**3**

common core
# Performance Coach

**Sample Lesson**

triumphlearning™   GET Coach™   **Performance Coach**

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# Whole Numbers Student Edition pages 94–101

## LESSON OVERVIEW

### Objectives

Students will:

- Use place value to identify the value of digits in four-digit and five-digit numbers
- Write numbers in standard form, word form, and expanded form

### Discussion Questions

**MP4** How does place value help you determine and understand a number in different forms?

**MP5** How is it helpful to use place-value models and place-value charts to write numbers?

**MP6** How does the position of a digit in a number affect its value?

### Standard

3.NBT.1

### Key Terms

expanded form            standard form

place value              word form

### Materials

- Math Tool: Place-Value Models, p. C9 (Student Edition, p. 367)
- Math Tool: Place-Value Chart, p. C10 (Student Edition, p. 379)

### Differentiation

**Lesson Support**

- Encourage students to use Math Tool: Place-Value Models and Math Tool: Place-Value Charts as they work through the lesson. It may be helpful for some students to build the number first using models and then filling in the chart.
- Point out that the place-value chart shows place values for 6-digit numbers. Students are working with 4- and 5-digit numbers, so they will not use the far-left column. If needed, have them cross out column(s) they do not need before recording a number.

**Lesson Extension** Have students write a 5-digit number with a different numeral in each place. Then have them create a new number by switching the places of two of the digits. Ask students to compare the two numbers they have made. Ask them to continue switching digits and comparing the numbers until they have created five different numbers. Challenge students to use what they have learned about the numbers to write true/false statements in which at least two of the five statements are true.

## 1 GETTING THE IDEA

### Lesson Opener

Review the relationship between thousands, hundreds, tens, and ones in a 4-digit number. Use Math Tool: Place-Value Models to show students a unit cube and a tens rod. Ask: *How many ones are there in one ten?* (10) Then show students a tens rod and a hundreds flat. Ask: *How many tens are there in one hundred?* (10) Next, show a thousands cube. Ask: *How many hundreds are there in one thousand?* (10) Have students describe the relationship between digits in each place of the number 1,348.

*Have students add* expanded form, place value, standard form, *and* word form *to their student dictionaries. As you progress through the lesson, have students record examples of expanded form, standard form, and word form.*

### ▶ Example 1

Emphasize the connection between the place-value models and the place-value chart. Ask: *How does the place-value model help you understand the value of the digits?* Discuss how the value of a digit is related to its place in the number.

### ▶ Example 2

Help students recognize that, for numbers greater than 999, they write the word name for the number in two parts. They first write the word name for the digit before the comma. Then they write the word name for the digits that come after the comma. Point out that the word names are based on the values of each digit.

▲ *Journal Prompt* **MP2** *How does the comma in the number 3,423 help you write the number in word form?*

### ▶ Example 3

Point out that the number has 5 digits and that the greatest place value is ten thousands. Have students compare the digits in the place-value chart to the expanded form of the number. Ask: *Why do you think that the value of the tens digit is not shown in expanded form?* (The value of the tens digit is zero. It does not affect the sum of the digits, so you do not need to show it.)

▲ *Common Error* *When a number has a zero as one of its digits, students may not account for the zero when they write the number in expanded form. For example, they may write 47,903 as 40,000 + 7,000 + 900 + 30. Encourage students to compare each number in the expanded form to the digits in the number, and the digits in the place-value chart, to make sure they have recorded the correct value.*

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### ◆ 2 COACHED EXAMPLE

Monitor students as they work through the Coached Example. Point out that 85,012 has a zero in the hundreds place. Ask: *How does the zero affect the*

*word form of the number?* Help students correctly complete the sentence frames as needed.

*For answers, see page A15.*

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### ◆ 3 LESSON PRACTICE

Encourage students to use the Math Tools to help them solve the problems. Problem 4 would be a good problem to use as a quick check for students' understanding of the concepts taught in this lesson.

For problem 6, remind students that the digit 0 is not shown in expanded form. Point out that each number has one or two digits with a 0.

*For answers, see page A15.*

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# Whole Numbers

## 1 ▶ GETTING THE IDEA

You can write whole numbers in different ways.

**Standard form:** 1,348

**Word Form:** one thousand, three hundred forty-eight

**Expanded Form:** 1,000 + 300 + 40 + 8
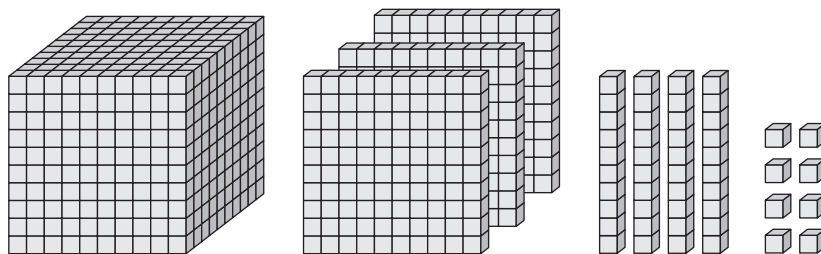
**Place value** can help you determine how to write numbers correctly.
Place value is the value of a digit based on its position in that number.
A place-value chart breaks a number down into individual digits to show their value.
This is 1,348 in a place value chart.

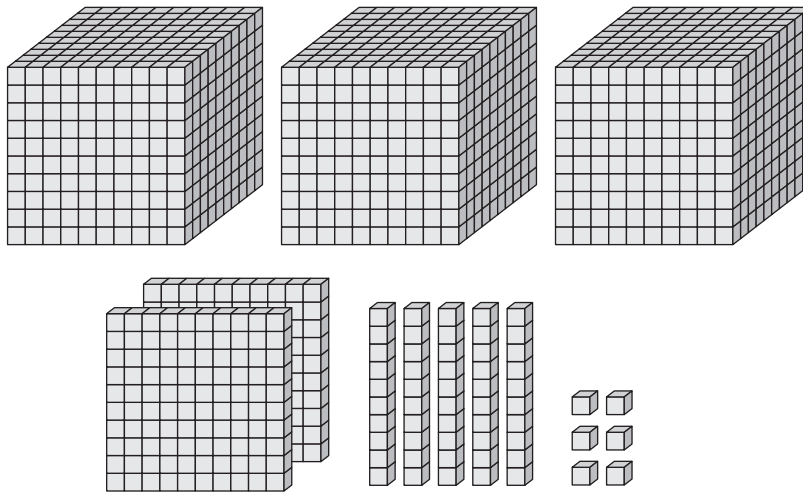| Thousands | Hundreds | Tens | Ones |
|-----------|----------|------|------|
| 1,        | 3        | 4    | 8    |

# Example 1

What is the value of each digit in 3,256?

**Strategy**   Use place-value models and a place-value chart.

**Step 1**   Model 3,256.

Show thousands, hundreds, tens, and ones.



There are 3 thousands, 2 hundreds, 5 tens, and 6 ones.

**Step 2**   Write 3,256 in a place-value chart.

Use the place-value models in Step 1 to help.

Write a comma after the number in the thousands place.

| Thousands | Hundreds | Tens | Ones |
|:---------:|:--------:|:----:|:----:|
| 3, | 2 | 5 | 6 |

**Step 3**   Find the value of each digit.

The digit 3 has a value of 3,000.

The digit 2 has the value of 200.

The digit 5 has a value of 50.

The digit 6 has a value of 6.

**Solution**   The value of each digit is shown in Step 3.

# Example 2

Pia took a plane trip. It was 2,594 miles. Write 2,594 in word form.

**Strategy**    Use a place-value chart.

**Step 1**    Write 2,594 in a place-value chart.

| Thousands | Hundreds | Tens | Ones |
|:---:|:---:|:---:|:---:|
| 2, | 5 | 9 | 4 |

**Step 2**    Write the value and the word name of the digit before the comma.

The digit before the comma is the 2 in the thousands place.

2 thousands = 2,000

Write a comma after the word *thousand*.

two thousand,

**Step 3**    Write the value and the word name for the digits after the comma.

The digits after the comma are 594.

5 hundreds = 500      9 tens = 90      4 ones = 4

five hundred ninety-four

**Step 4**    Write the word name for the whole number.

two thousand, five hundred ninety-four

**Solution**    The word form of 2,594 is two thousand, five hundred ninety-four.

# Example 3

A stadium holds 47,903 people. What is 47,903 in expanded form?

**Strategy**    Use a place-value chart to find the value of each digit.

**Step 1**    Write 47,903 in a place-value chart.

Write each digit in the chart. Write a comma after the thousands place.

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|:---:|:---:|:---:|:---:|:---:|
| 4 | 7, | 9 | 0 | 3 |

**Step 2**    Write the value of each digit.

40,000        7,000        900        3

**Step 3**    Write the number in expanded form.

Write a + sign between the values of each digit.

Since the tens digit has a 0, you do not have to list the value.

40,000 + 7,000 + 900 + 3

**Solution**    The expanded form of 47,903 is 40,000 + 7,000 + 900 + 3.

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**2  COACHED EXAMPLE**

A park had 85,012 visitors. Write 85,012 in word form.

Write the number in a place-value chart.

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
|  |  |  |  |  |

Write the word name for the value of the digits before the comma.

Write a comma after the word *thousand*.

_____

Next, write the word name for the value of the digits after the comma.
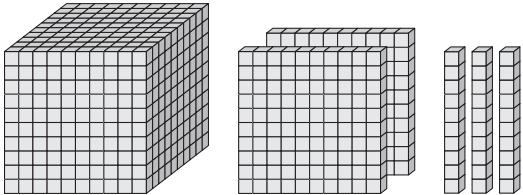
_____

Write the word name for the whole number.

_____
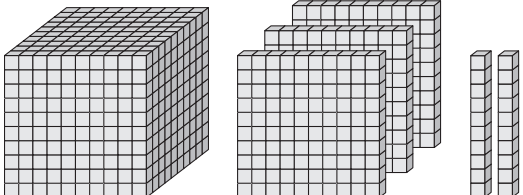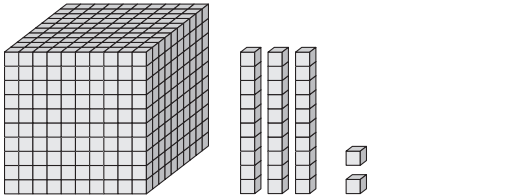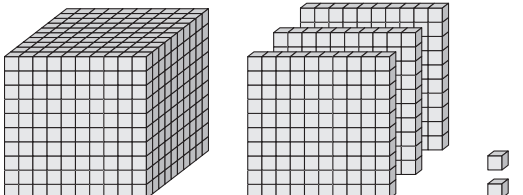
The word form of 85,012 is _____.

**1** A movie theater sold 31,809 tickets. Read each statement about the number of tickets. Select True or False.

**A.** The word form is thirty-one thousand, eighty-nine. ○ True ○ False

**B.** The value of the digit 3 is 30,000. ○ True ○ False

**C.** The expanded form is 30,000 + 1,000 + 800 + 9. ○ True ○ False

**D.** The value of the digit 8 is 80. ○ True ○ False

**E.** The tens place has a value of 0. ○ True ○ False

**F.** The value of the digit 9 is 90. ○ True ○ False

**2** Draw a line from each place-value model to the number it represents.

**A.** • • 1,032

**B.** • • 1,230

**C.** • • 1,302

**D.** • • 1,320

**3** An elephant has a mass of 6,145 kilograms. Write the number of kilograms in word form. Explain how you wrote the number.

**4** For each number, write an "X" to show the value of the digit 7.

| Number of Letters | 70,000 | 7,000 | 700 | 70 |
|---|---|---|---|---|
| 57,400 | | | | |
| 40,704 | | | | |
| 86,973 | | | | |
| 73,090 | | | | |
| 91,740 | | | | |

**5** A pet shelter received bags of dog food. It received four thousand, eighty-eight bags. Select True or False for each statement.

**A.** The shelter received 4,088 bags.   ○ True   ○ False

**B.** The number of bags can be written as 4,000 + 800 + 8.   ○ True   ○ False

**C.** The value of both 8s in the number of bags is the same.   ○ True   ○ False

**D.** The expanded form for the number of bags has no hundreds.   ○ True   ○ False

**6** Complete the expanded form for each number.

| Standard Form | Expanded Form |
|---|---|
| 40,404 | _____ + 400 + _____ |
| 40,444 | 40,000 + _____ + _____ + 4 |
| 44,004 | 40,000 + _____ + _____ |
| 44,040 | _____ + _____ + 40 |

**7** Felipe and Ava wrote the word form for the number 9,000 + 100 + 1.

Felipe

nine thousand, one hundred one

Ava

nine thousand, one hundred ten

**Part A**

Who wrote the number in correct word form? _____

**Part B**

How do you know who wrote the correct word form?
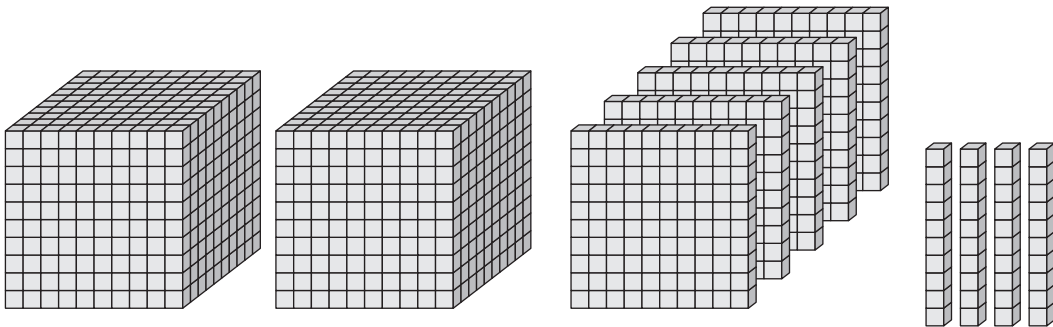
**Part C**

What error did the other student make?

**8** A ballpark has 50,287 seats. Is the word form or expanded form correct? Select Yes or No.

    **A.** fifty thousand, two hundred eighty-seven    ○ Yes  ○ No

    **B.** 50,000 + 2,000 + 80 + 7    ○ Yes  ○ No

    **C.** fifty thousand, twenty-eight hundred seven    ○ Yes  ○ No

    **D.** 50,000 + 200 + 80 + 7    ○ Yes  ○ No

**9** Cody used models to represent the length of the Missouri River.

Write the length of the Missouri River in standard form.

_____ miles

**10** Mr. Diaz drove his car a certain number of miles. Read the clues to find how many miles he drove.

- There is a 2 in the hundreds place.
- The value of the digit in the ten thousands place is 20,000.
- The digit in the tens place has a value of 60.
- The digit 8 is used twice in the number.
  It has a value of 8,000 and a value of 8.

Mr. Diaz drove _____ miles.