

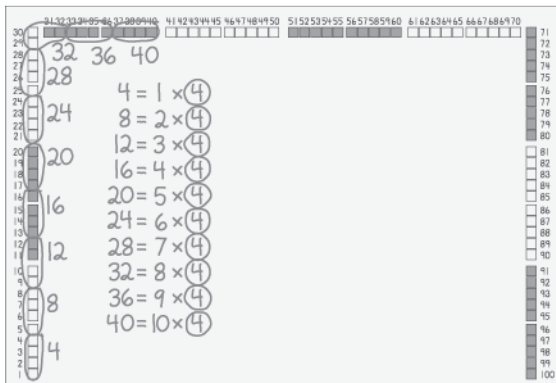
Teaching Unit 4 (continued)

Math Background

Strategies for Multiplying and Dividing

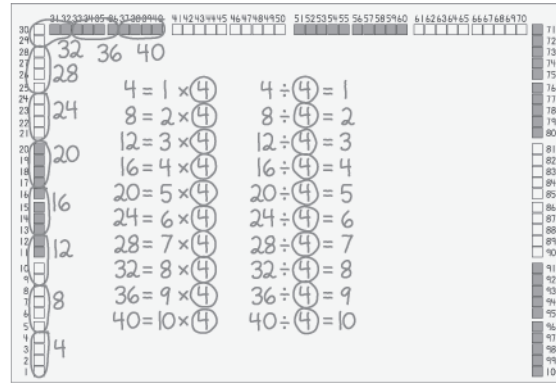
Sequential Groups on a Number Path

Students circle sequential groups of a given number (such as 4) on their Number Path and write the sequential totals. The totals show the multiplication products. Students analyze patterns they see in the count-bys for each number.



Division on the MathBoard

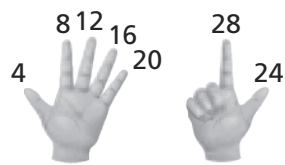
Students use their circled sequential groups on the Number Path, and their knowledge of multiplication, to write the related division equations.



Use Fingers to Divide

To solve a division such as $28 \div 4$, students say the 4s count-bys, raising a finger for each number until they reach 28. The number of fingers raised, 7, is the answer.

$$28 \div 4 = \square$$

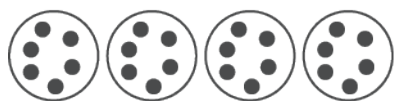


28 divided by 4 equals 7.

Use Drawings to Solve Multiplication and Division Problems

Students represent multiplication and division problems with different types of drawings.

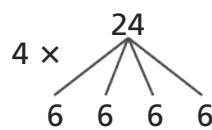
Repeated Groups Drawing



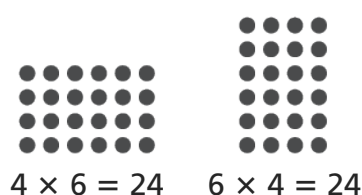
bags of lemons

$$4 \times 6 = 24 \quad 24 \div 4 = 6$$

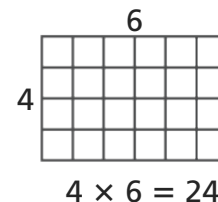
Equal Shares Drawing



Array Drawing



Area Model



Practice Materials and Routines for Learning the Basic Multiplications and Divisions

In this unit and the next, students will participate in testing and goal directed practice in school and at home. A variety of practice sheets, check sheets and routines will help students learn the basic multiplications and divisions and keep track of their progress. This is also an important opportunity for students to become self-directed and organized.

Study Plans Each day students will fill out a study plan at the top of a homework page, indicating which basic multiplications and divisions he or she will study that evening at home. At first it contains just the count-bys, multiplications, and divisions for the new number introduced. Later it will be the new number and any count-bys, multiplications, or divisions they do not recall when tested by their partner during the Check Up.

When a student has finished practicing/studying, the Homework Helper should sign the study plan.

Practice Charts Each time a new number is introduced, a student's homework page will include a practice chart. See Teacher's Edition page 476 for an explanation of how to practice the count-bys, multiplications, and divisions by covering the answers with a pencil and sliding it.

	In Order	Mixed Up
5s	$1 \times 5 = 5$	$9 \times 5 = 45$
	$2 \times 5 = 10$	$5 \times 5 = 25$
	$3 \times 5 = 15$	$2 \times 5 = 10$
	$4 \times 5 = 20$	$7 \times 5 = 35$
	$5 \times 5 = 25$	$4 \times 5 = 20$
	$6 \times 5 = 30$	$6 \times 5 = 30$
	$7 \times 5 = 35$	$10 \times 5 = 50$
	$8 \times 5 = 40$	$8 \times 5 = 40$
	$9 \times 5 = 45$	$1 \times 5 = 5$
	$10 \times 5 = 50$	$3 \times 5 = 15$

Study Sheets Students use both a class and home study sheet, which includes 3 or 4 practice charts on one page. This sheet can be used to practice all the count-bys, multiplications, and divisions or to practice just the ones a student doesn't know.

5s			2s		
Count-bys	Mixed Up \times	Mixed Up \div	Count-bys	Mixed Up \times	Mixed Up \div
$1 \times 5 = 5$	$2 \times 5 = 10$	$10 \div 5 = 2$	$1 \times 2 = 2$	$7 \times 2 = 14$	$20 \div 2 = 10$
$2 \times 5 = 10$	$9 \times 5 = 45$	$35 \div 5 = 7$	$2 \times 2 = 4$	$1 \times 2 = 2$	$2 \div 2 = 1$
$3 \times 5 = 15$	$1 \times 5 = 5$	$50 \div 5 = 10$	$3 \times 2 = 6$	$3 \times 2 = 6$	$6 \div 2 = 3$
$4 \times 5 = 20$	$5 \times 5 = 25$	$5 \div 5 = 1$	$4 \times 2 = 8$	$5 \times 2 = 10$	$16 \div 2 = 8$
$5 \times 5 = 25$	$7 \times 5 = 35$	$20 \div 5 = 4$	$5 \times 2 = 10$	$6 \times 2 = 12$	$12 \div 2 = 6$
$6 \times 5 = 30$	$3 \times 5 = 15$	$15 \div 5 = 3$	$6 \times 2 = 12$	$8 \times 2 = 16$	$4 \div 2 = 2$
$7 \times 5 = 35$	$10 \times 5 = 50$	$30 \div 5 = 6$	$7 \times 2 = 14$	$2 \times 2 = 4$	$10 \div 2 = 5$
$8 \times 5 = 40$	$6 \times 5 = 30$	$40 \div 5 = 8$	$8 \times 2 = 16$	$10 \times 2 = 20$	$8 \div 2 = 4$
$9 \times 5 = 45$	$4 \times 5 = 20$	$25 \div 5 = 5$	$9 \times 2 = 18$	$4 \times 2 = 8$	$14 \div 2 = 7$
$10 \times 5 = 50$	$8 \times 5 = 40$	$45 \div 5 = 9$	$10 \times 2 = 20$	$9 \times 2 = 18$	$18 \div 2 = 9$

A routine is built into this program so each day at school and at home student's practice count-bys, multiplications, and divisions and are tested when ready. When a student is ready for a Check Up on a number, a student's partner or Homework Helper tests the student marking any missed exercises lightly with a pencils. If a student gets all the answers in a column correct, the partner or Homework Helper signs the Home Signature Sheet.

Teaching Unit 4 (continued)

Connections

Connections Between Mathematical Topics

In this program, making connections between mathematical topics is an important goal for us to work towards for students' mathematical learning. To begin this unit, we build on students' knowledge of counting and skip-counting to introduce the concept of multiplication. Also throughout this unit, students see the interrelationship between multiplication and division. When students are introduced to the concept of division, we help them to make connections to the learning they have already done in multiplication. Students will already know the concept of equal groups in multiplication, for example, and we will have them apply the concept to dividing, which involves finding equal groups. Next, as students are involved in solving word problems, they can see that the situations can be represented with both multiplication equations and division equations.

We hope that if students have success with building from their earlier understanding of a mathematical concept to their understanding of a new concept, they can become more confident in their mathematical abilities.

$$\begin{array}{ccccc} \boxed{3} & \times & \textcircled{5} & = & 15 \\ \text{number} & & \text{group} & & \text{total} \\ \text{of groups} & & \text{size} & & \text{(product)} \\ \text{(factor)} & & \text{(factor)} & & \end{array} \qquad \begin{array}{ccccc} 15 & \div & \textcircled{5} & = & \boxed{3} \\ \text{total} & & \text{group} & & \text{number} \\ \text{(product)} & & \text{size} & & \text{of groups} \\ & & \text{(factor)} & & \text{(factor)} \end{array}$$