BRIDGES IN MATHEMATICS 3

GRADE 3 SUPPLEMENT

Set A4 Number & Operations: Place Value

Includes

Skills & Concepts

- ★ read, write, and compare whole numbers to 999,999 using numbers, words, and symbols
- ★ represent in word form whole numbers through nine hundred ninety-nine thousand
- ★ analyze the magnitude of digits through 999,999 on the basis of their place value
- ★ use expanded notation to represent numbers in different forms

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Bridges in Mathematics Grade 3 Supplement
Set A4 Numbers & Operations: Place Value

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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.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

Set A4 ★ Activity 1

ACTIVITY

Big Number Spin

Overview

This activity features a game in which you take turns with the class spinning a 0–9 spinner to construct a number between 1,000 and 999,999. Each team records their final number in symbolic, word and expanded form. The teams compare their numbers and use a more/less spinner to determine who wins each round.

Skills & Concepts

- ★ read, write, and compare whole numbers to 999,999 using numbers, words, and symbols
- ★ use expanded notation to represent numbers in different forms
- ★ represent in word form whole numbers through nine hundred ninety-nine thousand
- ★ analyze the magnitude of digits through 999,999 on the basis of their place value

You'll need

- ★ Big Number Spin Game Board (page A4.4, run one copy on a transparency)
- ★ Big Number Spin Record Sheet (pages A4.5 and A4.6, run a class set back-to-back)
- ★ single transparent spinner overlay
- ★ overhead pen

Instructions for Big Number Spin

1. Ask students how many people they think visit Disneyland in Anaheim, California, each day. What about each week? After a minute or two of discussion, write the following number on the board: 278,075. This is the average number of visitors Disneyland had each week in 2005 (based on average daily attendance in 2005, reported online by mousepad.mouseplanet.com).

2. Read the number with your students. Write it out in words on the board, and then in expanded notation. Work with students to read and understand each format.

278,075

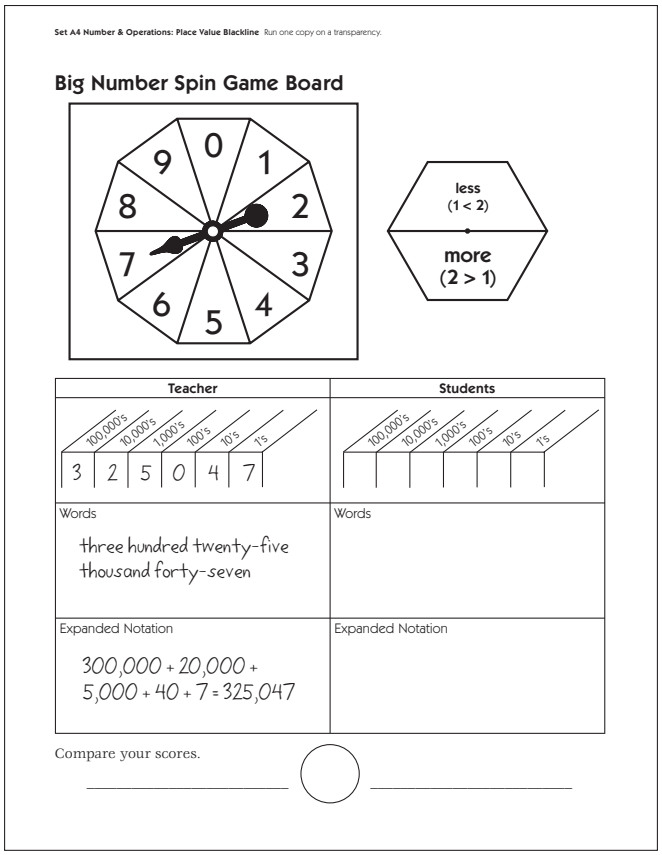
Two hundred seventy-eight thousand, seventy-five

200,000 + 70,000 + 8,000 + 70 + 5 = 278,075 people

3. Now explain that you're going to play a game with the class that involves other 6-digit numbers like this one. Place the Big Number Spin Game Board on display at the overhead and give each student a copy of the Big Number Spin Record Sheet.

Activity 1 Big Number Spin (cont.)

4. Set your spinner overlay on top of the number spinner. Explain that you're going to take the first turn so students can see how to play the game. Spin the 0–9 spinner six times and record the digits in the order they're spun. Then write the number in words and in expanded notation on your side of the game board. For example, if you spin a 3, 2, 5, 0, 4, and a 7, your side of the board will look like this:



Set A4 Number & Operations: Place Value Blackline Run one copy on a transparency.

Big Number Spin Game Board

Teacher	Students
100,000's 10,000's 1,000's 100's 10's 1's 3 2 5 0 4 7	100,000's 10,000's 1,000's 100's 10's 1's
Words three hundred twenty-five thousand forty-seven	Words
Expanded Notation 300,000 + 20,000 + 5,000 + 40 + 7 = 325,047	Expanded Notation

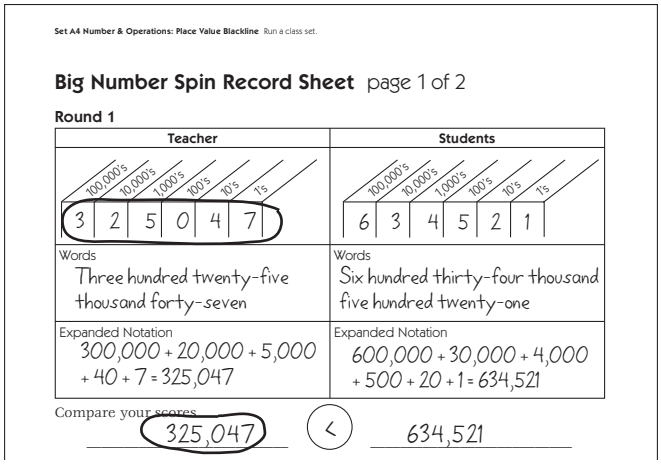
Compare your scores.

_____ ( ) _____

5. Ask students to record the results of your turn on their record sheets under "Round 1." Then invite 6 different students to come up in quick succession to spin a digit for the class. Ask students to write the digits on their record sheets as they're recorded at the overhead. Then work with the class to write the resulting 6-digit number in words and expanded notation. Provide guidance as necessary at the overhead while they work on their sheets. If either team spins a 0 on the first turn, have them spin again. If 0 is spun on any of the five subsequent turns, take the opportunity to discuss the role 0 plays as a place holder.

6. Choose another student to spin the more/less spinner to determine the outcome of the first round. If it lands on more, the team with the higher number wins; vice versa if it lands on less. Once the spin is made, have students pair-share which number they think is more and which is less. Then call on volunteers to share their thinking with the class. When there's general agreement, write a comparison statement at the bottom of the record sheet using the appropriate symbol (<, >, or =) as students do so on their sheets. Circle the winning number.

Activity 1 Big Number Spin (cont.)



Set A4 Number & Operations: Place Value Blackline Run a class set.

Big Number Spin Record Sheet page 1 of 2

Round 1

Teacher	Students
100,000's | 10,000's | 1,000's | 100's | 10's | 1's 3 | 2 | 5 | 0 | 4 | 7	100,000's | 10,000's | 1,000's | 100's | 10's | 1's 6 | 3 | 4 | 5 | 2 | 1
Words Three hundred twenty-five thousand forty-seven	Words Six hundred thirty-four thousand five hundred twenty-one
Expanded Notation 300,000 + 20,000 + 5,000 + 40 + 7 = 325,047	Expanded Notation 600,000 + 30,000 + 4,000 + 500 + 20 + 1 = 634,521

Compare your scores

325,047 < 634,521

Ramon *Too bad the spinner landed on less. I was sure we were going to win when we got 6 on our first spin!*

7. Erase the overhead and play a second round with the class. Let the class spin first this time. Students have room to record the results of 4 rounds on their record sheets. You can play all 4 rounds today, or save 1 or 2 for another time.

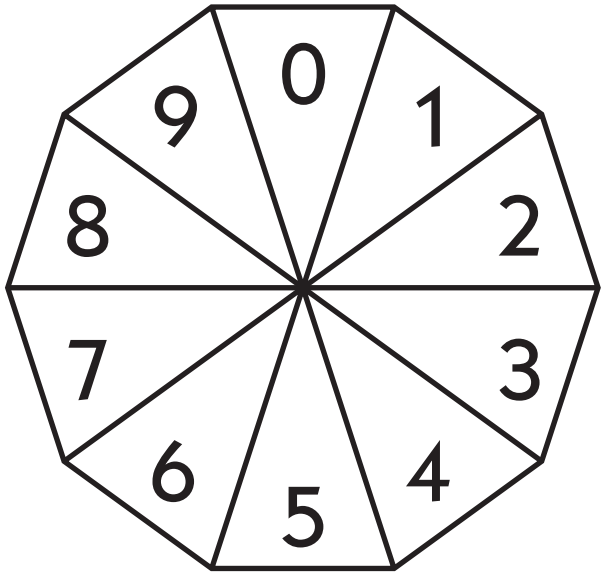
Extensions

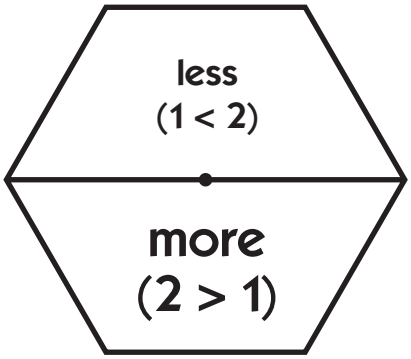
- Once students have played 2 or 3 rounds, you can invite them to play a more strategic game. Have them spin the more/less spinner *first* and then determine where they want to place each digit they spin to create what they believe will be a winning number.
- If your students enjoy this game, run another set of the record sheets and play it again. A single round makes a nice sponge activity, and you can easily stretch a game out over a week.

INDEPENDENT WORKSHEET

See Set A4 Independent Worksheets 1–4 for more practice using place value to read, write, and compare numbers to 999,999.

Big Number Spin Game Board





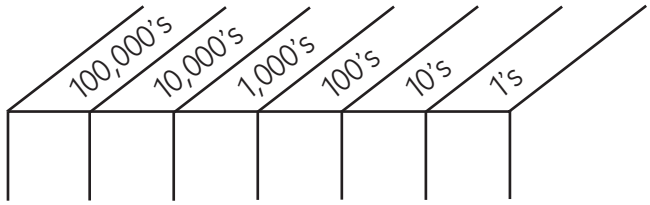
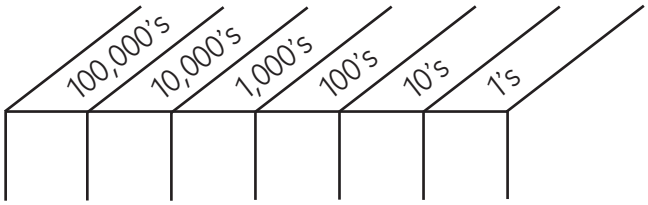
Teacher	Students
100,000's 10,000's 1,000's 100's 10's 1's	100,000's 10,000's 1,000's 100's 10's 1's
Words	Words
Expanded Notation	Expanded Notation

Compare your scores.

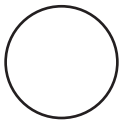
_____ ◯ _____

Big Number Spin Record Sheet page 1 of 2

Round 1

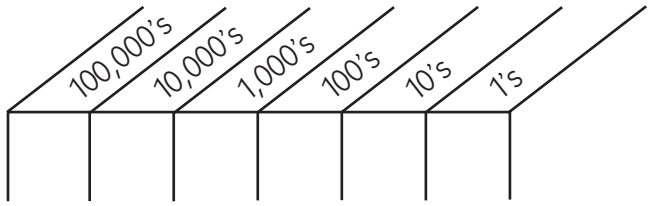
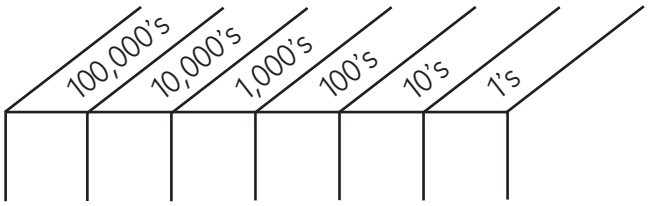
Teacher	Students
	
Words	Words
Expanded Notation	Expanded Notation

Compare your scores

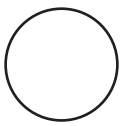


_____ _____

Round 2

Teacher	Students
	
Words	Words
Expanded Notation	Expanded Notation

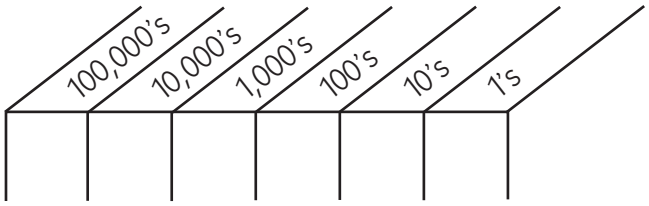
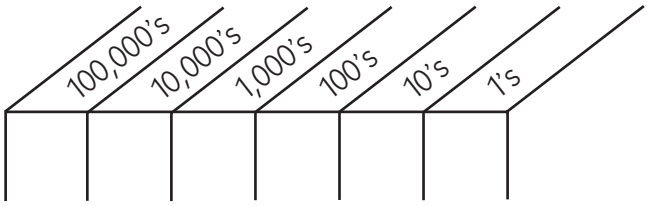
Compare your scores



_____ _____

Big Number Spin Record Sheet page 2 of 2

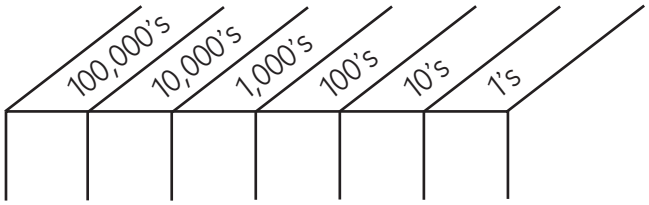
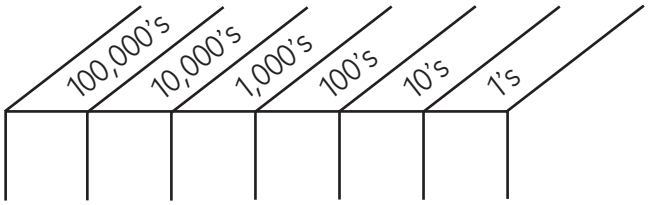
Round 3

Teacher	Students
	
Words	Words
Expanded Notation	Expanded Notation

Compare your scores

_____ ◯ _____

Round 4

Teacher	Students
	
Words	Words
Expanded Notation	Expanded Notation

Compare your scores

_____ ◯ _____

NAME _____ DATE _____

Set A4 ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Theme Parks

Do you know how many people, on the average, visit theme parks such as Disneyland each week? Complete the chart below to find out!* The first row is done for you.

Theme Park	Number	Words	Expanded Notation
example Magic Kindom	308,770	Three hundred eight thousand, seven hundred seventy	300,000 + 8,000 + 700 + 70
1 Epcot	189,875		
2 Six Flags		One hundred forty-three thousand, one hundred eighty one	
3 Sea World			100,000 + 70,000 + 2000 + 400 + 10 + 5
4 Hersheypark	148,820		

* These numbers are based on daily attendance figures in 2005.

NAME _____ DATE _____

Set A4 ★ Independent Worksheet 2

INDEPENDENT WORKSHEET

City Populations

New York City is the largest city in America. More than 8 million people live there, and it's growing every day. The chart below shows how many people live in several other cities around the U.S. Complete the chart to show each population in numbers, words, and expanded notation.*

City	Number	Words	Expanded Notation
example San Jose, California	912,332	Nine hundred twelve thousand, three hundred thirty-two	900,000 + 10,000 + 2,000 + 300 + 30 + 2
1 Detroit, Michigan	886,671		
2 San Francisco, California		seven hundred thirty-nine thousand, four hundred twenty-six	
3 El Paso, Texas			500,000 + 90,000 + 8,000 + 500 + 90
4 Denver, Colorado		five hundred fifty-seven thousand, nine hundred seventeen	

* These numbers are population estimates published in July 2005. Go online to find the most current figures for the city nearest you.

NAME _____ **DATE** _____

Set A4 ★ Independent Worksheet 3

INDEPENDENT WORKSHEET

Metric Measures Small & Large

An army ant is 1 centimeter long.


1 centimeter

10 army ants lined up measure 10 centimeters, or 1 decimeter.


10 centimeters

A line of 100 army ants would be 1 meter long. A line of 100,000 army ants would be 1,000 meters or 1 kilometer long.

Scientists measure things in centimeters, meters, and kilometers. They would tell you that the circumference of Jupiter is 449,020 kilometers. That's four hundred forty-nine thousand, twenty kilometers!

1 Here's a chart that shows the place value of every digit in the number 449,020. Use it to answer the questions below.

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones
4	4	9	0	2	0

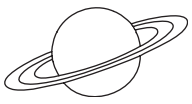
a The digit in the thousands place is _____.

b The digit in the ten thousands place is _____.

c There is a 0 in the _____ place and the _____ place.

d 449,020 = 400,000 + 40,000 + _____ + 20

2 The circumference of Saturn is 379,940 kilometers. Write 379,940 out in words, the way you'd read it to someone over the phone.



_____

3 Fill in the chart to show the value of each digit in 379,940.

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones

(Continued on back.)

Independent Worksheet 3 Metric Measures Small & Large (cont.)

4 This chart shows the distance around, or the circumference of, 6 different planets. Fill in the missing numbers or number names.

PLANET	CIRCUMFERENCE (IN KILOMETERES)	NUMBER NAME WRITTEN OUT IN WORDS
ex. Mars	21,314 km	twenty-one thousand, three hundred fourteen
a Neptune	146,038 km	
b Earth	40,038 km	
c Uranus		one hundred forty-seven, five hundred eighty
d Venus	38,032 km	
e Mercury		fifteen thousand two hundred forty-two

5 Write greater than (>) or less than (<) in each circle to compare the circumferences.

example

21,314 km Mars (<) 146,038 km Neptune

a

449,020 km Jupiter ( ) 379,940 km Saturn

b

38,032 km Venus ( ) 40,038 km Earth

c

21,314 km Mars ( ) 15,242 km Mercury

6 In the United States, we usually measure long distances in miles instead of kilometers. A kilometer is shorter than a mile. One kilometer is about half a mile.

a A line of 300,000 army ants would be 3 kilometers long. About how many miles would that be? Circle the best estimate.

1 mile 1 ½ miles 2 miles 2 ½ miles

NAME _____ **DATE** _____

Set A4 ★ Independent Worksheet 4

INDEPENDENT WORKSHEET

Reading, Writing & Comparing Numbers

1 Read the words and write the numbers.

example twenty-three thousand, five hundred six 23,506

a six thousand, three hundred forty-eight _____

b eighteen thousand, five hundred thirty-three _____

c thirty thousand, one hundred eight _____

d five hundred thirty-one thousand, four hundred fifty-eight _____

e three hundred seven thousand, nine hundred ninety-eight _____

2 Fill in the chart to show the value of each digit in the numbers below.

example 73,241

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones
	7	3	2	4	1

a 34,502

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones

b 136,018

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones

c three-hundred thousand, four hundred ninety-two

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones

d sixty-four thousand, eighty

100 Thousands	10 Thousands	Thousands	Hundreds	Tens	Ones

(Continued on back.)

Independent Worksheet 4 Reading, Writing & Comparing Numbers (cont.)

3 Identify the place value of the underlined digit in each number. Tell how much it is worth.

	PLACE VALUE	WORTH
example 3<u>6</u>,874	thousands	6,000
a 1<u>7</u>3,504		
b 85,0<u>9</u>7		
c 12<u>8</u>,000		
d <u>4</u>52,083		
e 14,00<u>7</u>		

4 Write greater than (>) or less than (<) in each circle to compare the numbers.

example 134,029 (<) 435.720	**a** 54,931 ( ) 45,021	**b** 392,010 ( ) 392,001
c 165,393 ( ) 65,323	**d** 78,013 ( ) 78,130	**e** 30,001 ( ) 430,000

5 Complete each equation.

example 17,508 = 10,000 + 7,000 + 500 + 8

a _____ = 20,000 + 400 + 50 + 6

b _____ = 30,000 + 2000 + 100 + 10 + 2

c _____ = 7000 + 40 + 6

d _____ = 90,000 + 6000 + 30 + 5

6 Fill in the missing number in each equation.

example 40,000 + 6,000 + 50 + 8 = 46,058

a 41,092 = 40,000 + _____ + 90 + 2

b 50,000 + 1,000 + _____ + 50 + 4 = 51,354

c 17,035 = 10,000 + _____ + 30 + 5

d 96,035 = 90,000 + 6,000 + _____ + 5