

STUDY LINK
2•10

Unit 3: Family Letter



Multiplication and Division; Number Sentences and Algebra

One of our goals in the coming weeks is to finish memorizing the multiplication facts for single-digit numbers. To help students master the facts, they will play several math games. Ask your child to teach you one of the games described in the *Student Reference Book*, and play a few rounds together.

The class will also take a series of 50-facts tests for multiplication.

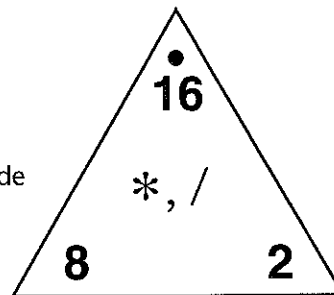
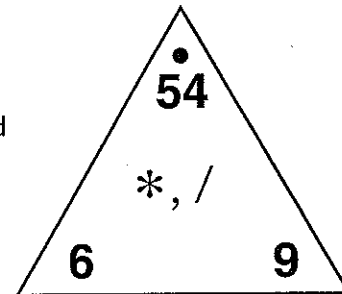
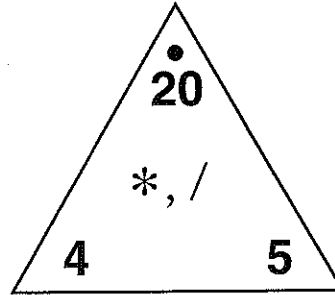
Because correct answers are counted only up to the first mistake (and not counted thereafter), your child may at first receive a low score. If this happens, don't be alarmed. Before long, scores will improve dramatically. Help your child set a realistic goal for the next test, and discuss what can be done to meet that goal.

Your child will use Multiplication/Division Fact Triangles to review the relationship between multiplication and division. (For example, $4 \times 5 = 20$, so $20 \div 5 = 4$ and $20 \div 4 = 5$.) You can use the triangles to quiz your child on the basic facts and test your child's progress.

In this unit, alternative symbols for multiplication and division are introduced. An asterisk (*) may be substituted for the traditional \times symbol, as in $4 * 5 = 20$. A slash (/) may be used in place of the traditional \div symbol, as in $20 / 4 = 5$.

In Unit 3, the class will continue the World Tour, a yearlong project in which the students travel to a number of different countries. Their first flight will take them to Cairo, Egypt. These travels serve as background for many interesting activities in which students look up numerical information, analyze this information, and solve problems.

Finally, the class will have its first formal introduction to solving equations in algebra. (Informal activities with missing numbers in number stories have been built into the program since first grade.) Formal introduction to algebra in fourth grade may surprise you, because algebra is usually regarded as a high school subject. However, an early start in algebra is integral to the *Everyday Mathematics* philosophy.



Please keep this Family Letter for reference as your child works through Unit 3.



Vocabulary

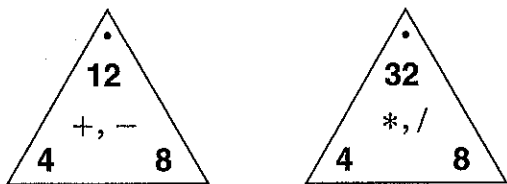
Important terms in Unit 3:

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.

Fact family A set of related arithmetic facts linking two inverse operations. For example, $4 + 8 = 12$, $8 + 4 = 12$, $12 - 4 = 8$, and $12 - 8 = 4$ is an addition/subtraction fact family, and $4 \times 8 = 32$, $8 \times 4 = 32$, $32/4 = 8$, and $32/8 = 4$ is a multiplication/division fact family.

Fact Triangle A triangular flash card labeled with the numbers of a *fact family* that students can use to practice addition/subtraction or multiplication/division facts.



factor One of two or more numbers that are multiplied to give a product. For example, $4 \times 1.5 = 6$; so 6 is the product, and 4 and 1.5 are the factors. See also *factor of a counting number n*.

factor of a counting number n A counting number whose product with some other counting number equals n . For example, 2 and 3 are factors of 6 because $2 \times 3 = 6$. But 4 is not a factor of 6 because $4 \times 1.5 = 6$ and 1.5 is not a counting number.

multiple of a number n A product of n and a counting number. The multiples of 7, for example, are 7, 14, 21, 28, and so on.

number sentence Two numbers or expressions separated by a relation symbol ($=$, $>$, $<$, \geq , \leq , or \neq). Most number sentences also contain at least one operation symbol ($+$, $-$, \times , $*$, \cdot , \div , $/$). Number sentences may also have grouping symbols, such as parentheses.

open sentence A *number sentence* in which one or more *variables* hold the places of missing numbers. For example, $5 + x = 13$ is an open sentence.

percent (%) Per hundred, or out of a hundred. For example, "48% of the students in the school are boys" means that, on average, 48 out of every 100 students in the school are boys; $48\% = \frac{48}{100} = 0.48$

product The result of multiplying two numbers called *factors*. For example, in $4 \times 3 = 12$, the product is 12.

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

square number A number that is the product of a counting number and itself. For example, 25 is a square number because $25 = 5 \times 5$. The square numbers are 1, 4, 9, 16, 25, and so on.

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 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. And in the equation $a + 3 = 3 + a$, a stands for all numbers.

"What's My Rule?" problem A type of problem that asks for a rule for relating two sets of numbers. Also, a type of problem that asks for one of the sets of numbers, given a rule and the other set of numbers.

Rule
$\times 8$

in	out
6	48
10	80
3	
	56
	64

Do-Anytime Activities

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

1. Continue to work on multiplication and division facts by using Fact Triangles and fact families and by playing games described in the *Student Reference Book*.
2. As the class proceeds through the unit, give your child multidigit addition and subtraction problems related to the lessons covered, such as $348 + 29$, $427 + 234$, $72 - 35$, and $815 - 377$.
3. Help your child recognize and identify real-world examples of right angles, such as the corner of a book, and examples of parallel lines, such as railroad tracks.

Building Skills through Games

In Unit 3, your child will play the following games.

Baseball Multiplication See *Student Reference Book*, pages 231 and 232.

Two players will need 4 regular dice, 4 pennies, and a calculator to play this game. Practicing the multiplication facts for 1–12 and strengthening mental arithmetic skills are the goals of *Baseball Multiplication*.

Beat the Calculator See *Student Reference Book*, page 233.

This game involves 3 players and requires a calculator and a deck of number cards, four each of the numbers 1 through 10. Playing *Beat the Calculator* helps your child review basic multiplication facts.

Division Arrays See *Student Reference Book*, page 240.

Materials for this game include number cards, 1 each of the numbers 6 through 18; a regular (6-sided) die; 18 counters; and paper and pencil. This game, involving 2 to 4 players, reinforces the idea of dividing objects into equal groups.

Multiplication Top-It See *Student Reference Book*, page 264.

The game can be played with 2 to 4 players and requires a deck of cards, four each of the numbers 1 through 10. This game helps your child review basic multiplication facts.

Name That Number See *Student Reference Book*, page 254.

Played with 2 or 3 players, this game requires a complete deck of number cards and paper and pencil. Your child tries to name a target number by adding, subtracting, multiplying, and dividing the numbers on as many of the cards as possible.

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 some of the Study Links in this unit.

Study Link 3•1

1. 60, 230, 110, 280, 370
2. 110, 80, 310, 240, 390
3. 34, 675, 54; +46 4. 9, 50, 420; $\times 7$
5. 2, 400, 2,000 6. Answers vary.
7. 115 8. 612 9. 1,440

Study Link 3•2

2. 1, 2, 3, 4, 6, 9, 12, 18, 36 3. 1, 16; 2, 8; 4, 4
4. 56 5. Sample answer: 4, 8, 12, 16 6. 53
7. 388 8. 765

Study Link 3•3

1. 24 2. 54 3. 28 4. 16
5. 45 6. 18 7. 40 8. 25
9. 48 11. 1, 2, 3, 6, 9, 18

Study Link 3•4

1. 6 2. 8 3. 6 4. 3
6. 20; 5 7. 18; 6 8. 49; 7 9. 9; 2
10. 7; 5 11. 7; 4
12. Sample answer: 10, 15, 20, 25
13. 1, 2, 3, 4, 6, 8, 12, 24

Study Link 3•5

1. 5 2. 7 3. 72 4. 10
5. 32 15. 1,646 16. 5,033
17. 289 18. 1,288

Study Link 3•6

3. a. T
4. about 128,921 miles;
 $132,000 - 3,079 = 128,921$
5. a. 4
6. 1, 2, 3, 4, 6, 12
7. Sample answers: 16, 24, 32, 40

Study Link 3•7

	Cities	Measurement on Map (inches)	Real Distance (miles)
1.	Cape Town and Durban	4	800
2.	Durban and Pretoria	$1\frac{3}{4}$	350
3.	Cape Town and Johannesburg	4	800
4.	Johannesburg and Queenstown	2	400
5.	East London and Upington	$2\frac{1}{2}$	500
6.	_____ and _____	Answers vary.	

Study Link 3•8

1. $659 - 457 = 202$; 202
2. $1,545 + 2,489 = 4,034$; 4034
3. $700 - 227 = 473$; 473
4. $1,552 - 1,018 = 534$; 534
5. $624 + 470 + 336 = 1,430$; 1,430 6. 9
7. 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Study Link 3•9

1. F 2. F 3. T 4. T
5. F 6. T 7. T 8. ?
11. b. $7 * 8 = 56$ 12. 36, 60, 84; +12
13. 54, 216, 324; +54

Study Link 3•10

1. 27 2. 33 3. 1 4. 24
5. 37 6. 8 7. $3 * (6 + 4) = 30$
8. $15 = (20/4) + 10$ 9. $7 + (7 * 3) = 4 * 7$
10. $9 * 6 = (20 + 7) * 2$
11. $72 \div 9 = (2 * 3) + (18 \div 9)$
12. $35 \div (42 \div 6) = (10 - 6) + 1$ 13. ?
14. ? 15. F 16. T 17. F 18. T