Unit 6: Family Letter

More Operations

In this unit, your child will apply multiplication facts strategies with a focus on using strategies that are efficient and appropriate for solving a given problem. Your child will also learn a new method for multidigit subtraction called trade-first subtraction. This method is highly efficient and relatively easy to learn, and it prepares children for learning the U.S. standard algorithm (introduced in *Fourth Grade Everyday Mathematics*). Children also build on their experiences with solving number stories. They represent number stories using single equations with multiple operations and letters for unknown quantities.

In Unit 6, children will:

- Use trade-first subtraction to solve subtraction problems.

- Identify and apply efficient and appropriate strategies for multiplication facts and problems with larger factors.

- Self-assess automaticity with multiplication facts.

- Use multiplication/division diagrams to represent an unknown quantity with a letter and make sense of multiplication and division number stories.

- Solve number sentences with parentheses.

- Apply the order of operations to solve multistep problems.

- Write number models to represent two-step number stories.

- Play multiplication games to build fact fluency.

$$\boxed{2} \quad \boxed{11} \quad \boxed{9} \quad \boxed{13} \quad \boxed{1} \qquad \boxed{17}$$

target
number

$(2 \times 9) - 1 = 17$

One round of *Name That Number*

Please keep this Family Letter for reference as your child works through Unit 6.

Vocabulary

Important lesson components and terms in Unit 6:

fact power In *Everyday Mathematics,* automaticity with basic arithmetic facts. Automatically knowing the facts is as important to arithmetic as knowing words by sight is to reading.

multiplication/division diagram A diagram used in *Everyday Mathematics* to model situations in which a total number is made up of equal-size groups. The diagram contains a number of groups, a number in each group, and a total number.

bowls	oranges per bowl	oranges in all
6	?	54

order of operations Rules that specify the order in which operations in a number sentence should be carried out. In *Third Grade Everyday Mathematics,* the order of operations is described as:

1. Do operations inside parentheses first. Follow rules 2 and 3 when computing inside parentheses.

2. Then multiply or divide, in order, from left to right.

3. Finally add or subtract, in order, from left to right.

parentheses ( ) Grouping symbols used to indicate which parts of a number sentence should be done first.

trade-first subtraction One method for solving subtraction problems in which all trades are made before subtracting.

$$
\begin{array}{r}
12 \\
1 \quad \cancel{13} \quad 11 \\
2 \quad \cancel{3} \quad \cancel{1} \\
-1 \quad 7 \quad 4 \\
\hline
0 \quad 5 \quad 7
\end{array}
$$

Trade-first subtraction

Do-Anytime Activities

The following activities provide practice for concepts taught in this and previous units.

1. As your child subtracts multidigit numbers, talk about the value of each digit and the trades your child makes.

2. Challenge your child to mentally solve unknown multiplication facts faster than you can solve them on a calculator. Have your child explain the strategy he or she used.

3. Ask questions that involve equal sharing and equal grouping. Encourage your child to act out, draw pictures or diagrams, or use numbers to show his or her thinking.

Example: *8 children each have 3 books. How many books do they have in all? 24 books*

children	books per child	books in all
8	3	?

$$8 \times 3 = ?$$

Example: *Each box has 8 crayons. There are 24 crayons in all. How many boxes are there? 3 boxes*

boxes	crayons per box	crayons in all
?	8	24

$$24 \div 8 = ? \text{ or } ? \times 8 = 24$$

4. Pose simple number stories that your child can solve with two calculations. Help your child make sense of them by asking questions such as: *What do you know from the story? What do you need to figure out? What can you do first? Next?* Examples:

- *I have 50 cents and want to buy peanuts for 25 cents and popcorn for 40 cents. Do I have enough money?*

- *We want to make 6 party bags with 2 glitter pencils and 1 mechanical pencil in each. How many pencils do we need in all?*

Building Skills through Games

In Unit 6 your child will practice multiplication facts and strategies by playing the following games. For detailed instructions, see the *Student Reference Book.*

Baseball Multiplication Players use multiplication facts to score runs. Team members take turns generating two factors (1–10) by rolling 10-sided dice. Then players on the batting team take turns multiplying the two factors and moving around the bases.

Beat the Calculator Three children each take a different role in this fact game. The "Caller" calls out a multiplication fact; the "Brain" tries to multiply the two numbers mentally to beat the "Calculator," who multiplies the two numbers with a calculator.

Multiplication Top-It Players play with number cards 1–10 (four of each). They turn two cards and find the product of the numbers. The player with the larger product wins the round and takes both cards.

Name That Number Players try to name a target number by adding, subtracting, multiplying, or dividing the numbers on 2 or more of 5 cards.

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. Answers to Home Links 6-4 and 6-7 are not shown.

Home Link 6-1

1. Sample answer: $400 - 300 = 100$; 79

2. Sample answer: $120 - 90 = 30$; 28

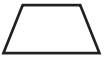3. Sample answer: $500 - 350 = 150$; 135

Home Link 6-2

Hidden message: Math is fun!

Home Link 6-3

1. Strategy: Sample answer: subtracting a group

   How I solved: Sample answer: $10 \times 6 = 60$, $60 - 6 = 54$, so $9 \times 6 = 54$.

2. Strategy: Sample answer: near squares

   How I solved: Sample answer: $8 \times 8 = 64$, $64 + 8 = 72$, so $8 \times 9 = 72$.

3. Strategy: Sample answer: adding a group

   How I solved: Sample answer: $5 \times 8 = 40$, $40 + 8 = 48$, so $6 \times 8 = 48$.

4. Strategy: Sample answer: doubling

   How I solved: Sample answer: $2 \times 7 = 14$, 4 is the double of 2 and $14 + 14 = 28$, so $4 \times 7 = 28$.

Home Link 6-5

1. Sample answers:

2. Sample answers:

3. Sample answer:

4. 184   **5.** 90   **6.** 134

Home Link 6-6

1. Sample answer: *B* for balls

tennis courts	balls per court	balls in all
6	B	42

   Number model: Sample answers: $42 \div 6 = B$; $6 \times B = 42$; Answer: 7 tennis balls

Home Link 6-8

1. 10; 4   **2.** 1; 13   **3.** 30; 38

4. Sample answers: $4 \times (8 - 6) = 8$; $(4 \times 8) - 6 = 26$

6. The parentheses are placed incorrectly. The number model should be $(8 \times 4) - 2 = 30$.

Home Link 6-9

1. 4 pears; Explanations vary.

Home Link 6-10

1. $8 \div \underline{(7 - 3)} = 2$ **2.** $26 = \underline{2 \times 10} + 6$

3. $10 + \underline{(6 \times 2)} = 22$ **4.** $15 - \underline{3 \times 2} = 9$

5. Sample answer: If we didn't have rules for the order of operations, we could get different answers for the same problem.

Home Link 6-11

1. Sample answer: *B* for banana muffins; $(6 \times 4) - 18 = B$; $(6 \times 4) = 18 + B$

   6 banana muffins; Sample answer: $(6 \times 4) - 18 = 6$; $(6 \times 4) = 18 + 6$

2. 50   **3.** 55   **4.** 80   **5.** 88