

## • Addition Word Problems with Missing Addends

### Power Up

#### facts

Power Up A

#### count aloud

Count by twos from 2 to 50 and then back down to 2.

#### mental math

**Number Sense:** Add a number ending in 0 or 9 to another number.

$$\begin{array}{r} \text{a.} \quad 28 \\ + 30 \\ \hline \end{array}$$

$$\begin{array}{r} \text{b.} \quad 28 \\ + 29 \\ \hline \end{array}$$

$$\begin{array}{r} \text{c.} \quad 37 \\ + 50 \\ \hline \end{array}$$

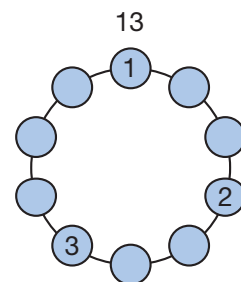
$$\begin{array}{r} \text{d.} \quad 37 \\ + 49 \\ \hline \end{array}$$

$$\begin{array}{r} \text{e.} \quad 56 \\ + 40 \\ \hline \end{array}$$

$$\begin{array}{r} \text{f.} \quad 56 \\ + 39 \\ \hline \end{array}$$

#### problem solving

Choose an appropriate problem-solving strategy to solve this problem. Copy this design of ten circles on your paper, following the same pattern as described in Lesson 8. Then, outside each circle, write the sum of the numbers in that circle and the two circles on either side. For example, the number outside of circle 1 should be 13.



### New Concept

In the “some and some more” problems we have solved so far, both the “some” number and the “some more” number were given in the problem. We added the numbers to find the total.

In this lesson we will practice solving word problems in which the total is given and an addend is missing. We can solve these problems just like arithmetic problems that have a missing addend—we subtract to find the missing number.

### Example 1

**Walter had 8 marbles. Then Lamont gave him some more marbles. Walter has 17 marbles now. How many marbles did Lamont give him?**

**If we can recognize the plot, we can write a number sentence to solve the problem.** Walter had some marbles. Then he received some more marbles. This problem has a “some and some more” plot so it can be represented with an addition formula. We know the “some” number. We know the total number. We put these numbers into the formula.

**Formula:** Some + Some more = Total

**Problem:** 8 marbles +  $m$  marbles = 17 marbles

We see that one of the addends is missing. One way to find the missing number is to ask an addition question.

“Eight plus what number equals seventeen?”

$$8 + m = 17$$

Since  $8 + 9 = 17$ , we know that Lamont gave Walter **9 marbles**.

One way to check the answer is to see if it correctly completes the problem.

*Walter had 8 marbles. Then Lamont gave him 9 marbles.  
Walter now has 17 marbles.*

#### Math Symbols

We can use  $M$  or  $m$  to represent the missing addend.

### Example 2

**Jamie picked some apples. Then she picked 5 more apples. Now Jamie has 12 apples. How many apples did Jamie pick at first?**

This is a “some and some more” word problem. We fill in the formula.

Some	$n$ apples
+ Some more	+ 5 apples
<hr/> Total	<hr/> 12 apples

We can find the missing number by asking an addition question or by asking a subtraction question.

“Five added to what number equals twelve?”

“Twelve minus five equals what number?”

Seven is the answer to both questions. First Jamie picked **7 apples**.

Some addition problems are about parts adding up to a whole.

**Formula:** Some + Some more = Total

**Formula:** Part + Part = Whole

The problem in Example 3 is about a whole class divided into two parts.

### Example 3

#### Reading Math

We translate the problem using an addition formula.

One part: 14 boys  
Other part: girls  
Whole class:  
24 students

**There are 24 students in the whole class. If there are 14 boys in the class, how many girls are there?**

One part of the class is boys and the other part is girls.

**Formula:** Part + Part = Whole

**Problem:** 14 boys + girls = 24 students

We can write the number sentence  $14 + g = 24$ .

Since  $14 + 10 = 24$ , we know that there are **10 girls** in the class.



#### Justify

Is the answer reasonable? How do you know?

### Lesson Practice

**Formulate** Write and solve equations for problems **a–c**.

- Lucille had 4 marigolds. Lola gave her some more marigolds. Now Lucille has 12 marigolds. How many marigolds did Lola give Lucille?
- Twelve of the 25 students in the class were girls. How many boys were in the class?
- At 7:00 a.m. the air was cool, but by noon the temperature had increased 25 degrees to 68°F. What was the temperature at 7:00 a.m.?

### Written Practice

*Distributed and Integrated*

**Formulate** Write and solve equations for problems **1** and **2**.

- \* **1.** If a winter day has 10 hours of daylight, then the day has how many hours of darkness? (*Hint: A whole day has 24 hours.*)

\*2. Tamira read 6 pages before lunch. After lunch she read some more.  
 (11) If Tamira read 13 pages in all, how many pages did she read after lunch?

3. **Represent** Use digits to write the number six hundred forty-two.  
 (7)

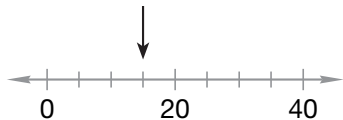
\*4. **Represent** Use digits and symbols to write this comparison:  
 (Inv. 1) "Negative twelve is less than zero."

\*5. Compare:  $-2 \bigcirc 2$   
 (Inv. 1)

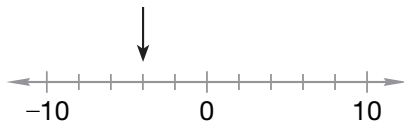
\*6. Use the digits 5, 6, and 7 to write an even number between 560 and 650.  
 (10)

\*7. **Represent** To what number is each arrow pointing?  
 (Inv. 1)

a.



b.



\*8. **Analyze** The books were put into two stacks so that an equal number of books was in each stack. Was the total number of books an odd number or an even number? Explain your thinking.  
 (10)

$$\begin{array}{r} 9. \quad 5 \\ (2) \quad b \\ + 7 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 10. \quad n \\ (2) \quad 5 \\ + 3 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 11. \quad 7 \\ (2) \quad a \\ + 4 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 12. \quad m \\ (2) \quad 2 \\ + 8 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 13. \quad 12 \\ (6) \quad - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 14 \\ (6) \quad - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 12 \\ (6) \quad - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 13 \\ (6) \quad - 6 \\ \hline \end{array}$$

$$\begin{array}{r} *17. \quad 74 \\ (9) \quad + 18 \\ \hline \end{array}$$

$$\begin{array}{r} *18. \quad 93 \\ (9) \quad + 39 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 28 \\ (9) \quad + 45 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 28 \\ (9) \quad + 47 \\ \hline \end{array}$$

**Conclude** Write the next three numbers in each counting sequence:

\*21. ..., 12, 9, 6, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...  
(Inv. 3)

22. ..., 30, 36, 42, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...  
(3)

\*23. **Connect** The numbers 5, 9, and 14 form a fact family. Write two addition facts and two subtraction facts using these three numbers.  
(6)

24.  $4 + 3 + 5 + 8 + 7 + 6 + 2$   
(1)

25. **List** Show six ways to add 7, 8, and 9.  
(1)

\*26. **Multiple Choice** If  $3 + \blacktriangle = 7$  and if  $\blacksquare = 5$ , then  $\blacktriangle + \blacksquare$  equals which of the following?  
(1)

A 4

B 5

C 8

D 9

\*27. How many different odd three-digit numbers can you write using the digits 5, 0, and 9? Each digit may be used only once, and the digit 0 may not be used in the hundreds place.  
(10)

\*28. Compare. Write  $>$ ,  $<$ , or  $=$ .  
(Inv. 1)

a.  $89 \bigcirc 94$

b.  $409 \bigcirc 177$

c.  $61 \bigcirc 26$

\*29. The land areas of three counties are shown in the table.  
(7)

Write the names of the counties in order from smallest area to largest area.

Land Area by County

County	State	Area (sq mi)
Cass	Iowa	564
Hood River	Oregon	522
Weber	Utah	576

\*30. **Formulate** Write and solve an addition word problem. Then explain why your answer is reasonable.  
(1)

## • Missing Numbers in Subtraction

### Power Up

#### facts

Power Up A

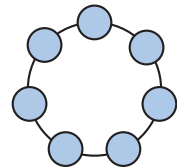
#### mental math

Add a number ending in 9 to another number in **a–f**.

- a. **Number Sense:**  $52 + 29$
- b. **Number Sense:**  $63 + 9$
- c. **Number Sense:**  $14 + 39$
- d. **Number Sense:**  $26 + 49$
- e. **Number Sense:**  $57 + 19$
- f. **Number Sense:**  $32 + 59$
- g. **Money:**  $\$12 + \$10$
- h. **Money:**  $\$12 + \$9$

#### problem solving

Choose an appropriate problem-solving strategy to solve this problem. Make a design of numbered circles like those in Lessons 10 and 11, but use seven circles instead of ten. Use the pattern “1, skip, skip, 2, skip, skip, 3, . . .” to number the circles, starting with the circle at top. Outside each circle, write the sum of the number in the circle and the two circles on either side. Describe the pattern to a classmate or write a description of the pattern.



### New Concept

Since Lesson 1 we have practiced finding missing numbers in addition problems. In this lesson we will practice finding missing numbers in subtraction problems.

### Thinking Skill

#### Discuss

Why can we add to find a missing number in a subtraction problem?

Remember that we “subtract down” to find the bottom number and “add up” to find the top number.

<b>Subtract Down</b>	↓	9	↑	<b>Add Up</b>
Nine minus six		$\frac{-6}{3}$		Three plus six
equals three.				equals nine.

We may use either “subtracting down” or “adding up” to find the missing number in a subtraction problem.

### Example 1

Find the missing number:  $14$

$$\begin{array}{r} - n \\ \hline 6 \end{array}$$

We may either “subtract down” or “add up.” Which way seems easier?

<b>Subtract Down</b>	↓	14	↑	<b>Add Up</b>
Fourteen minus		$\frac{-n}{6}$		Six plus what
what number				number equals
equals six?				fourteen?

Often it is easier to find a missing number in a subtraction problem by “adding up.” If we add 8 to 6 we get 14, so the missing number is **8**. We can check our answer by replacing  $n$  with 8 in the original problem.

$$\begin{array}{r} 14 \\ - 8 \\ \hline 6 \end{array} \text{ check}$$

Since  $14 - 8 = 6$ , we know our answer is correct.

### Example 2

Find the missing number:  $b$

$$\begin{array}{r} - 5 \\ \hline 7 \end{array}$$

Try both “subtracting down” and “adding up.”

<b>Subtract Down</b>	↓	$b$	↑	<b>Add Up</b>
What number		$\frac{-5}{7}$		Seven plus five
minus five equals				equals what
seven?				number?

Since 7 plus 5 is 12, the missing number must be **12**. We replace  $b$  with 12 in the original problem to check our answer.

$$\begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array} \text{ check}$$

## Lesson Practice

Find each missing number. Check your answers.

a.  $\frac{14}{-n} = \frac{\quad}{6}$

b.  $\frac{n}{-5} = \frac{\quad}{2}$

c.  $\frac{9}{-n} = \frac{\quad}{2}$

d.  $\frac{n}{-7} = \frac{\quad}{5}$

## Written Practice

*Distributed and Integrated*

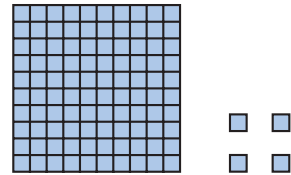
**Formulate** Write and solve equations for problems 1–3.

- \*1. <sup>(11)</sup> Laura found nine acorns in the park. Then she found some more acorns in her backyard. If Laura found seventeen acorns in all, how many acorns did she find in the backyard?

- \*2. <sup>(1, 9)</sup> Caterpillars change into butterflies every day at the butterfly center. In one week 35 caterpillars changed into butterflies. The next week 27 more caterpillars changed into butterflies. Altogether, how many caterpillars changed to butterflies?

- \*3. <sup>(11)</sup> Demetrius used a 12-inch ruler to stir the paint in the can. When he removed the ruler, 5 inches of it were not coated with paint. How many inches of the ruler were coated with paint?

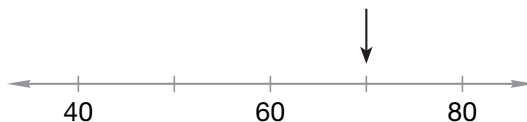
- \*4. <sup>(7)</sup> **Represent** Use words and digits to write the number shown by this model:



- \*5. <sup>(5)</sup> Nathan's little sister was born on the seventh day of June in 2002. Write her birth date in month/day/year form.

- \*6. <sup>(4)</sup> Write a three-digit odd number less than 500 using the digits 9, 4, and 6. Which digit is in the tens place?

- \*7. <sup>(Inv. 1)</sup> **Connect** To what number is the arrow pointing?





$$\begin{array}{r} 8. \quad 5 \\ (2) \quad n \\ + 6 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 9. \quad a \\ (2) \quad 2 \\ + 5 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 10. \quad 7 \\ (2) \quad 2 \\ + n \\ \hline 15 \end{array}$$

$$\begin{array}{r} 11. \quad 4 \\ (2) \quad a \\ + 2 \\ \hline 15 \end{array}$$

$$\begin{array}{r} *12. \quad n \\ (12) \quad - 6 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 13. \quad 16 \\ (6) \quad - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 14 \\ (6) \quad - 7 \\ \hline \end{array}$$

$$\begin{array}{r} *15. \quad 12 \\ (12) \quad - a \\ \hline 7 \end{array}$$

$$\begin{array}{r} *16. \quad b \\ (12) \quad - 6 \\ \hline 6 \end{array}$$

$$\begin{array}{r} *17. \quad 13 \\ (12) \quad - c \\ \hline 8 \end{array}$$

$$\begin{array}{r} *18. \quad \$48 \\ (9) \quad + \$16 \\ \hline \end{array}$$


$$\begin{array}{r} 19. \quad \$37 \\ (9) \quad + \$14 \\ \hline \end{array}$$

**Conclude** Write the next three numbers in each counting sequence:

\*20. ..., 28, 35, 42, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...  
(3)

\*21. ..., 18, 21, 24, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...  
(3)

22. How many cents is nine nickels? Count by fives.  
(3)

\*23.  **Explain** Write the following comparison using words and explain why the comparison is correct.  
(Inv. 1)

$$-3 > -5$$

\*24. Arrange these numbers from least to greatest: 0, -2, 4  
(Inv. 1)

25.  $7 + 3 + 8 + 5 + 4 + 3 + 2$   
(1)

\*26. **Multiple Choice** “Five subtracted from  $n$ ” can be written as which of the following?  
(6)

**A**  $5 - n$

**B**  $n - 5$

**C**  $5 + n$

**D**  $n + 5$

\*27. How many different three-digit numbers can you write using the digits 4, 2, and 0? Each digit may be used only once, and the digit 0 may not be used in the hundreds place.  
(10)

\*28. Compare. Write  $>$ ,  $<$ , or  $=$ .  
(Inv. 1)

**a.**  $310 \bigcirc 295$

**b.**  $56 \bigcirc 63$


**c.**  $104 \bigcirc 89$

29. The table shows the typical weight of three animals.  
(7)

Write the names of the animals in order from greatest weight to the least weight.

Typical Weight of Animals

Animal	Weight (pounds)
Fox	14
Badger	17
Otter	13

30.  **Formulate** Write and solve an addition word problem. Then explain why your answer is reasonable.  
(1)

**Early Finishers**  
*Real-World Connection*

Brianna earned \$15 walking her neighbor's dog in the afternoons. She used part of the money she earned to buy a CD. After buying the CD, Brianna has \$6 left. Write and solve an equation to find how much Brianna paid for the CD.

With the money she has left, Brianna wants to purchase a book that costs \$10. Write and solve an equation to find how much Brianna needs. Explain how you found your answer.

## • Adding Three-Digit Numbers

### Power Up

#### multiples

Power Up K

On your hundred number chart, circle all the numbers on the chart that we say when we count by 3s from 3 to 99. Do you see a pattern of even and odd numbers? Explain.

#### mental math

- Number Sense:**  $30 + 60$
- Number Sense:**  $74 + 19$
- Number Sense:**  $46 + 9$
- Number Sense:**  $63 + 29$
- Number Sense:**  $42 + 50$
- Number Sense:**  $16 + 39$
- Money:**  $\$20 + \$20$
- Money:**  $\$19 + \$20$

#### problem solving

The months of the year repeat. Twelve months after January is January of the next year. Twenty-four months after January is January again. What month is twenty-five months after January?

#### Focus Strategy: Use Logical Reasoning

**Understand** We are given this information:

- The months of the year repeat.
- Twelve months after January is January of the next year.
- Twenty-four months after January is January again.

We already know the months of the year (January, February, March, and so on). We are asked to find the month that is twenty-five months after January.

**Plan** We will use *logical reasoning*. We will combine our knowledge of the months of the year with the given information to answer the question.

**Solve** We are told that twenty-four months after January is January. Twenty-five months is one month more than twenty-four months ( $24 + 1 = 25$ ). We know that one month after January is February. So **February** is twenty-five months after January.

**Check** We know our answer is reasonable because the months of the year repeat. Twenty-four months after January is January, so by using logical reasoning, we know that twenty-five months after January is February.

## New Concept

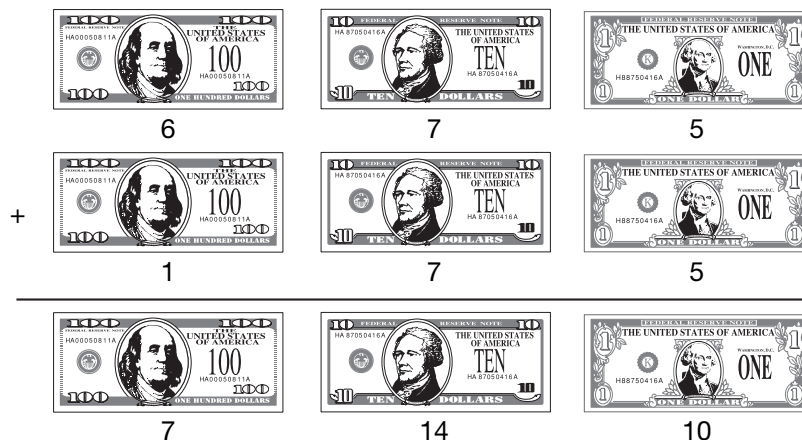
*Esmerelda and Denise were playing a game. Esmerelda had \$675. Denise landed on Esmerelda's property, so she paid Esmerelda \$175 for rent. How much money does Esmerelda have now?*

### Thinking Skill

#### Justify

Why can we use \$100 bills, \$10 bills, and \$1 bills to represent an addition problem?

We can use money manipulatives to add \$175 to \$675. The sum is 7 hundreds, 14 tens, and 10 ones.



We can exchange 10 ones for 1 ten and 10 tens for 1 hundred, giving us 8 hundreds, 5 tens, and no ones. Esmerelda has \$850.



We can also use pencil and paper to solve this problem. First we add the ones and regroup. Then we add the tens and regroup. As a final step, we add the hundreds.

### Thinking Skill

#### Verify

Why did we exchange ten \$1 bills for one \$10 bill?

Add ones. ———  
 Add tens. ———  
 Add hundreds. ———

$$\begin{array}{r}
 \$675 \\
 + \$175 \\
 \hline
 11 \\
 \hline
 \$850
 \end{array}$$

Show regrouping either above or below.

### Example

Rayetta bought a used car to drive to college. She paid \$456 to have it repainted and paid \$374 for new tires. Altogether, how much did Rayetta spend for the paint work and tires?

We begin by adding the digits in the ones column, and we move one column at a time to the left. We write the first digit of two-digit answers either above or below the next place's column. We find that Rayetta spent **\$830**.

$$\begin{array}{r}
 11 \\
 \$456 \\
 + \$374 \\
 \hline
 \$830
 \end{array}$$

### Thinking Skill

#### Discuss

In which place did we need to regroup? Explain why.



## Activity

### Adding Money

Materials needed:

- money manipulatives from Lesson 4 (from **Lesson Activities 2, 3, and 4**)

Use money manipulatives to act out the problem in the example. Then describe in writing how you can regroup the bills so that you use the fewest number of bills.

### Lesson Practice

Add:

a.  $\begin{array}{r} \$579 \\ + \$186 \\ \hline \end{array}$

b.  $\begin{array}{r} 408 \\ + 243 \\ \hline \end{array}$

c.  $\begin{array}{r} \$498 \\ + \$ 89 \\ \hline \end{array}$

d.  $\$458 + \$336$

e.  $56 + 569$

## Written Practice

*Distributed and Integrated*

\* 1. For recess, 77 students chose to play outside and 19 students chose to play in the gym. How many students were playing at recess altogether?  
 (1, 9)

\* 2. Five of the twelve students had no homework to take home on Friday.  
 (11) How many students had homework to take home?

**\*3. Represent** Use words to write the number 913.  
(7)

**\*4. Represent** Use digits to write the number seven hundred forty-three.  
(7)

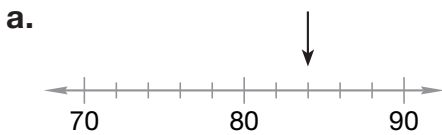
**\*5. Represent** Use digits and symbols to write this comparison:  
(Inv. 1) "Seventy-five is greater than negative eighty."

**\*6. Compare:**  
(7, Inv. 1) a.  $413 \bigcirc 314$

b.  $-4 \bigcirc 3$

**7. Connect** The numbers 7, 9, and 16 form a fact family. Write two addition facts and two subtraction facts using these three numbers.  
(6)

**\*8. Represent** To what number is each arrow pointing?  
(Inv. 1)



**\*9.** 
$$\begin{array}{r} \$475 \\ + \$332 \\ \hline \end{array}$$
  
(13)

**\*10.** 
$$\begin{array}{r} \$714 \\ + \$226 \\ \hline \end{array}$$
  
(13)

**\*11.** 
$$\begin{array}{r} 743 \\ + 187 \\ \hline \end{array}$$
  
(13)

**\*12.** 
$$\begin{array}{r} 576 \\ + 228 \\ \hline \end{array}$$
  
(13)

**13.** 
$$\begin{array}{r} 8 \\ 5 \\ + k \\ \hline 17 \end{array}$$
  
(2)

**14.** 
$$\begin{array}{r} 4 \\ n \\ + 6 \\ \hline 15 \end{array}$$
  
(2)

**15.** 
$$\begin{array}{r} 9 \\ a \\ + 6 \\ \hline 17 \end{array}$$
  
(2)

**16.** 
$$\begin{array}{r} n \\ 3 \\ + 7 \\ \hline 16 \end{array}$$
  
(2)

**\*17.** 
$$\begin{array}{r} 8 \\ - n \\ \hline 2 \end{array}$$
  
(12)

**18.** 
$$\begin{array}{r} 17 \\ - 8 \\ \hline \end{array}$$
  
(6)

**19.** 
$$\begin{array}{r} 13 \\ - 7 \\ \hline \end{array}$$
  
(6)

**\*20.** 
$$\begin{array}{r} n \\ - 8 \\ \hline 7 \end{array}$$
  
(12)

**\*21.** 
$$\begin{array}{r} 14 \\ - n \\ \hline 6 \end{array}$$
  
(12)

**\*22.** 
$$\begin{array}{r} 16 \\ - a \\ \hline 9 \end{array}$$
  
(12)

**23.** 
$$\begin{array}{r} n \\ - 9 \\ \hline 7 \end{array}$$
  
(12)

**24.** 
$$\begin{array}{r} \$49 \\ + \$76 \\ \hline \end{array}$$
  
(9)

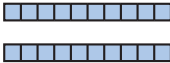

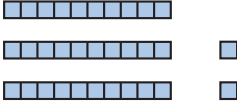

\*25. **Conclude** Write the next three numbers in each counting sequence:

<sup>(3, Inv. 1)</sup>

a. ..., 28, 35, 42, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

b. ..., 15, 10, 5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

\*26. **Multiple Choice** Which number shows the sum of the sets below?  
<sup>(7)</sup>

**A** 26                      **B** 32                      **C** 58                      **D** 13


\*27. What temperature is 5 degrees less than 1 degree?  
<sup>(Inv. 1)</sup>

\*28. Brothers and sisters are siblings. The table shows the names and ages of Jeremy and his siblings.  
<sup>(7)</sup>

Write the names in order from youngest to oldest.

**Jeremy and his Siblings**

Name	Age (in years)
Jeremy	10
Jack	8
Jackie	13

\*29.  **Justify** Will the sum of three even numbers be odd or even? Explain and give several examples to support your answer.  
<sup>(10)</sup>

\*30. How many different three-digit numbers can you write using the digits 0, 6, and 7? Each digit may be used only once, and the digit 0 may not be used in the hundreds place. Label your numbers as even or odd.  
<sup>(10)</sup>

- Subtracting Two-Digit and Three-Digit Numbers
- Missing Two-Digit Addends

**Power Up****multiples**

Power Up K

The multiples of 4 are the numbers we say when we count by fours: 4, 8, 12, 16, and so on. On your hundred number chart, circle the multiples of 4. Which of the circled numbers are even numbers? Are all the even numbers on the chart circled?

**mental math**

Add a number ending in two zeros to another number in **a–c**.

- Number Sense:**  $300 + 400$
- Number Sense:**  $600 + 300$
- Number Sense:**  $250 + 300$
- Number Sense:**  $63 + 29$
- Number Sense:**  $28 + 49$
- Money:** Two dimes and one nickel have the same value as what coin?
- Money:** How many quarters equal one dollar?
- Money:** If one pencil costs 20¢, how much do two pencils cost?

**problem solving**

Choose an appropriate problem-solving strategy to solve this problem. Twelve months after February is February. Twenty-four months after February is February again. On February 14, Paloma's sister was 22 months old. In what month was Paloma's sister born?



## New Concepts

### Subtracting Two-Digit and Three-Digit Numbers

KimRee had \$37. She spent \$23 to buy a game. How much money did KimRee have then?

We will use bills to illustrate this problem.

KimRee had \$37.



3



7

She spent \$23.

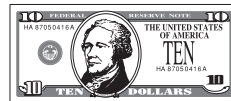


2



3

Then she had ...



1



4

The picture shows that KimRee had 3 tens and 7 ones and that she took away 2 tens and 3 ones. We see that she had 1 ten and 4 ones left over, which is \$14.

The problem is a subtraction problem. With pencil and paper, we solve the problem this way:

First subtract ones.  
Then subtract tens.

$$\begin{array}{r} \$37 \\ - \$23 \\ \hline \$14 \end{array}$$

### Example 1

**Subtract: 85 – 32**

We read this problem as “eighty-five minus thirty-two.” This means that 32 is subtracted from 85. We can write the problem and its answer like this:

$$\begin{array}{r} 85 \\ - 32 \\ \hline 53 \end{array}$$

**Verify** Explain why the answer is reasonable.

## Example 2

**Subtract 123 from 365.**

The numbers in a subtraction problem follow a specific order. This problem means “start with 365 and subtract 123.” We write the problem and its answer like this:

$$\begin{array}{r} 365 \\ - 123 \\ \hline 242 \end{array}$$

**Verify** Explain why the answer is reasonable.

## Missing Two-Digit Addends

The missing addend in the problem below has two digits. We can find the missing addend one digit at a time.

$$\begin{array}{r} 56 \\ + \underline{\quad} \\ \hline 98 \end{array}$$

ones column      ↘  
tens column     ↘

Six plus what number is eight? (2)  
Five plus what number is nine? (4)

The missing digits are 4 and 2, so the missing addend is 42.

## Example 3

**Find the missing addend: 36**

$$\begin{array}{r} 36 \\ + w \\ \hline 87 \end{array}$$

The letter  $w$  stands for a two-digit number. We first find the missing digit in the ones place. Then we find the missing digit in the tens place.

$$\begin{array}{r} 36 \\ + w \\ \hline 87 \end{array}$$

Six plus what number is seven? (1)  
Three plus what number is eight? (5)

The missing addend is **51**.

We check our answer by replacing  $w$  with 51 in the original problem.

$$\begin{array}{r} 36 \\ + w \\ \hline 87 \end{array} \quad \begin{array}{r} 36 \\ + 51 \\ \hline 87 \end{array} \text{ check}$$

### Example 4

**Find the missing addend:  $m + 17 = 49$**

We want to find the number that combines with 17 to total 49.

The missing addend contains two digits. We will find the digits one at a time.

$$\begin{array}{r} m \text{ What number plus seven is nine? (2)} \\ + 17 \text{ What number plus one is four? (3)} \\ \hline 49 \end{array}$$

We find that the missing addend is **32**. We check our answer.

$$m + 17 = 49$$

$$32 + 17 = 49 \quad \text{check}$$

### Lesson Practice

**Model** Solve problems **a** and **b** using money manipulatives. Then subtract using pencil and paper.

**a.**  $\$485 - \$242$

**b.**  $\$56 - \$33$

**c.** Subtract 53 from 97.

**d.** Subtract twenty-three from fifty-four.

Find the missing addend in each problem:

**e.** 
$$\begin{array}{r} 24 \\ + q \\ \hline 65 \end{array}$$

**f.** 
$$\begin{array}{r} m \\ + 31 \\ \hline 67 \end{array}$$

**g.**  $36 + w = 99$

**h.**  $y + 45 = 99$

### Written Practice

*Distributed and Integrated*

**Formulate** Write and solve equations for problems **1** and **2**.

\***1.** <sup>(1)</sup> The surf shop had forty-two surfboards. The shop received a shipment with seventeen more surfboards. How many surfboards were at the surf shop?

\***2.** <sup>(11)</sup> Machiko saw four grasshoppers in her backyard on Monday. On Tuesday she saw some more grasshoppers. She saw a total of eleven grasshoppers on those two days. How many grasshoppers did she see on Tuesday?

\*3. Use the digits 1, 2, and 3 to write an even number less than 200. Use each digit only once.

\*4. **Connect** Use the numbers 9, 7, and 2 to write two addition facts and two subtraction facts.

\*5. Subtract seven hundred thirteen from eight hundred twenty-four.

\*6. Compare:

a.  $704 \bigcirc 407$

b.  $-3 \bigcirc -5$

7. What is the total number of days in the first two months of a common year?

\*8. **Represent** To what number is the arrow pointing?



\*9. 
$$\begin{array}{r} \$346 \\ + \$298 \\ \hline \end{array}$$

\*10. 
$$\begin{array}{r} 499 \\ + 275 \\ \hline \end{array}$$

\*11. 
$$\begin{array}{r} \$421 \\ + \$389 \\ \hline \end{array}$$

\*12. 
$$\begin{array}{r} \$506 \\ + \$210 \\ \hline \end{array}$$

\*13. 
$$\begin{array}{r} \$438 \\ - \$206 \\ \hline \end{array}$$

\*14. 
$$\begin{array}{r} 17 \\ - a \\ \hline 9 \end{array}$$

\*15. 
$$\begin{array}{r} 7 \\ + b \\ \hline 14 \end{array}$$

\*16. 
$$\begin{array}{r} 5 \\ - c \\ \hline 2 \end{array}$$

\*17. 
$$\begin{array}{r} 8 \\ + d \\ \hline 15 \end{array}$$

\*18. 
$$\begin{array}{r} 15 \\ - k \\ \hline 9 \end{array}$$

\*19. 
$$\begin{array}{r} 3 \\ n \\ + 2 \\ \hline 13 \end{array}$$

\*20. 
$$\begin{array}{r} 476 \\ - 252 \\ \hline \end{array}$$

\*21. 
$$\begin{array}{r} 47 \\ - 16 \\ \hline \end{array}$$

\*22. 
$$\begin{array}{r} 28 \\ - 13 \\ \hline \end{array}$$

\*23. 
$$\begin{array}{r} 75 \\ + t \\ \hline 87 \end{array}$$

\*24. 
$$\begin{array}{r} 24 \\ + e \\ \hline 67 \end{array}$$

\*25. **Conclude** Write the next three numbers in each counting sequence:

a. ... , 81, 72, 63, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

b. ... , 12, 8, 4, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

\*26. **Multiple Choice** If  $\square - 7 = 2$ , then which of these is *not* true?

(12)

A  $7 - \square = 2$

B  $\square - 2 = 7$

C  $2 + 7 = \square$

D  $\square = 7 + 2$

\*27.

(10)



**Verify**

When you add four even numbers, will the sum be even or odd? Explain why, and give several examples to support your answer.

\*28.

(1, 7)

A piano has 36 black keys and 52 white keys. Does a piano have more black keys or white keys? How many keys does a piano have altogether?

\*29.

(10)



**Verify**

Will the sum of three odd numbers be odd or even? Explain why, and give several examples to support your answer.

\*30.

(10)

How many different three-digit numbers can you write using the digits 9, 1, and 0? Each digit may be used only once, and the digit 0 may not be used in the hundreds place. Label the numbers you write as even or odd.

## Early Finishers

Real-World Connection

The Helman family took a 745-mile car trip to visit relatives. The trip took three days because they made stops to sightsee each day. On the first day, they traveled 320 miles, and on the third day, they traveled 220 miles. How many miles did they travel on the second day? Explain why your answer is reasonable.

## • Subtracting Two-Digit Numbers with Regrouping

### Power Up

#### facts

Power Up A

#### count aloud

Count by fours from 4 to 60.

#### mental math

Add a number ending in two zeros to another number in **a–c**.

- Number Sense:**  $400 + 500$
- Number Sense:**  $600 + 320$
- Number Sense:**  $254 + 100$
- Number Sense:**  $39 + 25$
- Number Sense:**  $19 + 27$
- Money:** What is the value of 3 nickels and 2 pennies?
- Money:** What is the value of 3 quarters?
- Money:** The price of a baseball glove is \$19. The price of a baseball is \$3. What is the total cost of one glove and one ball?

#### problem solving

Talmi has a total of 10 coins in his left and right pockets. He has four more coins in his right pocket than in his left pocket. How many coins does Talmi have in each pocket?

#### Focus Strategy: Guess and Check

**Understand** We are told the total number of coins (10). We are told Talmi's right pocket contains four more coins than his left pocket. We are asked to find the number of coins in each pocket.

**Plan** We can try *guessing* the numbers of coins and then *checking* whether the numbers fit the problem.

**Solve** We will use fact families to only guess pairs of numbers that have a sum of 10. We try to make a *reasonable* guess. We can eliminate the guess of 5 coins in each pocket because we know Talmai has different numbers of coins in his two pockets.

We might try guessing 6 coins for the right pocket and 4 coins for the left pocket. This guess would be wrong because it would mean Talmai has 2 more coins in one pocket than in the other pocket ( $6 - 4 = 2$ ). If we make a wrong guess, we revise our guess and check again.

For a different guess, we might try 7 coins and 3 coins. Seven coins is four more than three coins ( $7 - 3 = 4$ ), which fits the problem. This means Talmai has **7 coins in his right pocket and 3 coins in his left pocket.**

**Check** We know our answer is reasonable because 7 coins plus 3 coins totals 10 coins, and 7 coins is 4 more than 3 coins. We used fact families and the strategy of *guess and check* to solve the problem.

## New Concept

*Roberto had \$53. He spent \$24 to buy a jacket. Then how much money did Roberto have?*

We will use pictures of bills and our money manipulatives to help us understand this problem.

Roberto had \$53.



He spent \$24.



Then he had ...



## Thinking Skill

### Discuss

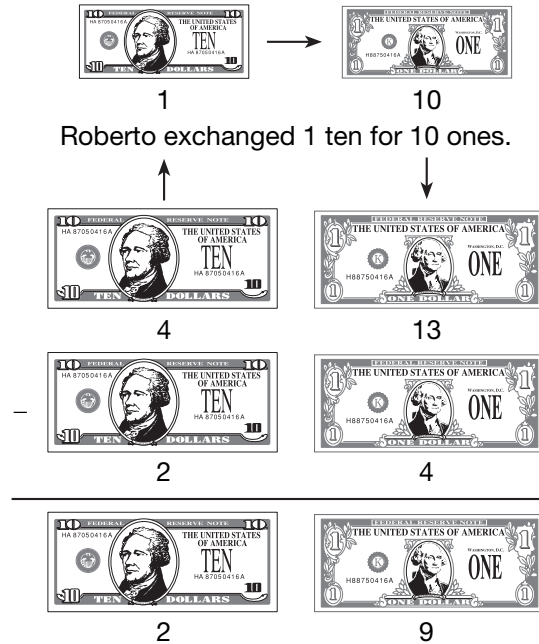
Explain why 5 tens and 3 ones equals the same number as 4 tens and 13 ones.

The picture shows that Roberto had 5 tens and 3 ones and that he took away 2 tens and 4 ones. We see that Roberto had enough tens but not enough ones. To get more ones, Roberto traded 1 ten for 10 ones.

Roberto had \$53.

He spent \$24.

Then he had ...



After trading 1 ten for 10 ones, Roberto had 4 tens and 13 ones. Then he was able to take 2 tens and 4 ones from his money to pay for the jacket. The purchase left him with 2 tens and 9 ones, which is \$29.

Trading 1 ten for 10 ones is an example of **regrouping**, or **exchanging**. (In subtraction, this process may also be called **borrowing**.) We often need to regroup when we subtract.

## Example

**Santino had \$56. He spent \$29 to repair his bike. Then how much money did Santino have?**

We subtract \$29 from \$56, writing \$56 on top.

$$\begin{array}{r} \$56 \\ - \$29 \\ \hline ? \end{array}$$

We understand that \$56 means 5 tens and 6 ones and that \$29 means 2 tens and 9 ones. Since \$6 is less than \$9, we need to regroup before we can subtract. We take \$10 from \$50 and add it to the \$6. From 5 tens and 6 ones we get 4 tens and 16 ones, which is still equal to \$56.



### Thinking Skill

#### Justify

How can we check the answer?

We subtract and get 2 tens and 7 ones, which is **\$27**. We usually show the regrouping this way:

$$\begin{array}{r} \phantom{\$}4\phantom{0}1\phantom{0}6 \\ - \$2\phantom{0}9 \\ \hline \$2\phantom{0}7 \end{array}$$

### Activity

#### Subtracting Money

Materials needed:

- money manipulatives from Lesson 4 (from **Lesson Activities 2, 3, and 4**)

Use money manipulatives to act out the problem in the example. Then describe in writing how to regroup the bills so that you can subtract.

### Lesson Practice

**Model** Use money manipulatives or draw pictures to show each subtraction:

a.	\$53	b.	\$56	c.	\$42	d.	\$60
	$- \$29$		$- \$27$		$- \$24$		$- \$27$

Use pencil and paper to find each difference:

e.	$63 - 36$	f.	$40 - 13$
g.	$72 - 24$	h.	$24 - 18$

### Written Practice

*Distributed and Integrated*

**Formulate** Write and solve equations for problems 1 and 2.

\*1. Jimmy found six hundred eighteen acorns under one tree. He found one hundred seventeen acorns under another tree. How many acorns did Jimmy find in all?  
(1, 13)

\*2. On the first day Rueben collected sixteen leaves. On the second day Rueben collected some more leaves, giving him a total of seventy-six leaves. How many leaves did he collect on the second day?  
(11, 14)

3. Use the digits 3, 6, and 7 to write an even number less than 400. Use each digit only once.

\*4. **Represent** Use words to write the number 605.

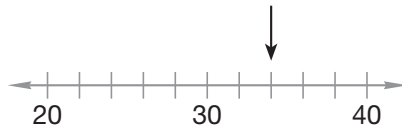
5. The smallest two-digit odd number is 11. What is the smallest two-digit even number?

6. Compare:  
a.  $75 \bigcirc 57$

b.  $5 + 7 \bigcirc 4 + 8$

\*7. Subtract 245 from 375.

\*8. To what number is the arrow pointing?



\*9. 
$$\begin{array}{r} \$426 \\ + \$298 \\ \hline \end{array}$$

10. 
$$\begin{array}{r} \$278 \\ + \$456 \\ \hline \end{array}$$

11. 
$$\begin{array}{r} 721 \\ + 189 \\ \hline \end{array}$$

\*12. 
$$\begin{array}{r} 409 \\ + 198 \\ \hline \end{array}$$

13. 
$$\begin{array}{r} d \\ + 7 \\ \hline 12 \end{array}$$

14. 
$$\begin{array}{r} 18 \\ - a \\ \hline 9 \end{array}$$

\*15. 
$$\begin{array}{r} 38 \\ + b \\ \hline 59 \end{array}$$

16. 
$$\begin{array}{r} c \\ - 4 \\ \hline 1 \end{array}$$

17. 
$$\begin{array}{r} \$456 \\ - \$120 \\ \hline \end{array}$$

\*18. 
$$\begin{array}{r} \$54 \\ - \$27 \\ \hline \end{array}$$

\*19. 
$$\begin{array}{r} 46 \\ - 28 \\ \hline \end{array}$$

\*20. 
$$\begin{array}{r} 35 \\ - 16 \\ \hline \end{array}$$

\*21. **Analyze** What is the total number of days in the last two months of the year?

\*22. **Connect** The numbers 5, 6, and 11 form a fact family. Write two addition and two subtraction facts using these three numbers.

\*23.  $3 + 6 + 7 + 5 + 4 + 8$

**Conclude** Write the next three numbers in each counting sequence:

24.  $\dots, 72, 63, 54, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \dots$

\*25. ... , -7, -14, -21, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...  
(Inv. 1)


\*26. **Multiple Choice** If  $\square = 6$  and if  $\square + \triangle = 10$ , then  $\triangle$  equals which of the following?  
(1)

A 3

B 4

C 5

D 6

\*27.  **Verify** Will the sum of an odd number and an even number be odd or even? Explain why, and give several examples to support your answer.  
(10)

28. The numbers of students who attend three different elementary schools are shown in this table:  
(7)

Enrollment

School	Number of Students
Washington	370
Lincoln	312
Roosevelt	402

Write the names of the schools in order from the least number of students to greatest.

\*29. A chimpanzee weighs about 150 pounds. A gorilla weighs about 450 pounds. Which animal weighs more? About how much more does it weigh?  
(6, 7)

30. How many different three-digit numbers can you write using the digits 4, 0, and 8? Each digit may be used only once, and the digit 0 may not be used in the hundreds place.  
(10)

## Early Finishers

Real-World Connection

The zookeeper keeps a chart showing how much food the giant panda at the zoo eats each day. The chart shows that the panda ate 61 pounds of food on Monday and 55 pounds of food on Tuesday. How much more food did the panda eat on Monday than on Tuesday? Use base ten blocks to solve the problem. Then check your answer using pencil and paper.