# Family Letter

Unit 4: Multiplication and Division

Unit 4 focuses on the most common uses of multiplication and division—problems that involve equal sharing and equal grouping. In *Second Grade Everyday Mathematics,* children were exposed to multiplication and division number stories and multiplication and division facts. To solve multiplication and division number stories, children will refer to familiar strategies introduced in second grade:

• **Acting out problems using concrete objects, such as counters** (below)
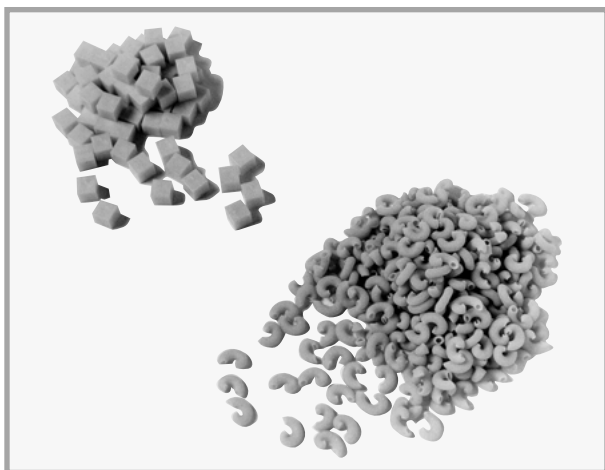
• **Representing problems with pictures and arrays** (right)

children	pennies per child	total number of pennies
4	?	28
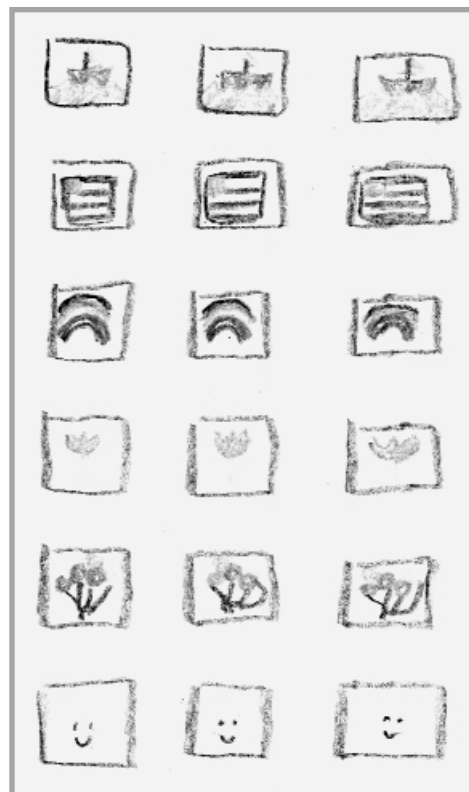
A sheet of stamps has 6 rows. Each row has 3 stamps. How many stamps are on a sheet?

$6 \times 3 = 18$

• **Using diagrams to sort out quantities** (above)

Problem:	**Solution strategies:**
Each child has 2 apples. There are 16 apples. How many children have apples?	*2 × ? = 16, or I know that 16 ÷ 2 = 8. If there are 16 apples and each child has 2, then there must be 8 children.*

• **Using number models to represent solution strategies** (above)

Vocabulary

Important terms in Unit 4:

multiples Repeated groups of the same amount or number. Multiples of a number are the products of that number times other whole numbers. For example, the numbers 2, 4, 6, 8, and 10 are all multiples of 2 because $2 \times 1 = 2$, $2 \times 2 = 4$, and so on.

multiplication The operation used to find the total number of things in several equal groups or to find the number of times a number repeats.

multiplication/division diagram A diagram used to represent problems in which the total number of objects in several equal groups is being considered. The diagram has three parts: number of groups, number in each group, and total number.

array A group of objects placed in rows and columns.

factor A number that is multiplied.

product The result of multiplication.

In the number model
$4 \times 3 = 12,$
4 and **3** are the **factors,**
and **12** is the **product.**

equal groups Sets with the same number of elements, such as tables with 4 legs, rows with 6 chairs, boxes of 100 paper clips, and so on.

dividend The total before sharing.

divisor The number of equal parts, or the number in each equal part.

quotient The result of division.
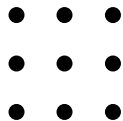
In the number model
$28 \div 4 = 7,$
28 is the **dividend,**
4 is the **divisor,** and
7 is the **quotient.**

remainder The amount left over when things are divided into equal shares. In the division number model $16 \div 3 \rightarrow 5$ R1, the remainder is 1.

square number The product of a number multiplied by itself; any number that can be represented by a square array.

$3 \times 3 = 9$
The number 9 is a
square number.

Building Skills through Games

In Unit 4, your child will practice division and multiplication by playing the following games. For detailed instructions, see the *Student Reference Book.*

Division Arrays

Players make arrays with counters using number cards to determine the number of counters and a toss of a die to establish the number of rows.

Beat the Calculator

A "Calculator" (a player who uses a calculator) and a "Brain" (a player who solves the problem without a calculator) compete to see who will be first to solve multiplication problems.

Use with Lesson 3.9.

Do-Anytime Activities

To work with your child on concepts taught in this unit and in previous units,
try these interesting and rewarding activities:

1 Together with your child, sort objects into equal groups. Discuss what you could do with any
leftover objects.

2 Review multiplication-fact shortcuts:

- **turn-around facts** The order of the factors does not change the product. Thus, if you know
  $3 \times 4 = 12$, you also know $4 \times 3 = 12$.

- **multiplication by 1** The product of 1 and another number is always equal to the other
  number. For example, $1 \times 9 = 9$; $1 \times 7 = 7$.

- **multiplication by 0** The product of 0 and another number is always zero. For example,
  $4 \times 0 = 0$; $0 \times 2 = 0$.

- **square numbers** Arrays for numbers multiplied by themselves are always squares. For example,
  2×2 and 4×4 are square numbers.

$4 \times 4 = 16$

$2 \times 2 = 4$
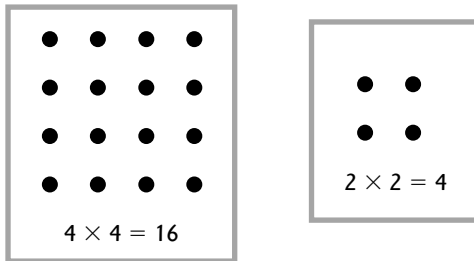
3 Use the $\times, \div$ Fact Triangles (a set will be sent home later) to practice the basic facts. Act as a
partner by covering one number on the card and then asking your child to create
a multiplication or division number model using the other two numbers.

$$56$$
$$\times, \div$$
$$7 \qquad 8$$

$7 \times 8 = 56$

$8 \times 7 = 56$

$56 \div 8 = 7$

$56 \div 7 = 8$
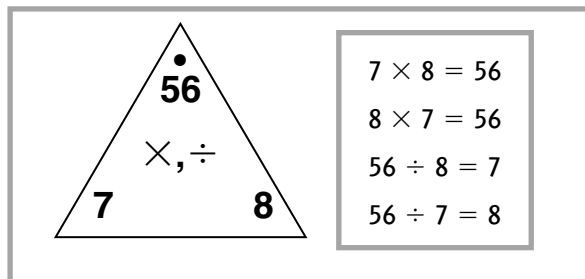
4 Write any number—for example, 34,056. Then ask questions like the following:
How many thousands are there? *(4)* What is the value of the digit 5? *(50)*

5 Ask questions like the following:
Is $467 + 518$ more or less than 1,000? *(less)* Is $754 - 268$ more or less than 500? *(less)*

As You Help Your Child with Homework

As your child brings home assignments, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through this unit's Home Links.

Home Link 4.1

1. 30 apples   **2.** 60 cupcakes

Home Link 4.2

1. 24 counters   **2.** 24 counters

3. 24 counters

Home Link 4.3

1. 5 counters per person; 0 counters remaining

2. 2 counters per person; 5 counters remaining

3. 4 weeks in January; 3 days remaining

4. 4 teams; 2 children remaining

5. 2 pencils; 4 pencils left over

6. 11 jelly beans; 0 jelly beans left over

7. 8 shelves

Home Link 4.4

1. 6 marbles; 0 marbles left over

2. 2 cookies; 1 cookie left over

3. 4 complete rows; 6 stamps left over

Home Link 4.5

1. 10; 10	**2.** 15; 15	**3.** 20; 20	**4.** 9; 9
5. 90; 90	**6.** 365; 365	**7.** 0; 0	**8.** 0; 0
9. 0; 0	**10.** 20	**11.** 20	**12.** 18
13. 14	**14.** 15	**15.** 50	

Home Link 4.6

1. 10; 10; 10; 10   **2.** 12; 12; 12; 12

3. $2 \times 7 = 14$; $7 \times 2 = 14$;
$14 \div 2 = 7$; $14 \div 7 = 2$

4. $2 \times 8 = 16$; $8 \times 2 = 16$;
$16 \div 2 = 8$; $16 \div 8 = 2$

5. $5 \times 4 = 20$; $4 \times 5 = 20$;
$20 \div 5 = 4$; $20 \div 4 = 5$

6. $10 \times 6 = 60$; $6 \times 10 = 60$;
$60 \div 10 = 6$; $60 \div 6 = 10$

Home Link 4.7

1. $5 \times 6 = 30$; $6 \times 5 = 30$; $30 \div 6 = 5$; $30 \div 5 = 6$

2. $8 \times 3 = 24$; $3 \times 8 = 24$; $24 \div 3 = 8$; $24 \div 8 = 3$

3. $2 \times 9 = 18$; $9 \times 2 = 18$; $18 \div 2 = 9$; $18 \div 9 = 2$

4. $4 \times 7 = 28$; $7 \times 4 = 28$; $28 \div 7 = 4$; $28 \div 4 = 7$

5. $9 \times 8 = 72$; $8 \times 9 = 72$; $72 \div 9 = 8$; $72 \div 8 = 9$

6. $6 \times 7 = 42$; $7 \times 6 = 42$; $42 \div 7 = 6$; $42 \div 6 = 7$

Home Link 4.8

1. 5; 7; $7 \times 5 = 35$; 35 square units

2. 7; 6; $6 \times 7 = 42$; 42 square units

3. $4 \times 8 = 32$

4. $5 \times 9 = 45$

Home Link 4.9

The following answers should be circled:

1. more than the distance from Chicago to Dallas; about 2,400 miles

2. about 600 miles;
less than the distance from Chicago to Denver

3. more than the distance from New York to Chicago

4. less than the distance from Denver to Atlanta;
more than the distance from New York to Portland; about 750 miles

Use with Lesson 3.9.