

Teaching Unit C (Continued)

Math Background

Transformations In the previous grade, students identified slides, flips, and turns, and created patterns using these transformations. In this unit, students draw flipped images of figures, describe slides, and describe and draw turned figures. When describing a turn, students use the vocabulary *quarter turn* and *half turn* and include an arrow showing the direction of the turn. The terms *clockwise* and *counterclockwise* are reserved for future work with transformations.

Repeating Patterns In the previous grade, students extended repeating number and shape patterns. They also had opportunities to create their own repeating patterns. In this unit, students extend repeating patterns, identify patterns on hundred grids, work with open-ended pattern problems, and write rules for patterns. The process of writing a pattern rule, telling how the pattern begins and how it continues, is an important stage in the development of algebraic thinking.

Growing and Shrinking Patterns In this unit, students' experiences with growing and shrinking patterns help them to continue making connections between physical representations and verbal descriptions. In the previous grade, students extended growing and shrinking patterns and created their own patterns but they were not required to describe the patterns. In this unit, students identify pattern rules as an integral part of the activities.

Problem Solving By developing proficiency in identifying and extending patterns, students acquire the skills and confidence to make sense of the regularities of their worlds. In the final lesson of this unit, students use simpler problems to help solve more complex problems, and solve real-world problems involving patterns. The goal at this grade is to have students recognize patterns, express the patterns they observe, and make predictions based on those patterns. In meeting those objectives, students think mathematically and begin to bridge the gap between arithmetic and algebra.

