Math Background

The Coordinate Grid
The Cartesian coordinate system, or coordinate grid, is used to display relationships between two variables. Its horizontal x-axis and vertical y-axis divide it into four quadrants. Every point on the grid can be shown as an ordered pair: (x, y). The first number in the pair describes the position of the point along the x-axis. The second number in the pair describes the position of the point along the y-axis. Since all the points in the first quadrant (I) are described by positive numbers, this is the only quadrant used in this unit (until optional Lesson 4).

![Coordinate Grid]

By substituting values for x into functions of the form y = 3x, students can generate ordered pairs, for example, (0, 3), (1, 3), (2, 6), (3, 9), and plot the function on a coordinate grid.

![Graph of y = 3x]

Translations, Reflections, and Rotations
Translations, reflections, and rotations are known as isometries. In these transformations, the shape of a figure does not change, but its position does. In reflections, the figure’s image becomes a mirror image of the original figure. Performing these transformations on a grid allows students to check their work and verify the unchanging shape by counting grid lines.