

Before This Module

Grade 7 Module 3

In grade 7, students use if-then moves to solve linear equations in one variable. In this module, students extend upon this work to formalize the properties of equality and solve more complex linear equations.

Grade 7 Module 1

Grade 8 Module 3

Students apply their proportional reasoning skills from grade 7 to support their work in discovering the slope of a line. They use the relationship between similar triangles from module 3 to relate unit rate triangles to slope triangles. They also use similar triangles to develop the formula to find the slope of a line, the slope-intercept form of a linear equation, and the point-slope form of a linear equation.

Overview

Linear Equations in One and Two Variables

Topic A

Linear Equations in One Variable

Students formalize the properties of equality and use them to solve linear equations with variables on both sides of the equation. They write and solve equations to answer questions about consecutive integers and geometric relationships. Students learn how to use linear equations to write repeating decimals as fractions.

Topic B

The Structure of Linear Equations in One Variable

In this topic, students discover that linear equations in one variable can have only one solution, infinitely many solutions, or no solution. They use the structure of an equation to determine the number of solutions.

Topic C

Linear Equations in Two Variables

Students discover that two values, which can be written as an ordered pair, are needed to represent a solution to a linear equation in two variables. Students graph linear equations in standard form, including equations for horizontal and vertical lines. Then students determine that graphing the solutions in a coordinate plane forms a line. They realize that the line represents the infinite number of solutions that make the equation true.

Topic D

Slope of a Line

Students use proportional relationships and similar triangles to develop an understanding of the slope of a line. They analyze rising and falling lines and learn to graph lines given a point on the line and the slope of the line. The topic concludes with students developing the formula to find the slope of a line.

Topic E

Different Forms of Linear Equations

In this topic, students utilize their understanding of similar triangles and the slope of a line to develop the slope-intercept form and the point-slope form of a linear equation. They apply the properties of rigid motions and knowledge of slope triangles to determine the relationship between the slopes of parallel lines. Then they write and graph equations of lines given in different forms. The topic ends with students recognizing that many equations can represent the same line.

Topic F

Graphing and Writing Linear Equations

Students apply the skills learned in topics C–E to write and graph linear equations in slope-intercept form, point-slope form, and standard form. The module concludes with students writing and using linear equations to solve problems in real-world contexts.

After This Module

Grade 8 Module 5

Students apply their understanding of a solution to a linear equation to systems of linear equations in two variables. They use their knowledge from module 4 to first graph the equations in a system to find the intersection point that represents the solution to the system. Then they utilize their skills for solving linear equations in one variable to support their work when solving systems of linear equations by the substitution method.

Grade 8 Module 6

Students apply their knowledge of writing linear equations from module 4 to write equations that represent linear functions.