Contents

Introduction

Math Mammoth Geometry 4 is a worktext that covers these typical 8th grade geometry topics: geometric transformations, angle relationships, and the volume of prisms, cylinders, pyramids, cones, and spheres.

The worktext starts out with the basics of congruent transformations: translations, reflections, rotations. Students use transparent paper to perform several of these transformations hands-on, so as to gain an understanding of the attributes that are preserved in these transformations.

Next we practice these same transformations in the coordinate grid. Students learn how the coordinates of the points change when a figure is translated or reflected in the *x* or *y*-axis. They also explore rotating figures in the coordinate grid; here we limit the rotations to 90°, 180°, or 270° degrees.

Then it is time to study sequences of transformations, which enable us to describe more complex transformations. The key idea here is to understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of transformations.

All of this work has related to congruent transformations, which means the size of the figure has not changed. Now we turn our attention to dilations. In a dilation, the figure is transformed so that its size changes but its shape does not. Such figures are called similar figures. Yet another term describing the same process is scaling a figure.

Next, we study angle relationships. The first lesson in this section reviews certain angle relationships from 7th grade (complementary, supplementary, and vertical angles). Then students learn about angles formed when a transversal crosses two parallel lines: corresponding angles, alternate interior angles, and alternate exterior angles. They also investigate angle relationships related to triangles and learn how these relationships allow us to deduce angle measurements of other angles.

In all of this work, students are guided to reason using mathematical facts they have learned and to justify their reasoning, thus becoming familiar with the process of mathematical proof.

The last major topic of the book is volume of various three-dimensional figures. Students solve a variety of real-world and mathematical problems involving multiple three-dimensional shapes.

I wish you success with teaching math!

Maria Miller