



Unit 2: Adding and Subtracting Whole Numbers

Unit 2 will focus on addition and subtraction of whole numbers, emphasizing problem-solving strategies and computational skills. In *Second Grade Everyday Mathematics*, children used shortcuts, fact families, Fact Triangles, and games to help them learn basic addition and subtraction facts. Such devices will continue to be used in third grade. Knowing the basic facts and their extensions is advantageous. Knowing that $6 + 8 = 14$, for example, makes it easy to solve such problems as $56 + 8 = ?$ and $60 + 80 = ?$ Later, knowing that $5 \times 6 = 30$ will make it easy to solve $5 \times 60 = ?$, $50 \times 60 = ?$, and so on.

In Unit 2, children will learn new methods for solving addition and subtraction problems. *Everyday Mathematics* encourages children to choose from any of these methods or to invent their own computation methods. When children create—and share—their own ways of doing operations instead of simply learning one method, they begin to realize that any problem can be solved in more than one way. They are more willing and able to take risks, think logically, and reason analytically.

Blair Chewning, a teacher in Richmond, Virginia, gave her *Everyday Mathematics* students this problem to solve. Here are just a few of the strategies her students used.

Jill needs to earn \$45.00 for a class trip. She earns \$2 a day on Mondays, Tuesdays, and Wednesdays. She earns \$3 each day on Thursdays, Fridays, and Saturdays. She does not work on Sundays. How many weeks will it take her to earn \$45?

Handwritten student solutions for the problem:

Strategy 1: 3 weeks
 $2 \times 6 = 12$
 $3 \times 9 = 27$
 $12 + 27 = 39$
 $39 + 6 = 45$

Strategy 2: 3 weeks
 $3 \times \$15.00 = \45.00
 $2+2+2 \quad 3+3+3 = 15.00$
 $2+2+2 \quad 3+3+3 = 30.00$
 $2+2+2 \quad 3+3+3 = 45.00$
3 weeks.

Strategy 3: 3 weeks
 $15 \times 3 = 45$
 $15 \times 3 = 45$
 $15 \times 3 = 45$
3 weeks.

Strategy 4: 3 weeks

1 st	2 nd	3 rd	3 rd	3 rd	3 rd	3 rd
Mon	Tu	Wen	Th	Fr.	Sa.	Su.
2	2	2	3	3	3	
4	4	4	6	6	6	
6	6	6	9	9	9	

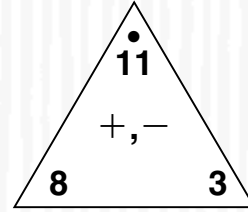
 $15 + 15 + 15 = 45$
3 wks.

Strategy 5: 3 weeks
 $3 \text{ days } 6 - 6$
 $3 \text{ days more } 9 - 9$
 $= 15 \text{ a week}$
 $15 \quad 15$
 $15 \quad 15$
 $30 \quad 15$
 $\$45.00$
 Answer
 I will take her 3 weeks.

Finally, Unit 2 introduces another yearlong project—the National High/Low Temperatures Project. Children will calculate, record, and graph differences in temperatures from cities around the United States.

Math Tools

Your child will be using **Fact Triangles** to practice and review addition and subtraction facts. Fact Triangles are a “new and improved” version of flash cards; the addition and subtraction facts shown are made from the same three numbers, and this helps your child understand the relationships among those facts.



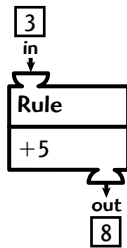
Vocabulary

Important terms in Unit 2:

fact family A collection of related addition and subtraction facts, or multiplication and division facts, made from the same numbers.

$$\begin{array}{l} 3 + 8 = 11 \\ 8 + 3 = 11 \\ 11 - 3 = 8 \\ 11 - 8 = 3 \end{array}$$

function machine An imaginary machine that processes numbers according to a certain rule. A number (input) is put into the machine and is transformed into a second number (output) through the application of the rule.



“What’s My Rule?” table A list of number pairs in which the numbers in each pair are related to each other according to the same rule. Sometimes the rule and one number in each pair are given, and the other number is to be found. Sometimes the pairs are given and the rule is to be found.

in	out
3	8
5	10
8	13
10	15
16	21

number family A collection of addition and subtraction sentences, or multiplication and division sentences, made from the same three multidigit numbers.

$$\begin{array}{ll} 221 + 229 = 450 & 450 - 221 = 229 \\ 229 + 221 = 450 & 450 - 229 = 221 \end{array}$$

number model A number sentence that shows how the parts of a number story are related. For example, $5 + 8 = 13$ shows how the parts are related in this number story: *5 children skating. 8 children playing ball. How many children in all?*

parts-and-total diagram A diagram used to represent problems in which two or more quantities are combined to form a total quantity. It is often used when the parts are known and the total is unknown. It can also be used when the total and one or more parts are known, but one part is unknown.

For example, the parts-and-total diagram here represents this number story: *Leo baked 24 cookies. Nina baked 26 cookies. How many cookies in all?*

Total	
50	
Part	Part
24	26

change diagram A diagram used to represent addition or subtraction problems in which a given quantity is increased or decreased. The diagram includes the starting quantity, the ending quantity, and the amount of the change.

For example, the change diagram here represents this subtraction problem: *Rita had \$28 in her wallet. She spent \$12 at the store. How much money is in Rita’s wallet now?*

Start	Change	End
28	-12	16

comparison diagram A diagram used to represent problems in which two quantities are given and then compared to find how much more or less one quantity is than the other.

For example, the comparison diagram here represents this problem: *34 children ride the bus to school. 12 children walk to school. How many more children ride the bus?*

Quantity	
34	
Quantity	Difference
12	22

Do-Anytime Activities

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

1 Review addition and subtraction facts. Make $+$, $-$ Fact Triangles for facts that your child needs to practice.

2 Practice addition and subtraction fact extensions. *For example:*

$$6 + 7 = 13$$

$$13 - 7 = 6$$

$$60 + 70 = 130$$

$$23 - 7 = 16$$

$$600 + 700 = 1,300$$

$$83 - 7 = 76$$

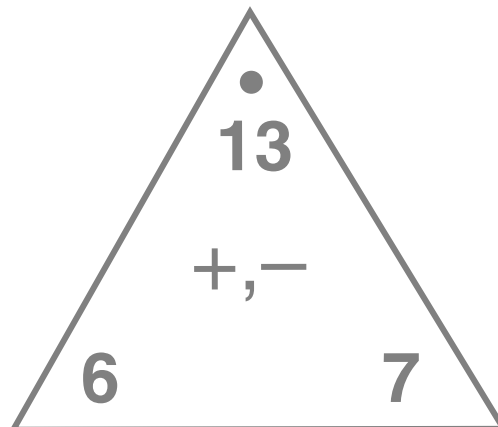
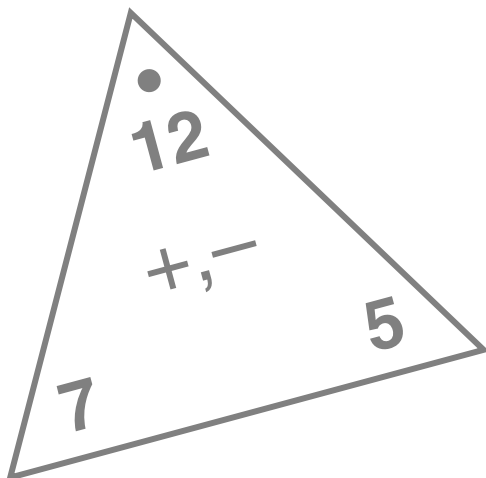
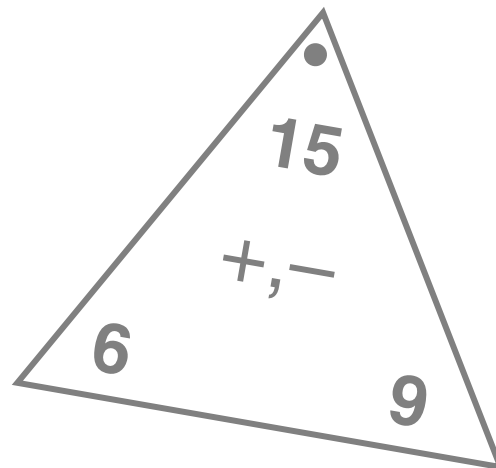
3 When your child adds or subtracts multidigit numbers, talk about the strategy that works best. Try not to impose the strategy that works best for you! Here are some problems to try:

$$267 + 743 = \underline{\hspace{2cm}}$$

$$794 - 554 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = 851 + 697$$

$$840 - 694 = \underline{\hspace{2cm}}$$



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 2.1

- $9 + 6 = 15$; $6 + 9 = 15$; $15 - 9 = 6$; $15 - 6 = 9$
- $25 + 50 = 75$; $50 + 25 = 75$; $75 - 25 = 50$;
 $75 - 50 = 25$

Home Link 2.2

- 16; 26; 76; 106
- 12; 22; 62; 282
- 8; 28; 58; 98
- 5; 15; 115; 475
- 13; 130; 1,300; 13,000

Home Link 2.3

- | in | out |
|----|-----|
| 14 | 7 |
| 7 | 0 |
| 12 | 5 |
| 15 | 8 |
| 10 | 3 |
| 21 | 14 |
- | in | out |
|----|-----|
| 7 | 16 |
| 9 | 18 |
| 37 | 46 |
| 77 | 86 |
| 49 | 58 |

Answers vary.

- | in | out |
|----|-----|
| 70 | 100 |
| 20 | 50 |
| 30 | 60 |
| 90 | 120 |
| 50 | 80 |

Answers vary.

Home Link 2.4

- 55 minutes; $25 + 30 = 55$
- 39 shells; $23 + 16 = 39$
- 700 cans; $300 + 400 = 700$

Home Link 2.5

- $\$9$; $25 - 16 = 9$
- $\$49$; $35 + 14 = 49$
or $16 + 9 = 25$

Home Link 2.6

- $\$30$; $43 - 13 = 30$
or $13 + 30 = 43$
- 9 days; $28 - 19 = 9$
or $19 + 9 = 28$
- 15 children; $40 - 25 = 15$

Home Link 2.7

- 337
- 339
- 562
- 574
- 627
- 1,214

Home Link 2.8

- 202
- 122
- 206
- 439
- 487

Home Link 2.9

- 38
- 213
- 40
- 70
- 915
- 55
- 19

