
Quantities and Relationships

Mathematics is a connected set of ideas, and your student knows a lot. Encourage them to use the mathematics they already know when encountering new concepts in this topic.

Where are we?

**MODULE 1
Searching for Patterns**

**TOPIC 1
Quantities and Relationships**

TOPIC 2
Sequences

TOPIC 3
Linear Regressions

In this MATHbook topic, students explore a variety of different functions. The intent is merely to introduce these new functions, providing an overview but not a deep understanding. The topic helps students recognize that function families have different key characteristics. Later in this course, they will formalize their understanding of the defining characteristics of each type of function.

Where have we been?

In previous grades, students defined a function and used linear functions to model the relationship between two quantities. They have written linear functions in slope-intercept form and can identify the slope and *y*-intercept in the equation. Students have also characterized graphs as functions using the terms *increasing, decreasing, constant, discrete, continuous, linear,* and *nonlinear*.

Where are we going?

The study of functions is a primary focus of high school mathematics. This topic builds the foundation for future, more in-depth study by familiarizing students with the concept of a function. They will continue to use formal function notation throughout this course and in higher-level math courses.

MATHia®

Encourage your students to work through the sequence of MATHia assigned to them. These workspaces deepen their understanding and provide practice with the concepts of *Quantities and Relationships*.

Understanding Quantities and Their Relationships
• Identifying Quantities

Recognizing Functions and Function Families
• Interpreting Function Notation
• Identifying Domain and Range
• Identifying Key Characteristics of Graphs of Functions
• Introduction to Function Families

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MARK YOUR CALENDAR
End of Topic Test:

How to support your student as they learn

MATH MYTH

I don't have the math gene.

Let's be clear about something. There isn't a gene that controls the development of mathematical thinking. Instead, there are probably hundreds of genes that contribute to it.

A recent study suggests that mathematical thinking arises from the ability to learn a language. Given the right input from the environment, children learn to speak without formal instruction. They can learn number sense and pattern recognition the same way.

To further nurture your child's mathematical growth, attend to the learning environment. You can think of it as providing a nutritious mathematical diet that includes: discussing math in the real world, offering encouragement, being available to answer questions, allowing your student to struggle with difficult concepts, and providing space for plenty of practice.

#mathmythbusted

Talking Points

Discuss With Your Student

Your student is learning about types of functions and function relationships. You can further support your student's learning by asking questions about the work they do in class or at home.

Questions to Ask

1 *How does this problem look like something you did in class?*

2 *Can you show me the strategy you used to solve this problem? Do you know another way to solve it?*

3 *Does your answer make sense? How do you know?*

4 *Is there anything you don't understand? How can you use today's lesson to help?*

KEY TERMS

increasing function
If a function increases across the entire domain, then the function is an increasing function.

decreasing function
If a function decreases across the entire domain, then the function is a decreasing function.

function family
A function family is a group of functions that all share some characteristics.

***x*-intercept**
The x-intercept is the point where a graph crosses the x-axis.

***y*-intercept**
The y-intercept is the point where a graph crosses the y-axis.

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