



Division

Unit 4 begins with a review of division facts and the relationship between division and multiplication. Emphasis is on fact families. A person who knows that $4 * 5 = 20$ also knows the related facts $5 * 4 = 20$, $20 \div 4 = 5$, and $20 \div 5 = 4$.

We will develop strategies for dividing mentally. Challenge your child to a game of *Division Dash* to help him or her practice. You'll find the rules in the *Student Reference Book*, page 303.

In *Fourth Grade Everyday Mathematics*, students were introduced to a method of long division called the partial-quotients division algorithm. This algorithm is easier to learn and apply than the traditional long-division method. It relies on "easy" multiplication, and it can be quickly employed by students who struggle with traditional computation.

In this method, a series of partial answers (partial quotients) are obtained, and then added to get the final answer (the quotient). After your child has worked with this method, you might ask him or her to explain the example below:

$$\begin{array}{r}
 12 \overline{)158} \\
 - 120 \\
 \hline
 38 \\
 - 36 \\
 \hline
 2
 \end{array}
 \begin{array}{r}
 10 \\
 3 \\
 \hline
 13
 \end{array}$$

↑
↑
Remainder **Quotient**

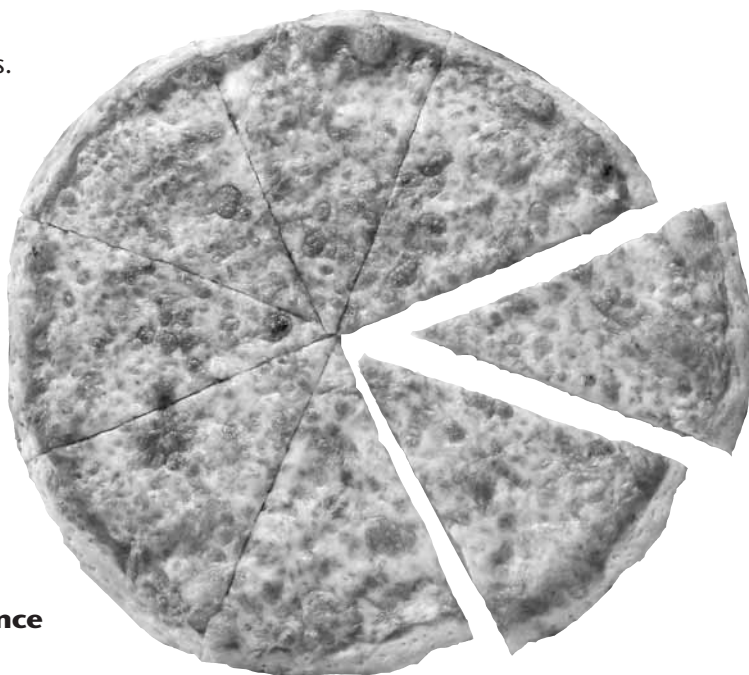
In the coming unit, we will review the partial-quotients algorithm and extend it to decimals.

Your child will practice using this division algorithm, as well as others, if he or she chooses.

The partial-quotients division algorithm and another method called column division are described in the *Student Reference Book*.

When we solve division number stories, special attention will be placed on interpreting the remainder in division.

The American Tour will continue as the class measures distances on maps and uses map scales to convert the map distances to real-world distances between cities, lengths of rivers, and so on.



Please keep this Family Letter for reference as your child works through Unit 4.

These notations for division are equivalent:

$12 \overline{)246}$

$246 \div 12$

$246 / 12$

$$\begin{array}{r} \underline{246} \\ 12 \end{array}$$

Vocabulary

Important terms in Unit 4:

dividend In division, the number that is being divided. For example, in $35 \div 5 = 7$, the dividend is 35.

divisor In division, the number that divides another number. For example, in $35 \div 5 = 7$, the divisor is 5.

map legend (map key) A diagram that explains the symbols, markings, and colors on a map.

map scale The ratio of a distance on a map, globe, or drawing to an actual distance.

number sentence Two expressions with a relation symbol ($=$, $<$, $>$, \neq , \leq , or \geq). For example, $5 + 5 = 10$ and $6 * (43 + 7) = 300$ are number sentences. Compare to *open sentence*.

open sentence A *number sentence* with one or more *variables*. For example, $x + 3 = 5$ is an open sentence.

quotient The result of dividing one number by another number. For example, in $35 \div 5 = 7$, the quotient is 7.

remainder The amount left over when one number is divided by another number. For example, if 38 books are divided into 5 equal piles, there are 7 books per pile, with 3 books remaining. In symbols, $38 \div 5 \rightarrow 7 R3$.

variable A letter or other symbol that represents a number. A variable can represent one specific number. For example, in the number sentence $5 + n = 9$, only $n = 4$ makes the sentence true. A variable may also stand for many different numbers. For example, $x + 2 < 10$ is true if x is any number less than 8.

Do-Anytime Activities

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

1. Provide your child with opportunities to look at maps from various parts of the country. Ask him or her to explain the map legend and map scale, and to find the distances between two cities or places of interest.
2. Read the book *A Remainder of One*, by Elinor J. Pinczes.
3. Play *Division Dash*, *First to 100*, *Divisibility Dash*, *Division Top-It* or *Name that Number* as described in the *Student Reference Book*.
4. Ask your child to write number stories that can be solved using division. Help your child solve those problems, and then identify how the quotient and remainder are used to answer the question in the number story.

Building Skills through Games

In Unit 4, your child will practice division as well as other skills by playing these and other games. For detailed instructions, see the *Student Reference Book*.

Divisibility Dash See *Student Reference Book*, page 302

This is a game for two to three players and requires a set of number cards. Playing *Divisibility Dash* provides practice recognizing multiples and using divisibility rules in a context that also develops speed.

Division Dash See *Student Reference Book*, page 303

This is a game for one or two players. Each player will need a calculator. Playing *Division Dash* helps students practice division and mental calculation.

Division Top-It See *Student Reference Book*, page 334

This is a game for two to four players and requires number cards. Playing *Division Top-It* provides practice recognizing multiples and applying division facts and extended facts.

First to 100 See *Student Reference Book*, page 308

This is a game for two to four players and requires 32 Problem Cards and a pair of six-sided dice. Players answer questions after substituting numbers for the variable on Problem Cards. The questions offer practice on a variety of mathematical topics.

Name That Number See *Student Reference Book*, page 325

This is a game for two or three players using the Everything Math Deck or a complete deck of number cards. This game provides a review of operations with whole numbers.

As You Help Your Child with Homework

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

Study Link 4•1

- 19; Sample answer: 30 and 27
- 12; Sample answer: 80 and 16
- 2,000 mi 4. 5 lb
- 878; $1,803 - 878 = 925$; $925 + 878 = 1,803$;
 $878 + 925 = 1,803$
- 875; $377 + 498 = 875$; $875 - 377 = 67$;
 $875 - 498 = 67$

Study Link 4•2

1. 10, 10, 10, and 3 2. 27 R4 3. 42 R4
- 32 R5 5. 24
- 3,985; $3,985 - 168$, or $3,817 = 3,817$, or 168
- 52,236; 281, or $52,236 + 52,236$
or 281 = 52,517

Study Link 4•3

- a. About 1 mi b. About $1\frac{1}{2}$ mi
- a. About $3\frac{3}{4}$ in. b. About $1\frac{7}{8}$ mi
- 188; $188 + 188 = 376$
- 4,148; $4,148 - 3,997$, or $151 = 151$, or 3,997

Study Link 4•4

- 71 2. 53 3. 82 R22
- 26 R10 5. 83 pages
- 2,814; $2,814 - 814$, or $68 = 68$, or 814
- 3,296; 165; $3,296 + 3,296$; $165 = 3,461$

Study Link 4•5

Estimates vary. Sample estimates are given for Problems 1–6.

- The 10s box should be circled; $60 \div 6 = 10$; 13.1
- The 100s box should be circled; $300 \div 3 = 100$;
129
- The 1s box should be circled; $30 \div 10 = 3$; \$3.69
- The 10s box should be circled; $800 \div 40 = 20$; 23
- The 100s box should be circled; $1,000 \div 5 = 200$;
169
- The 1s box should be circled; $18 \div 9 = 2$; 1.76
- 14.544; $14.544 - 8.54$, or $6.004 = 6.004$, or 8.54

Study Link 4•6

- \$6.25; Reported it as a fraction or decimal;
Sample answer: The cost per game is exact, so
the answer needs to be exact.
- 7; Ignored it; Sample answer: The remaining
\$4.00 is not enough to buy another pizza, and is
ignored.
- 15 R1 4. 52,836

Study Link 4•7

- 49 2. 780 3. 610

Answers vary for Problems 4–11.

- 3,985 13. 52,236