Name Date Time

STUDY LINK 1•10

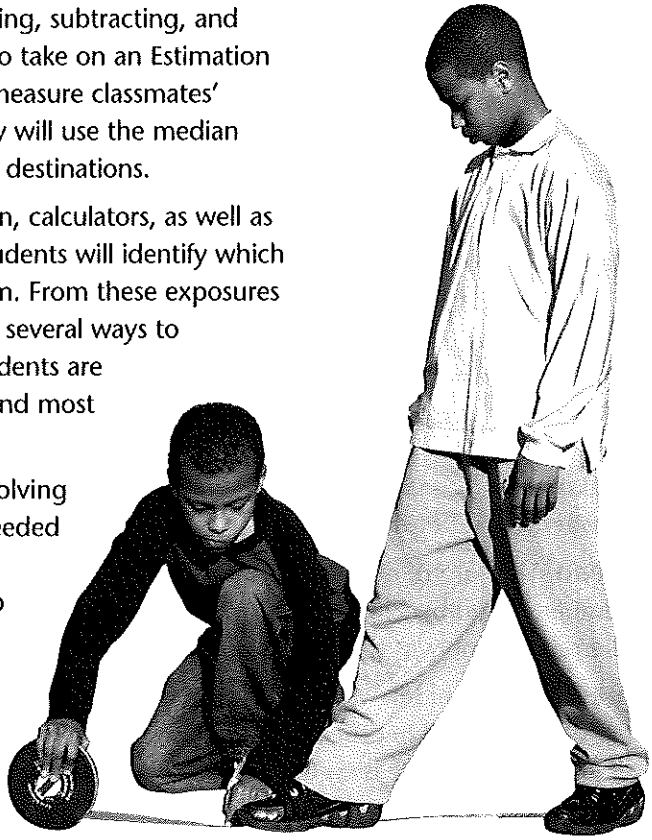
Unit 2: Family Letter

Estimation and Calculation

Computation is an important part of problem solving. Many of us were taught that there is just one way to do each kind of computation. For example, we may have learned to subtract by borrowing, without realizing that there are many other methods of subtracting numbers.

In Unit 2, students will investigate several methods for adding, subtracting, and multiplying whole numbers and decimals. Students will also take on an Estimation Challenge in Unit 2. For this extended problem, they will measure classmates' strides, and find a median length for all of them. Then they will use the median length to estimate how far it would take to walk to various destinations.

Throughout the year, students will practice using estimation, calculators, as well as mental and paper-and-pencil methods of computation. Students will identify which method is most appropriate for solving a particular problem. From these exposures to a variety of methods, they will learn that there are often several ways to accomplish the same task and achieve the same result. Students are encouraged to solve problems by whatever method they find most comfortable.



Computation is usually not the first step in the problem-solving process. One must first decide what numerical data are needed to solve the problem and which operations need to be performed. In this unit, your child will continue to develop his or her problem-solving skills with a special focus on writing and solving equations for problems.

Please keep this Family Letter for reference as your child works through Unit 2.

Vocabulary

Important terms in Unit 2:

Estimation Challenge A problem for which it is difficult, or even impossible, to find an exact answer. Your child will make his or her best estimate and then defend it.

magnitude estimate A rough estimate. A magnitude estimate tells whether an answer should be in the tens, hundreds, thousands, and so on.

Example: Give a magnitude estimate for 56 * 32

Step 1: Round 56 to 60.

Step 2: Round 32 to 30.

60 * 30 = 1,800, so a magnitude estimate for 56 * 32 is in the thousands.

10s	100s	(1,000s)	10,000s

maximum The largest amount; the greatest number in a set of data.

mean The sum of a set of numbers divided by the number of numbers in the set. The mean is often referred to simply as the average.

median The middle value in a set of data when the data are listed in order from smallest to largest or vice versa. If there is an even number of data points, the median is the *mean* of the two middle values.

minimum The smallest amount; the smallest number in a set of data.

partial-sums addition A method, or algorithm, for adding in which sums are computed for each place (ones, tens, hundreds, and so on) separately and are then added to get a final answer.

	268
	+ 483
1. Add 100s	600
2. Add 10s	140
3. Add 1s	+ 11
4. Add partial sums.	751

Partial-sums algorithm

place value A number system that values a digit according to its position in a number. In our number system, each place has a value ten times that of the place to its right and one-tenth the value of the place to its left. For example, in the number 456, the 4 is in the hundreds place and has a value of 400.

range The difference between the *maximum* and *minimum* in a set of data.

reaction time The amount of time it takes a person to react to something.

trade-first subtraction A method, or algorithm, for subtracting in which all trades are done before any subtractions are carried out.

Example: 352 − 164

100s	10s	1s
	4	12
3	~~5~~	~~2~~
−1	6	4

Trade 1 ten for 10 ones.

100s	10s	1s
	14	
2	~~4~~	12
~~3~~	~~5~~	~~2~~
−1	6	4
1	8	8

Trade 1 hundred for 10 tens and subtract in each column.

Building Skills through Games

In Unit 2, your child will practice computation skills by playing these games. Detailed instructions are in the *Student Reference Book.*

Addition Top-It See *Student Reference Book,* page 333. This game for 2 to 4 players requires a calculator and 4 each of the number cards 1–10, and provides practice with place-value concepts and methods of addition.

High-Number Toss See *Student Reference Book,* pages 320 and 321. Two players need one six-sided die for this game. *High-Number Toss* helps students review reading, writing, and comparing decimals and large numbers.

Multiplication Bull's-Eye See *Student Reference Book,* page 323. Two players need 4 each of the number cards 0–9, a six-sided die, and a calculator to play this game. *Multiplication Bull's Eye* provides practice in estimating products.

Number Top-It See *Student Reference Book,* page 326. Two to five players need 4 each of the number cards 0–9 and a Place-Value Mat. Students practice making large numbers.

Subtraction Target Practice See *Student Reference Book,* page 331. One or more players need 4 each of the number cards 0–9 and a calculator. In this game, students review subtraction with multidigit whole numbers and decimals.

Do-Anytime Activities

To work with your child on the concepts taught in Units 1 and 2, try these activities:

1. When your child adds or subtracts multidigit numbers, talk about the strategy that works best. Try not to impose the strategy that works best for you! Here are some problems to try:

   467 + 343 = _____ _____ = 761 + 79

   894 − 444 = _____ 842 − 59 = _____

2. As you encounter numbers while shopping or on license plates, ask your child to read the numbers and identify digits in various places—thousands place, hundreds place, tens place, ones place, tenths place, and hundredths place.

As You Help Your Child with Homework

As your child brings assignments home, you might 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 2•1

Answers vary for Problems 1-5.

6. 720 **7.** 90,361 **8.** 12 **9.** 18

Study Link 2•2

Sample answers:

1. 571 and 261 **2.** 30, 20, and 7

3. 19 and 23 **4.** 533 and 125

5. 85.2 and 20.5, or 88.2 and 17.5; Because the sum has a 7 in the tenths place, look for numbers with tenths that add to 7: 85.2 + 20.5 = 105.7; and 88.2 + 17.5 = 105.7.

6. 4,572 **7.** 4.4 **8.** 246 **9.** 1.918

10. 47 **11.** 208 **12.** 3 **13.** 8 R2

Study Link 2•3

1. 451 and 299 **2.** 100.9 and 75.3

3. Sample answer: 803 and 5,000

4. 17 and 15 **5.** 703 and 1,500

6. 25 and 9 **7.** 61 **8.** 137 **9.** 5.8

10. 18.85 **11.** 6 **12.** 84,018 **13.** $453.98

14. 98 **15.** 14

Study Link 2•4

1. a. 148 and 127 **b.** Total number of cards

c. 148 + 127 = *b* **d.** *b* = 275

e. 275 baseball cards

2. a. 20.00; 3.89; 1.49 **b.** The amount of change

c. 20.00 − 3.89 − 1.49 = *c*,
or 20 − (3.89 + 1.49) = *c*

d. *c* = 14.62 **e.** $14.62

3. a. 0.6; 1.15; 1.35; and 0.925

b. The length of the ribbons

c. *b* = 0.6 + 1.15 + 1.35 + 0.925

d. *b* = 4.025 **e.** 4.025 meters

Study Link 2•5

Answers vary for Problems 1–5.

6. 5,622 **7.** 29,616 **8.** 518 **9.** 13

Study Link 2•6

1. Unlikely: 30%
Very unlikely: 15%
Extremely unlikely: 5%
Very likely: 80%
Likely: 70%

2. 30%: Unlikely
99%: Extremely unlikely
80%: Very likely
65%: Likely
5%: Extremely unlikely
20%: Very unlikely
35%: Unlikely
45%: 50-50 chance

Study Link 2•7

1. 1,000s; 70 * 30 = 2,100

2. 1,000s; 10 * 700 = 7,000

3. 10,000s; 100 * 100 = 10,000

4. 10s; 20 * 2 = 40

5. 10s; 3 * 4 = 12

6. Sample answers: 45 * 68 = 3,060; 684 * 5 = 3,420; and 864 * 5 = 4,320

Study Link 2•8

1. 152; 100s; 8 * 20 = 160

2. 930; 100s; 150 * 6 = 900

3. 2,146; 1,000s; 40 * 60 = 2,400

4. 21; 10s; 5 * 4 = 20.

5. 26.04; 10s; 9 * 3 = 27

Study Link 2•9

1. 6,862; 1,000s **2.** 88.8; 10s **3.** 33.372; 10s

4. 100,224; 100,000s **5.** 341.61; 100s

6. 9,989 **7.** 5 R2 **8.** 91 **9.** $19.00

Study Link 2•10

1. 390.756 **2.** 3,471.549 **3.** 9,340

4. 244 **5.** 44,604 **6.** 19 R2