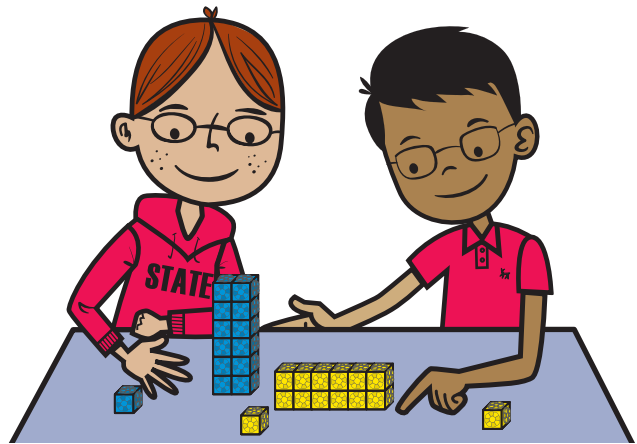# Bridges in Mathematics
## Grade 5 Unit 1

# Expressions, Equations & Volume

In this unit your child will:

■ Solve multi-step story problems involving multiplication and division with remainders

■ Multiply and divide with multi-digit numbers

■ Demonstrate an understanding of volume using multiplication

■ Find all factor pairs for whole numbers between 1 and 100

Your child will learn and practice these skills by solving problems like those shown below. Use the free Math Vocabulary Cards app for additional support: mathlearningcenter.org/apps

| PROBLEM | COMMENTS |
|---|---|
|  | Students can multiply all three dimensions to find the volume: 4 x 3 x 2 = 24. Many of the activities in this unit encourage students to see equal layers of cubes. In this example, they can see 2 layers (the height) with 12 cubes in each layer. |
|  | The multi-digit multiplication strategies emphasized in Unit 1 are: partial products, the over strategy, the 5 is half of 10 strategy, and the doubling and halving strategy. These strategies were developed in fourth grade and are extended and refined over the course of this unit. Students work together to summarize these strategies and represent them using arrays, ratio tables, and equations, developing posters or "anchor charts" for future reference. |

| PROBLEM | COMMENTS |
|---|---|
| Write an expression with parentheses to represent this statement: I added 3 and 8 and then multiplied by 7.<br><br>$(3 + 8) \times 7$ | Students use parentheses to show which operation happened first. In this case, 3 and 8 are added and then their sum (11) is multiplied by 7. Without the parentheses— 3 + 8 × 7 —order of operations dictates that multiplication happens before addition, yielding a different answer. We want students to be comfortable expressing mathematical situations and actions with the symbols—including numerals, operational symbols, and grouping symbols like parentheses—that are the language of mathematics. |

## FREQUENTLY ASKED QUESTIONS ABOUT UNIT 1

### Q: Why do some of these activities look like what my child did in fourth grade?

**A:** This unit reviews mathematical concepts while introducing and establishing routines that will be used in fifth grade. Teachers assess students' skill level and plan future lessons based on this review. There are also several new ideas in Unit 1, including volume and the conventions of writing and evaluating expressions that include parentheses. A variety of efficient and effective computational strategies are developed and notated. For example, students already familiar with using landmark numbers to simplify such combinations as 99 × 87 now have a way to communicate their thinking numerically and concisely: 99 × 87 = (100 × 87) – (1 × 87). In a similar manner, they have the tools to communicate and share the strategy of doubling and halving in a mathematically precise way: 25 × 36 = (25 × 2) × (36 ÷ 2), or 50 × 18.