



# GRADE 4 SUPPLEMENT

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## Set A3 Number & Operations: Place Value to Millions

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### Skills & Concepts

- ★ read, write, order, and compare whole numbers to one million and beyond
- ★ use expanded notation to represent numbers in different forms
- ★ understand place value to millions in various contexts

**Bridges in Mathematics Grade 4 Supplement**

**Set A3** Numbers & Operations: Place Value to Millions

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*Bridges in Mathematics* is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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# Set A3 ★ Activity 1



## ACTIVITY

### Target 5

#### Overview

Students play a game in which they build 5-digit numbers using dice, arranging them to form a number closest to a target. Then they read, write, compare, and order these whole numbers.

#### Skills & Concepts

- ★ read, write, order, and compare whole numbers
- ★ use expanded notation to represent numbers in different forms
- ★ understand place value to 99,999 in various contexts

#### You'll need

- ★ Target 5 Record Sheet (page A3.3, run 1 copy on a transparency and a class set.)
- ★ 2 dice marked 1–6
- ★ 3 dice marked 4–9
- ★ Student Math Journals or 1 piece of lined or grid paper per student

#### Instructions for Target 5

1. Let students know that you're going to play a game with big numbers today. They will work as a team against you to see who can get closest to a 5-digit target number. Then select a student to roll 5 dice, one at a time. As the dice are rolled, line them up, left to right, to form a 5-digit target number. Write the target number at the top of the Target 5 Record Sheet overhead. Read the number with the class.

Set A3 Numbers & Operations: Place Value to Millions Run a class set and 1 copy on a transparency

NAME \_\_\_\_\_ DATE \_\_\_\_\_

### Target 5 Record Sheet

49,251

Target Number

	Digits We Rolled	Number We Made
Team 1		

2. Give students each a copy of the Target 5 Record Sheet and ask them to write the target number at the top of the sheet. Explain that they'll be keeping track of the numbers for both teams on their sheet as you do so at the overhead.

3. Decide who will go first, you or the students. Team 1 rolls all 5 dice and records the numbers. Team 1 then finds the combination of numbers that is closest to the 5-digit target number.

**Activity 1** Target 5 (cont.)

**Amy** We rolled a 3, 5, 9, 2, 1.

**Bryan** The target number is 49,251. That means we'll want the 3 in the ten thousands place.

**Tamika** But 5 is just as close to 4 as a 3.

**Chae** She's right. I think we have to figure out the first two numbers together. Like 51 would be a lot closer to the 49 in our target number than the closest we could get with a 3...just 39.

**Jen** I agree. 39,000 is a lot further from 49,000 than 51,000 is.

After Team 1 settles on a number closest to the target, they need to say the number aloud so that you can record their answer for round one. Then, Team 2 (you, in this case) takes a turn.

Set A3 Numbers & Operations: Place Value to Millions Run a class set and 1 copy on a transparency

NAME \_\_\_\_\_ DATE \_\_\_\_\_

**Target 5 Record Sheet**

49,251

Target Number

	Digits We Rolled	Number We Made
Team 1	3, 5, 9, 2, 1	51,239

4. After both teams have finished the first round, work together to determine which team came the closest to the target number. That team wins round 1. Circle the winning number for the round. Take turns rolling the dice and recording solutions until each team has taken five turns. The team that gets closest to the target number in the most rounds, wins.

5. After the game is finished, ask the students to put their team's 5 numbers in order, from least to greatest, recording their answers in their math journals. Ask them to read the numbers to their neighbors when they're done to check their work.

**Extensions**

- Run multiple copies of the record sheet for students to play the game again with a partner. If some pairs finish early, provide them with extra dice and challenge them to play the game to the hundred thousands place or higher.
- Check your school library to see if you have any of the books listed below. If so, read one or more to the class to further explore place value with large numbers.
  - *Can You Count to a Googol?* by Robert E. Wells
  - *How Much is a Million?* by David Schwartz
  - *If You Made a Million* by David Schwartz
  - *Is a Blue Whale the Biggest Thing There Is?* by Robert E. Wells
  - *Millions to Measure* by David Schwartz
  - *On Beyond a Million* by David Schwartz

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Target 5 Record Sheet

Target Number

	Digits We Rolled	Number We Made	
Team 1			
Team 2			
Final Score	Team 1		Team 2



# Set A3 ★ Activity 2



## ACTIVITY

### Charting One Million

#### Overview

Students work together to make a chart of one million tiny squares. This activity is designed to help students understand some of the relationships between hundreds, thousands, ten thousands, hundred thousands, and millions.

#### Skills & Concepts

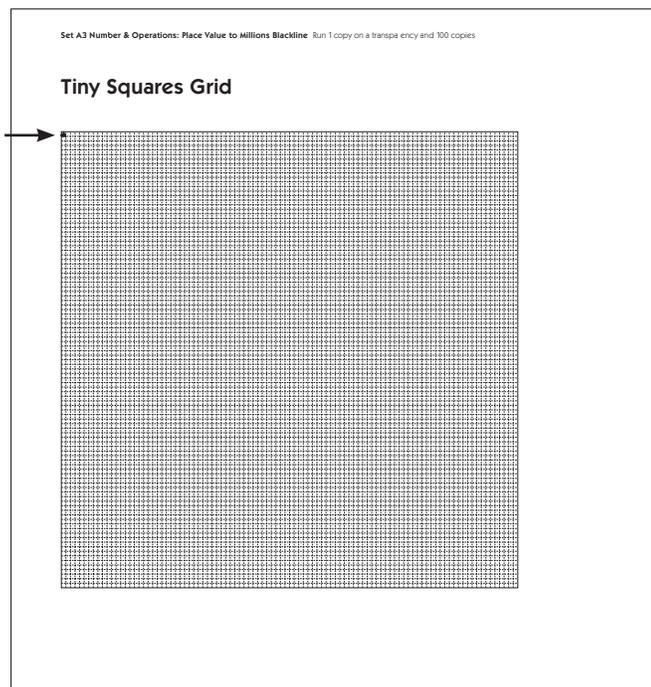
- ★ read, write, order, and compare whole numbers to one million and beyond
- ★ use expanded notation to represent numbers in different forms
- ★ understand place value to millions in various contexts

#### You'll need

- ★ Tiny Squares Grid (page A3.8, run 1 copy on a transparency and 100 copies)
- ★ several blank transparencies
- ★ overhead pens
- ★ tape
- ★ scissors

#### Instructions for Charting One Million

1. Place the Tiny Squares Grid on the overhead. Call students' attention to the smallest square in the top left-hand corner. Ask them to think privately about how many of these tiny squares there are on the entire grid and give them about 15–20 seconds to examine the overhead quietly.



**Activity 2** Charting One Million (cont.)

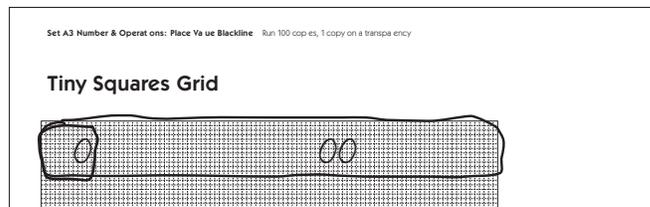
2. Turn off the overhead and ask them to pair-share their estimates. Invite volunteers to share their estimates with the class as you record them at the board.

How many tiny squares are there on the grid? Estimates:			
1,000	5,000	3,000	10,000
1,000,000	7,500	9,000	25,000
2,500	2,000,000	6,000	20,000

3. Ask students to pair up, or assign partners. Give each pair 1 copy of the Tiny Squares Grid and ask them to work together to find out how many tiny squares there are. Encourage students to use efficient but accurate counting strategies. Let them know it's fine to loop groups of squares or make other marks on the grids if that seems helpful. After they've had a few minutes to work, ask volunteers to share their answers as well as their counting methods. Place a blank transparency on top of the grid overhead so students can demonstrate their methods for the class.

**Devon** When we first looked at the grid, we saw that the tiny square in the corner was part of a 10-by-10 square, like a hundreds mat in the base 10 pieces.

**Brittany** Then we saw there were 10 of those little mats across the top, so that made 1,000.



**Devon** After that, we counted the rows of 1,000 all the way down and it made 10,000 in all.

**Ravi** We did kind of the same thing but we found 1,000 going down and then counted across. There are 10 lines of 1,000 so it's 10,000 in all.

4. Divide the class into 10 groups. Some groups may have two students while others have three or even four depending on the size of your class. Ask them to keep their grids, and distribute enough extra copies so that each group has 10 grids in all. Have them cut out the 10 grids and tape them together to create one long strip. How many tiny squares are there in the strip of 10 grids? How do they know?

**Jose** It's 100,000 because each grid is 10,000. That's 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 thousand.

5. Have each group bring their grid to the bulletin board as you pin or tape them side-by-side to form a large square. How many tiny squares are there in this giant square? Ask students to pair-share their ideas and then invite volunteers to share and explain their answers. It may not be obvious to some students that the total is 1,000,000. Some may count by hundreds to determine that there are "a thousand thousands." If, after some discussion, students haven't mentioned a million, explain that a thousand thousands, or  $1,000 \times 1,000$ , is the same as one million. You might also ask students to identify the dimensions of the giant square (1,000 by 1,000) and multiply the numbers on their calculators to see the result.

**Activity 2** Charting One Million (cont.)

6. Ask students to pair-share any observations they can make about the completed square of one million. Then have volunteers share their observations with the class. You may want to record some of their observations, print them out, and add them to the display. You might also have each student write an observation to post near the giant grid.

Every grid we cut out had 10,000 tiny squares

Every grid was a 100 by 100 squares

$100 \times 100 = 10,000$

There are 100,000 tiny squares in each row going up and down

Our city has about a million people

If you had a million dollars, this shows how many dollar bills you'd have.

There are one hundred thousand tiny squares in each row of grids

That's 100,000

If you count the rows, you get 100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000 thousands

A thousand thousand is the same as a million

There are one million tiny squares on this grid

If you look really close, you can see 1,000 tiny squares along the side of the square and 1,000 along the top

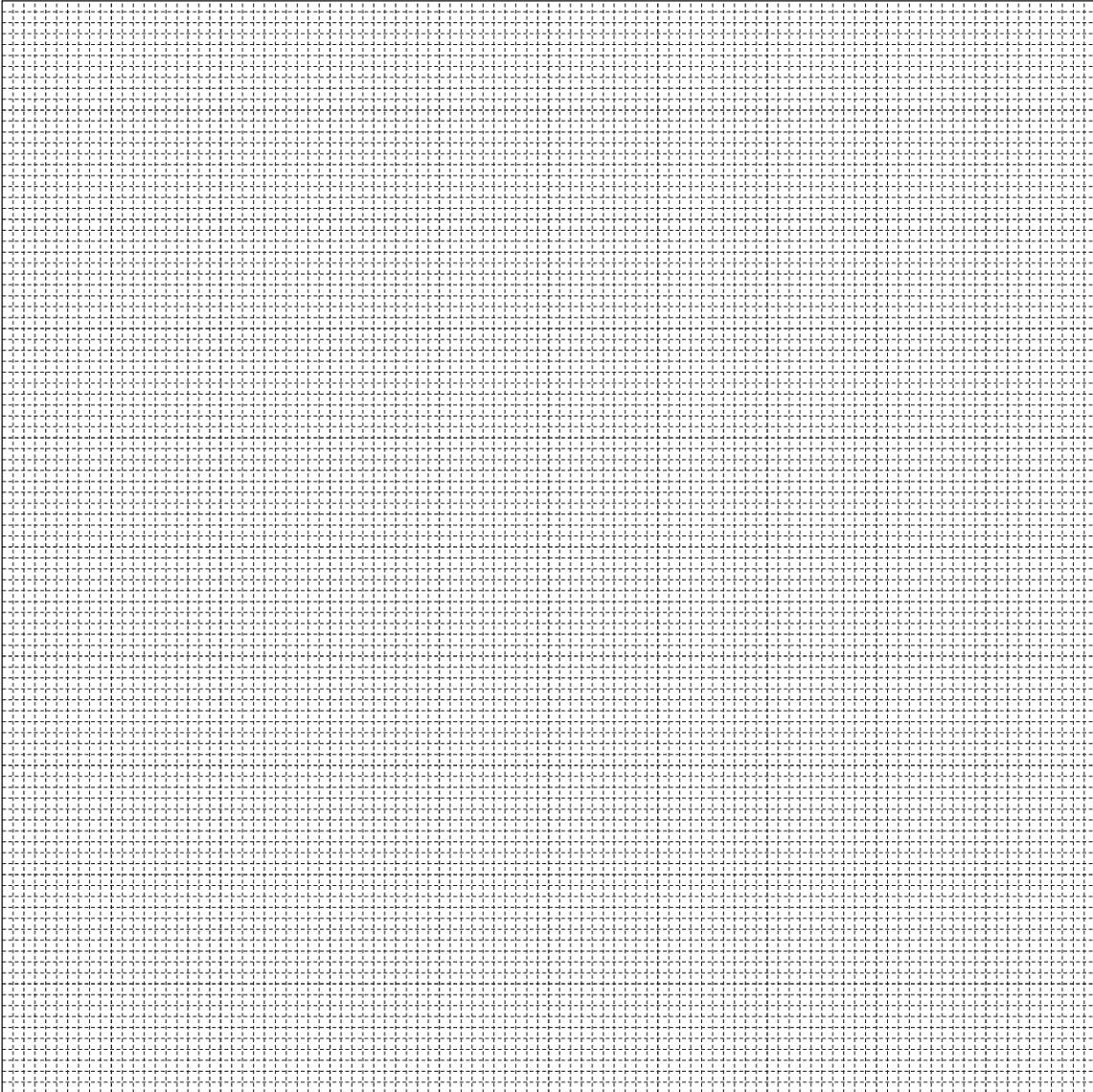
$1,000 \times 1,000 = 1,000,000$

One million is a really big number

**Extensions**

- Glue the giant grid, along with students' comments to butcher paper. Display on a classroom wall or in the hall.
- Read *How Much is a Million?* or *If You Made a Million* by David Schwartz to your class after you conduct this activity. Other books your students might enjoy include:
  - *Can You Count to a Googol?* by Robert E. Wells
  - *Is a Blue Whale the Biggest Thing There Is?* by Robert E. Wells
  - *On Beyond a Million* by David Schwartz
- Ask students to imagine the size and shape of a grid that had 10 million tiny squares, 100 million tiny squares, or even 1 billion tiny squares. Would a grid of a billion fit on your classroom wall? Why or why not? If not, where would it fit?

# Tiny Squares Grid



# Set A3 ★ Activity 3



## ACTIVITY

### Millions of Sport Spectators

#### Overview

Students explore place value into the millions during this activity.

#### Skills & Concepts

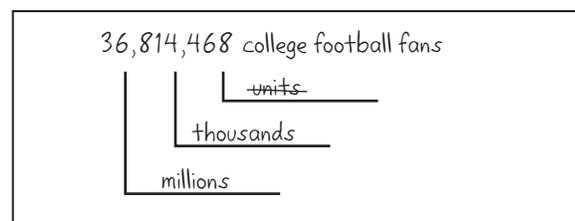
- ★ read, write, order, and compare whole numbers to one million and beyond
- ★ use expanded notation to represent numbers in different forms
- ★ understand place value to millions in various contexts

#### You'll need

- ★ Sports Fans the World Over (pages A3.11–A3.13, run a class set)
- ★ calculators (class set)
- ★ overhead pens
- ★ Student Math Journals or 1 piece of lined or grid paper per student

#### Instructions for Millions of Sports Spectators

1. Open the activity with a brief discussion about sports. Which sports do the students in your class play? Which sports do they like to watch? Do they watch sports on TV or go to live games?
2. Explain that people enjoy sporting events the world over, and surprisingly large numbers attend live sporting events each year. Invite students to estimate how many people they think go to live college football games in the United States each year. Then write 36,814,468 on the whiteboard without reading the number to the class. Explain that this is the number of people who attended live college football games in 2006. Ask students to pair-share their ideas about what the number says. Then work with input from the class to label the number as shown below. Explain that the word “units” is crossed out because we know it but we don’t say it.



3. Read the number with your students and have them copy it into their journals. To help them get some sense of just how large this number is, tell them that the Astrodome in Houston, Texas, holds 62,439 football fans. About how many times would 36,814,468 people fill the Astrodome? Have them pair-share estimates and then ask them to use their calculators to find out. (36,814,468 football fans would fill the Astrodome almost 590 times!)

4. Now write the number 27,008,920 on the board without reading it to the class. Explain that this is the number of people who attended college basketball games in 2006. Work with student input to label the number. Then ask them to compare 36,814,468 and 27,008,920. Which number is greater? How do they know?

**Activity 3** Millions of Sport Spectators (cont.)

27,008,920 college basketball fans

units  
thousands  
millions

$27,008,920 < 36,814,468$

5. Give each student a copy of Sports Fans the World Over. Review the instructions with the class and let them go to work. Encourage them to share and compare their answers. Circulate to provide help as needed.

**INDEPENDENT WORKSHEET**

See Set A3 Independent Worksheets 1–3 for more practice reading, writing, comparing, and ordering numbers to 999,999,999.

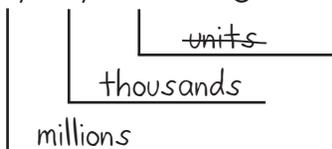
NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Sports Fans the World Over page 1 of 3

Many people around the world enjoy going to sporting events such as baseball, soccer, and football games. In the United States 36,814,468 people went to college football games during the 2006–2007 season. You can use place value to help understand this number.

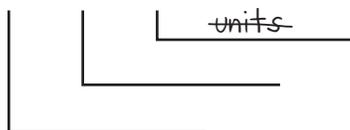
38,814,468 college football fans



If you were to read this number to someone over the phone, you'd say,  
 "Thirty-six million, eight hundred fourteen thousand, four hundred sixty-eight."

**1** In the United States, 7,686,275 people went to women's college basketball games during the 2006–2007 season. Label this number with its place values.

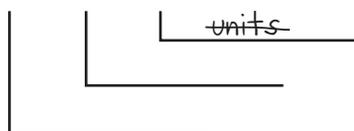
7,686,275 women's college basketball fans



**2** Write the number 7,686,275 out in words, the way you'd read it over the phone.

**3** Soccer is one of the most popular games in the world. 5,501,381 people went to see the World Cup games in 2006. Label this number with its place values.

5,501,381 World Cup soccer fans



**4** Write the number 5,501,381 out in words, the way you'd read it over the phone.

(Continued on back.)

## Sports Fans the World Over page 2 of 3

**5** Every 4 years, people from around the world gather to watch the Summer Olympics. The Olympics are held in a different country each year. The chart below shows the estimated populations of some of the countries that have hosted the Olympics. Use the information to solve the problems below.

Name of Country	Year They Hosted the Summer Olympics	Estimated Population in 2006
Greece	2004	10,688,058
Australia	2000	20,264,082
United States	1996	300,000,000
Spain	1992	40,397,842
South Korea	1988	48,846,823

**a** Which country on the chart had the largest estimated population in 2006? Which had the smallest?

**b** Compare the populations of some of these countries by writing the numbers and putting a greater than (>) or less than (<) sign between them.

Greece and Australia $10,688,058 < 20,264,082$	South Korea and Spain
Spain and Greece	The United States and Australia

**c** Write the populations of the 5 countries in order from least to greatest on the lines below. Write the name of each country below its population number. Use abbreviations if you need to.

\_\_\_\_\_ < \_\_\_\_\_ < \_\_\_\_\_ < \_\_\_\_\_ < \_\_\_\_\_  
 \_\_\_\_\_

(Continued on next page.)

## Sports Fans the World Over page 3 of 3



### CHALLENGE

**6** Go online to find out what the estimated population of the world is right now. Record the answer here.

The population of the world on \_\_\_\_\_ is \_\_\_\_\_.  
(month, day, year)



NAME \_\_\_\_\_

DATE \_\_\_\_\_

**Set A3** ★ Independent Worksheet 1**INDEPENDENT WORKSHEET****The Dodgers & The Yankees**

20,137,408 people went to see the Los Angeles Dodgers play baseball between 2001 and 2006. That's twenty million, one hundred thirty-seven thousand, four hundred eight baseball fans!

**1** Here's a chart that shows the place value of every digit in the number 20,137,408. Use the information on the chart to answer questions a–i below.

100 Millions	10 Millions	Millions	100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones
	2	0	1	3	7	4	0	8

- a** The digit in the millions place is:
- b** The digit in the ten thousands place is:
- c** The digit in the hundred thousands place is:
- d** The digit in the ten millions place is:
- e** Are there any hundred millions in this number?
- f** The digit in the hundreds place is:
- g** The digit in the thousands places is:
- h** The digit in the ones place is:
- i** The digit in the tens place is:

(Continued on back.)

**Independent Worksheet 1** The Dodgers & The Yankees (cont.)

**2** The chart below shows the number of people who went to see the New York Yankees play baseball between 2001 and 2006. Use the information on the chart to answer questions a–d below.

100 Millions	10 Millions	Millions	100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones
	2	2	2	6	2	5	6	4

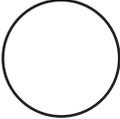
**a** How many people watched the New York Yankees play baseball between 2001 and 2006? Write the number here with the commas placed correctly.

**b** Now write the number out in words, the way you'd read it over the phone.

**c** Are there any ten millions in this number? If so, how many?

**d** The digit in the hundreds place is

**3** Did more people go to Dodgers or Yankees games between 2001 and 2006? Write the numbers on the lines below. Then put a greater than (>) or less than (<) symbol between them to compare the two.

\_\_\_\_\_  \_\_\_\_\_  
 Dodgers Yankees

(Continued on next page.)

NAME \_\_\_\_\_

DATE \_\_\_\_\_

**Independent Worksheet 1** The Dodgers & The Yankees (cont.)

**4** Complete the chart to write and name some other very large numbers. The first one is done for you.

Number	Number Written Out in Words
<b>example</b> 724,589,743	Seven hundred twenty-four million, five hundred eighty-nine thousand, seven hundred forty-three
<b>a</b> 658,902,456	
<b>b</b>	Nine hundred forty-three million, three hundred twenty-seven thousand, one hundred seventy-six
<b>c</b> 426,113,042	
<b>d</b>	Five hundred sixty-two million, three hundred twenty-nine thousand, two hundred fifty-one

**5** Write the five numbers above in order from least to greatest on the lines below.

\_\_\_\_\_ < \_\_\_\_\_ < \_\_\_\_\_ < \_\_\_\_\_ < \_\_\_\_\_



NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Set A3 ★ Independent Worksheet 2



## INDEPENDENT WORKSHEET

### Big Numbers

**1** Each weekend, Dylan and his dad go fishing. Dylan checks the odometer reading before each trip and records it in their mileage book. (An odometer is an instrument on the dashboard of a car that tells how far you've driven altogether.) Put these readings in the order that they would appear in the book, from least to greatest. The first one has been done for you.

- 93,102
- 89,776
- 95,004
- 91,204
- 90,089
- 91,438
- 99,173

89,776

**2a** Look at the following numbers. Circle the number that is the closest to 60,034.

60,000      60,100      60,200      60,300

**b** Circle the number closest to 194,321.

190,000      191,000      192,000      193,000      194,000      195,000

**c** Circle the number closest to 233,904.

230,000      231,000      232,000      233,000      234,000      135,000

**d** Circle the number closest to 234,900,032.

232,000,000      233,000,000      234,000,000      235,000,000

(Continued on back.)

## Independent Worksheet 2 Big Numbers (cont.)

**3a** Amanda is sure she got the high score on a video game. But she's not sure what the number is. Please write it down for her.

She scored nine hundred forty-three million, two hundred sixty-one thousand, five hundred eighty-six.

**b** Caleb is positive he beat her score. His score was 925,298,199. Who got the highest score? How do you know?

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Set A3 ★ Independent Worksheet 3



## INDEPENDENT WORKSHEET

### Another Look at Big Numbers

**1** The state of Texas has the second highest population in the U.S. with 22,859,968 people. Fill in the answers below, and then use the key to decode the name of the Texas state tree. Look at the key and write the letter that matches each number to the right of the number.

Key: 5=A, 9=N, 2=C, 6=P, 8=E	Number	Letter
<b>a</b> Which digit is in the tens place?		
<b>b</b> Which digit is in the hundred thousands place?		
<b>c</b> Which digit is in the ten millions place?		
<b>d</b> Which digit is in the ten thousands place?		
<b>e</b> Which digit is in the thousands place?		
<b>f</b> The Texas state tree is the		

**2** Fill in the missing numbers.

**a** 90,106      90,107      \_\_\_\_\_      90,109      \_\_\_\_\_

**b** 826,998,996      \_\_\_\_\_      826,998,998

**c** 2,384,209      \_\_\_\_\_      \_\_\_\_\_      2,384,212

**d** 3,581,998      \_\_\_\_\_      \_\_\_\_\_      3,582,001

(Continued on back.)

### Independent Worksheet 3 Another Look at Big Numbers (cont.)

**3** Go on a big number hunt. Find at least one number greater than 100,000. Find at least one number greater than 1,000,000. Hint: Look in science books, around your classroom, on-line, and in the newspaper. Record the numbers below and write at least 2 sentences to describe what each one is about.