

Place Value Games

- Strand:** Number and Number Sense
- Topic:** Reading, writing, identifying, and representing numbers in various ways
- Primary 2023 SOL:** **3.NS.1 The student will use place value understanding to read, write, and determine the place and value of each digit in a whole number, up to six digits, with and without models.**
- a) Read and write six-digit whole numbers in standard form, expanded form, and word form.
 - b) Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place and value of each digit in a six-digit whole number (e.g., in 165,724, the 5 represents 5 thousands and its value is 5,000).
 - c) Compose, decompose, and represent numbers up to 9,999 in multiple ways, according to place value (e.g., 256 can be 1 hundred, 14 tens, 16 ones, but also 25 tens, 6 ones), with and without models.

Materials:

- Place Value Game Cards-multiple copies on cardstock (attached)
- Two Hula Hoops

Vocabulary:

place, value, place value, expanded form, written form, standard form, represents, representation

Student/Teacher Actions: What should students be doing? What should teachers be doing?

Prior to playing the games, students should be instructed on various ways to compose, decompose and represent numbers to include standard form, written form, expanded form, and multiple representations of numbers (e.g., 2,345 = 2 thousands, 3 hundreds, 4 tens, 5 ones **OR** 23 hundreds, 4 tens, 5 ones **OR** 2 thousands, 34 tens, 5 ones. Representations should also include base 10 blocks.

Note: A set of cards has been included as a resource which can be used to play each of the following games.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Hula Hoop Race

1. Place Hula Hoops on the floor on one side of the room.
2. Each number has four representations. Take two representations of each number and place them scattered face down in one hoop. Place the other two representations in the other hoop.
3. Divide students into two teams lined up at the opposite end of the classroom from the Hula Hoops.
4. On your signal, the first student in each line races down to the Hula Hoops and finds a set of matching cards (two representations of one number). The students race back with the cards and place them on the floor near their line.
5. Quickly check to see if the card set is correctly matched. If it is, allow the next student in line to go. If it's not correct, quickly place the card set back in the Hula Hoop, as you signal the next student in that line to go.
6. Play continues until one team's Hula Hoop is empty, and the team has successfully matched all of representations for each number.

Memory Game

1. Have students play with a partner or in a small group.
2. Shuffle all cards and place face down in a 5 x 8 array.
3. Students should take turns turning over two cards trying to match representations for each number.
4. Play continues until all matches are made.

Go Fish

1. Students can play with a partner or in a small group (3 or 4).
2. Shuffle all cards and deal five to each player.
3. Students take turns asking the player to the right for a card that will match one in their hand. Example: a student has 23 hundreds, 4 tens and 5 ones will ask for a card that represents 2,345.
4. Play continues until all matches are made.

Assessment

- **Questions**
 - Represent the number four thousand, six hundred seventy-eight in two different ways.
 - What number is represented by 27 hundreds, 4 tens and 8 ones? Write the number in two other ways.

- **Journal/writing prompts**

- Your teacher has given you some base 10 blocks. You have 2 large cubes, 3 flats, 15 rods and 6 small cubes. What number is represented by the base 10 blocks?
- Jackson was absent from class today. Write a note to him explaining why 27 hundreds is the same as 2 thousands and 7 hundreds.
- Represent the number 6,329 at least four different ways. Explain your strategy for creating different ways.
- Represent a number using (any) 12 base 10 blocks. Write the number in your journal and list the blocks used to make it. Represent a different number using 12 base 10 blocks. Write it in your journal and list the blocks used to make it. How is this number different from the first?

- **Other Assessments**

- Circulate during the activity to observe students' strategies and rationales as they play the games. Note who is having difficulty with the various representations. Help them as needed.
- Represent the number 324 using exactly eighteen base 10 blocks.

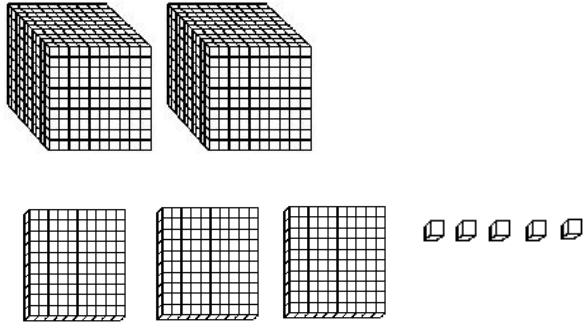
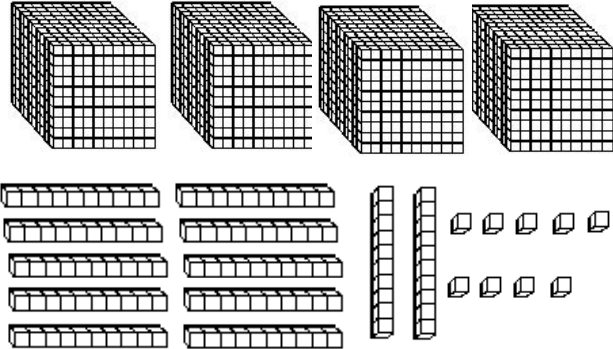
Extensions and Connections (for all students)

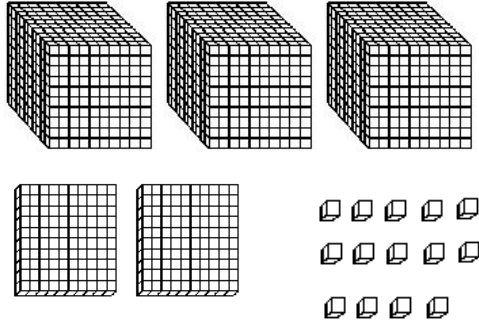
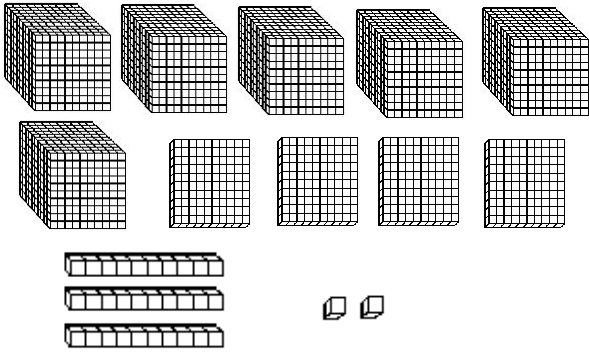
- Bradley used exactly 26 base 10 blocks to represent the number 2,465. Which base 10 blocks could he have used?
- If there were a base 10 block to represent the number 10,000 what might it look like? How many thousands would be used to represent it? How many hundreds? How many tens?
- Use the Sample Number Cards (attached) to play the Hula Hoop game or Memory Game.

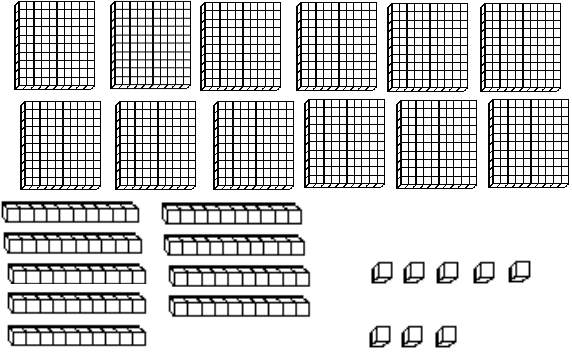
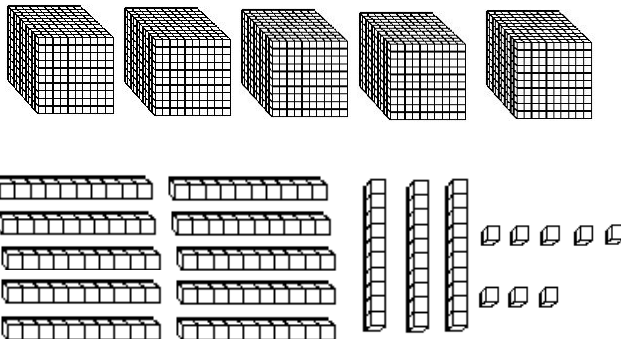
Strategies for Differentiation

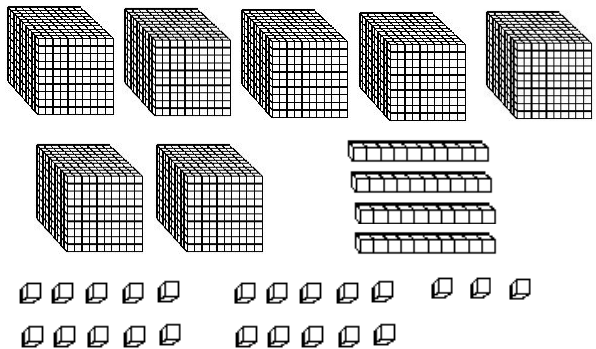
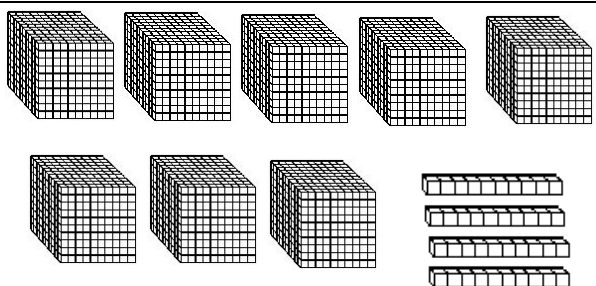
- Students struggling with four-digit numbers may need to begin by building two-digit numbers with base 10 blocks in multiple ways. Once mastered move to three-digit numbers and then four-digit.
- Use a place value mat to place base 10 blocks when building numbers.

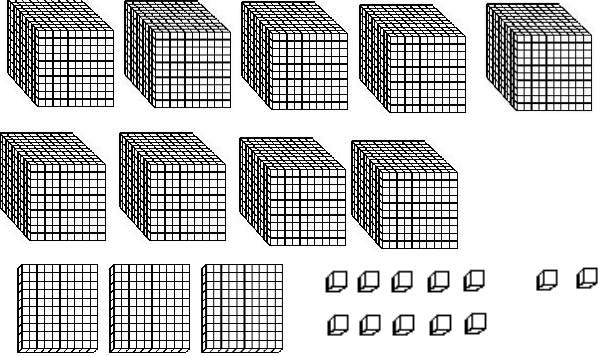
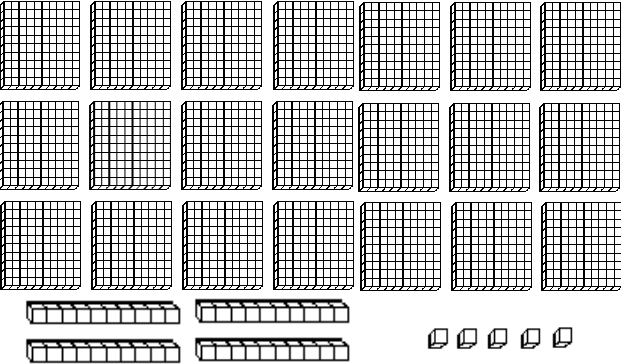
Note: The following pages are intended for classroom use for students as a visual aid to learning.

<p style="text-align: center;">2,305</p>	<p style="text-align: center;">two thousand, three hundred five</p>
	<p style="text-align: center;">2,000 + 300 + 5</p>
<p style="text-align: center;">4,129</p>	<p style="text-align: center;">four thousand, one hundred twenty-nine</p>
	<p style="text-align: center;">4,000 + 100 + 20 + 9</p>

<h1 style="text-align: center;">3,214</h1>	<p style="text-align: center;">three thousand, two hundred fourteen</p>
	<p style="text-align: center;">$3000 + 200 + 10 + 4$</p>
<h1 style="text-align: center;">6,432</h1>	<p style="text-align: center;">six thousand, four hundred thirty-two</p>
	<p style="text-align: center;">$6,000 + 400 + 30 + 2$</p>

<h1 style="text-align: center;">1,298</h1>	<p style="text-align: center;">one thousand, two hundred ninety-eight</p>
	<p style="text-align: center;">1,000 + 200 + 90 + 8</p>
<h1 style="text-align: center;">5,138</h1>	<p style="text-align: center;">five thousand, one hundred thirty-eight</p>
	<p style="text-align: center;">5,000 + 100 + 30 + 8</p>

<p>7,063</p>	<p>seven thousand, sixty-three</p>
	<p>$7,000 + 60 + 3$</p>
<p>8,040</p>	<p>eight thousand, forty</p>
	<p>$8,000 + 40$</p>

<h1 style="text-align: center;">9,312</h1>	<p style="text-align: center;">nine thousand, three hundred twelve</p>
	<p style="text-align: center;">9,000 + 300 + 10 + 2</p>
<h1 style="text-align: center;">2,145</h1>	<p style="text-align: center;">two thousand, one hundred forty-five</p>
	<p style="text-align: center;">2,000 + 100 + 40 + 5</p>

Sample Number Cards

135	one hundred thirty-five
204	two hundred four
35	thirty-five
44,651	forty-four thousand, six hundred fifty-one
12,044	twelve thousand, forty- four
990	nine hundred ninety
635,002	six hundred thirty-five thousand, two
18,405	eighteen thousand, four hundred five

62,091	sixty-two thousand, ninety-one
125,430	one hundred twenty-five thousand, four hundred thirty
97,003	ninety-seven thousand, three
304,016	three hundred four thousand, sixteen
17,812	seventeen thousand, eight hundred twelve
224,460	two hundred twenty-four thousand, four hundred sixty
88,090	eighty-eight thousand, ninety
123,456	one hundred twenty-three thousand, four hundred fifty-six