

Bemidji State University

Summer 2016

**Math 6062 ~ Number Theory for
Elementary & Middle School Teachers**

Grade 2 – Place Value

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Executive Summary for Morning Meeting Place Value Activities

This unit is designed to build place value knowledge through a variety of games and activities. The unit aligns with the Minnesota K-12 Academic Standards under the Number and Operation Strand for Second Grade.

This Place Value Unit will consist fifteen class days or approximately three weeks. It is designed to be used either as a part of your Responsive Classroom morning meeting or as Quick Math before each daily math lesson.

The goal of this unit is to provide students with multiple differentiated strategies to understand place value through the hundreds place. This unit will have a pre and post-test. The expectation of the post-test is to observe students write, draw and verbalize examples of place value to the hundreds place.

Table of Contents

Lessons:

Day 1 ~ Pre-test & Flash Counting

**Day 2 ~ Review of Flash Counting and
Secret Card Codes**

Day 3 - Simple as Straws!

Day 4 & 5 ~ High Roller with Dice

Day 6 & 7 ~ Base Ten Blocks

Day 8 ~ Place Value Breakdown

Day 9 & 10 ~ Place Value with Decks of Cards

Day 11 & 12 ~ Place Value Dominoes

Day 13 & 14 ~ Blindfold Numbers

Day 15 ~ Post-test & Place Value BINGO

Pre-Test

(Day 1)

MN Academic Standards: 2.1.1.1, 2.1.1.2, 2.1.1.3, 2.1.1.4, 2.1.1.5

Objective: To assess the students on their beginning knowledge of number theory using place value to the ones, tens and hundreds place.

Materials: Pre-Test and pencil

Launch: Today we are going to start a new unit on place value. But first, I need to understand what you already know about place value.

Explore: Give the assessment. Collect pre-test after 15 minutes of work time, even if their work is incomplete.

Share: Ask students to explain how they came up with their answers on the pre-test.

Summarize: Over the next 15 days, we will be looking at some fun games and activities that will help you answer all these questions on the pre-test you just took.

2nd Grade Place Value pre-test

Fill in the for the correct answer.

1. Which shows the number in expanded form?

136

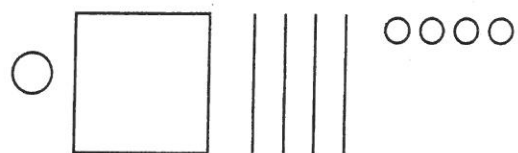
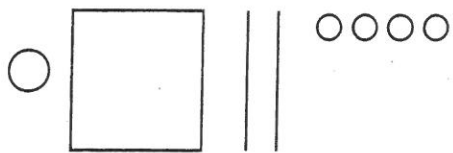
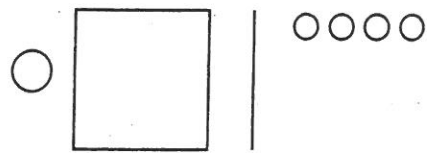
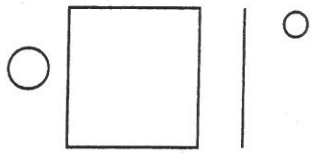
$100 + 30 + 6$

$100 + 60 + 3$

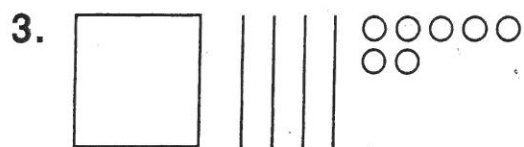
$100 + 3 + 6$

$10 + 30 + 6$

2. Which shows 124?



Which number is shown?

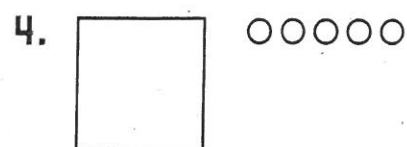


147

174

471

741



15

105

150

505

Flash Counting

(Day 1)

Standards: 2.1.1.2 Use place value to describe whole numbers between 10 and 1000 in terms of hundreds, tens and ones.

Objective: Students will be able to learn, practice, and demonstrate place value through a technique called Flash Counting.

Materials: Students own hands.

Launch: Sing “If you’re happy and you know it, clap your hands”. Ask students to list other ways they use their hands during the day.

Explore: Today we’re going to look at ways to show numbers using our own fingers. When I say the number “1”, show me “1” finger with your arm to the side. Show me “5” fingers with your arm to the side. Show me “10” fingers with your arms straight in front of you. Now I’ll show you a way to count to “32”. We say 10, 20, 30, freeze, 32. Children flash ten fingers all at once for each ten and show two fingers for each one they count after that. Saying freeze helps children shift from counting by tens to counting by ones. (You can stop saying freeze when all children no longer need the signal.)

Share: Have each child pair up. Children can practice and support their partner while the teacher gives examples.

Summarize: Today we practiced how to make two-digit numbers using our hands and fingers.

Secret Code Cards

(Day 2)

Standards: 2.1.1.2 Use place value to describe whole numbers between 10 and 1000 in terms of hundreds, tens and ones.

Objective: Students will learn place value using printed cards that represent digits 0 through 9 and multiples of 10 through 90. Each number is represented on the back of the card by dots, sticks or boxes.

Materials: Secret Code Cards in zip lock baggies

Launch: Write down my favorite, secret number on a piece of paper (1 – 99) and put it in my pocket. Each child gets to guess my favorite secret number by writing it on the SmartBoard. Teacher will reveal their secret number at the end of the lesson.

Explore: Teacher models many examples how to make a two-digit numbers using a ten's card and a one's card.

Share: Students take turns coming to the front of the classroom and modeling numbers that the teacher provides. Students at their desks are mirroring what the student at the front of the room is showing.

Summarize: Today we learned how to combine tens and ones into a two-digit number.

1,000	1000	100	1
2,000	2000	200	2
3,000	3000	300	3
4,000	4000	400	4
5,000	5000	500	5
6,000	6000	600	6
7,000	7000	700	7
8,000	8000	800	8
9,000	9000	900	9

Simple as Straws

(Day 3)

Standards: 2.1.1.1, 2.1.1.2, 2.1.1.3

Objective: The understanding that 10 straws is equal to 1 group and 100 straws are equal to 10 groups of ten and 100 ones, is critical to understanding place value. Using models like bundles of tens along with place-value mats create connections between the physical and symbolic representations of a number. These models can build a stronger understanding when comparing two quantities and identifying the value of each place value position.

Materials: Straws and rubber bands

Launch: Drop a large number of straws out on a table in front of the room. (More than 50 straws, but less than 100) Ask children to estimate how many straws they believe are lying on the table. Have the children write their estimate on a piece of paper, fold it and see who has the closest estimate at the end of the activity.

Explore: Teacher will model how to count this large quantity of straws. Although counting by ones is not efficient when dealing with such a large number, it is important for students to discover that bundling groups of ten would be the easiest.

Share: Have student's pair up and randomly drop straws on their desks. Students should bundle groups of 10 and count how many are left over. Once students have come up with an answer, they can switch desks with another pair of students and count another group of straws.

Summarize: Today you figured out how many straws there were by counting and putting straws in bundles of 10. The next time we count straws, we will work on three-digit numbers.

High Roller with Dice

(Day 4 & 5)

Standards: 2.1.1.2 Use place value to describe whole numbers between 10 and 1000 in terms of hundreds, tens and ones.

2.1.1.5 Compare and order whole numbers up to 1000

Objective: Students will arrange the dice in the hundreds, tens, and ones place to make the largest number possible. Students will begin to understand that a digit's place determines its value

Materials: One die for each child, "High Roller" recording sheet

Launch: Let's have fun rolling a die together. (Pass out one die to each student and give the rules of rolling die/dice) Ask them how many sides a die has. Have every child roll their die and ask how many got a "1". Then have every child roll again and ask who got a "2". Continue this until you have got to "6".

Explore: Today we are going to look at the numbers you roll on your six-sided die. Let's roll this large foam die in the front of the room three times. We'll decide where to put each number on our place value worksheet/mat. We want to make the biggest number we can.

Share: Have each child pair up and give each group a worksheet. Students should place the numbers from their rolls in the three/four boxes. The first student rolls the die four times. After each roll, each student fills in the number rolled in a box on their "High Roller" worksheet to try make the largest number possible. Once the number is written they may not erase or make a change in the order of their numbers. After all three/four rolls have been completed, the students compare with their partner to determine who came up with the largest number. Then they write their name next to the row they won.

Summarize: Today we learned about place value with the hundreds, tens and ones while playing a dice game. Next time we play this game, we will use a die with the numbers 1 - 9. You are starting to realize that a digit's place can determine its value.

Name: _____

High Roller 100's Edition

Round	Hundreds	Tens	Ones
1.			
2.			
3.			
4.			

Round	Hundreds	Tens	Ones
1.			
2.			
3.			
4.			

Round	Hundreds	Tens	Ones
1.			
2.			
3.			
4.			

High Roller 1,000's Edition

Round	Thousands	Hundreds	Tens	Ones
1.				
2.				
3.				
4.				

High Roller 1,000's Edition

Round	Thousands	Hundreds	Tens	Ones
1.				
2.				
3.				
4.				

Base Ten Blocks

(Day 6 & 7)

Standard: 2.1.1.1 Read, write and represent whole numbers up to 1000

2.1.1.2 Use place value to describe whole numbers between 10 and 1000 in terms of hundreds, tens and ones.

2.1.1.5 Compare and order whole numbers up to 1000

Objective: Students count blocks and represent quantities with them. They are working in a context that promotes counting by 1's and 10's. As students become more comfortable with the idea of one ten, they will be much less likely to count by 1's.

Materials: Base 10 blocks (ones, tens and hundreds), Place-Value Mat

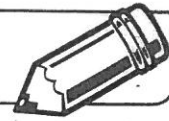
Launch: These are fun blocks to play with. Show me what you can build in three minutes. (This gets kids excited about the blocks)

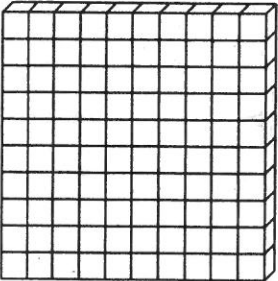


Explore: Teacher will use the SmartBoard to model two-digit numbers as students create the numbers with their base 10 blocks at their desks.

Share: Students will make their own number at their desks on the Place-Value Mat and will switch desks with another student in the class. As students move to other desks, they will identify the number. We will repeat this process at least five times. Students will have seen and identified five different numbers.

Summarize: Now you are able to break two-digit numbers into tens and ones and adding like groups. Next time we use base 10 blocks, we'll use a place value chart to the hundreds place and also make a connection to money.

Place-Value Mat



<p>\$1.00 100¢</p>  <p>Dollars</p>	<p>\$0.10 10¢</p>  <p>Dimes</p>	<p>\$0.01 1¢</p>  <p>Pennies</p>
<p>100s</p> <p>Flats</p>	<p>10s</p> <p>Longs</p>	<p>1s</p> <p>Cubes</p>

Place Value Breakdown

(Day 8)

Standards: 2.1.1.2 Use place value to describe whole numbers between 10 and 1000 in terms of hundreds, tens and ones. Know that 100 is 10 tens, and 1000 is 10 hundreds.

Objective: This activity follows the High Roller game and includes expanded notation.

Materials: One die per pair of students, Recording worksheet

Launch: Do you realize you can say any number you create in words? This is called expanded form.

Explore: Students should alternate rolling the die. The student decides where the digit should be written on their recording sheet and describes it to their partner. "I rolled a 4, I'm going to put it in the tens place to make 40." The second student does the same. This game continues until both students have a complete number. The person with the highest number wins.

Share: Ask students about the strategies they used to make the largest number they could. Think-Pair-Share what numbers work best in the hundreds place, tens place and ones place.

Summarize: Today you learned how to generate numbers into expanded form. It's a different way to show or make a number.

Place Value with a Deck of Cards

(Day 9 & 10)

Standard: 2.1.1.1 Read, write and represent whole numbers up to 1000. Representations may include numerals, addition, subtraction, multiplication, words, pictures, tally marks, number lines and manipulatives, such as bundles of sticks and base 10 blocks.

Objective: Learning about two-digit place value using a deck of cards.

Materials: Deck of cards for each child

Launch: Hand out one card to each student. Teacher randomly calls up two students at a time and makes a two-digit number in front of the class.

Explore: This is where the teacher models explains how the value of the cards will work. The teacher will explain that all face cards have a value of 10 and all other cards have their own face value.

Share: Students will pair up and each student will flip a card to make a two-digit number.

Summarize: Today we practiced making two-digit numbers with a partner. Tomorrow we will play a game with our partners to see who can make the largest two-digit number.

Place Value Dominos

(Day 11 & 12)

Standard: 2.1.1.1 Read, write and represent whole numbers up to 1000. Representations may include numerals, addition, subtraction, multiplication, words, pictures, tally marks, number lines and manipulatives, such as bundles of sticks and base 10 blocks.

Objective: Learning about two-digit place value with the use of dominos.

Materials: Dominoes, pencil and a “Place Value Dominoes” worksheet

Launch: Use YouTube to show a video of an elaborate dominoes creation.

Explore: This is an individual activity but involves domino manipulatives.

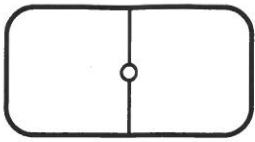
Share: Have student’s pair up. One student picks a domino and writes down one of the numbers depending on which way it is turned. He/she hands over the domino to their partner and the other number on their worksheets.

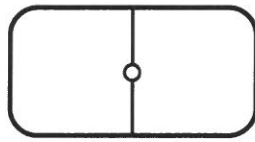
Summarize: Students learned how to make two different two-digit numbers from one domino. They are also capable of crossing those numbers off of a hundred’s chart.

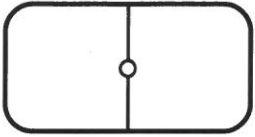
Place Value Dominoes

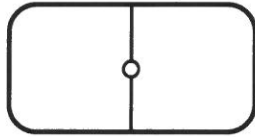
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

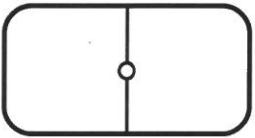


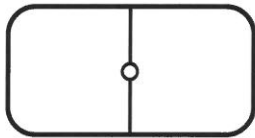


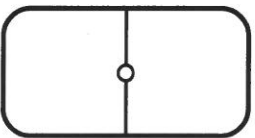


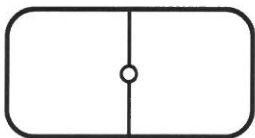


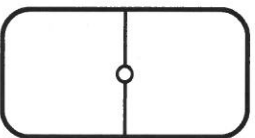


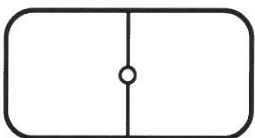


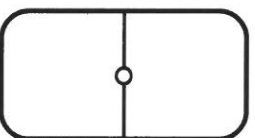




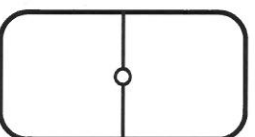


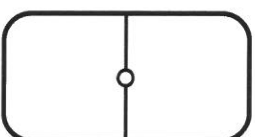


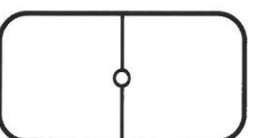


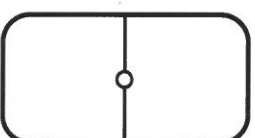












Blindfold Numbers

(Day 13 & 14)

Standard: 2.1.1.1 Read, write and represent whole numbers up to 1000

2.1.1.2 Use place value to describe whole numbers between 10 and 1000 in terms of hundreds, tens and ones.

2.1.1.5 Compare and order whole numbers up to 1000

Objective: Identify the two-digit number by only touching the base 10 blocks.

Materials: Blindfolds, base 10 blocks

Launch: Have volunteers come up to the front of the room and blindfold them. Put objects in their hands and have them guess what it is.

Explore: Students pair up. One student is blindfolded. The other student picks tens and ones and mixes them up. Let the blindfolded student sort them, and then using touch alone, identify the two-digit number. Have the students reverse roles.

Share: Each student will share with their partner how they came up with that number.

Summarize: Today you learned how to identify a two-digit number by touch only. Tomorrow we will find a new partner and add the hundreds block to make a three-digit number.

BINGO

(Day 15)

Standards: 2.1.1.1 Read, write and represent whole numbers up to 1000. Representations may include numerals, addition, subtraction, multiplication, words, pictures, tally marks, number lines and manipulatives, such as bundles of sticks and base 10 blocks.

Objective: Students will practice their place value skills, writing numbers, reading numbers and listening skills.

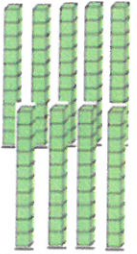
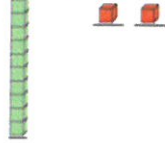
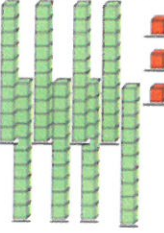

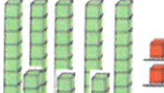
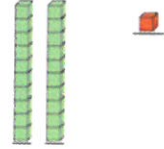
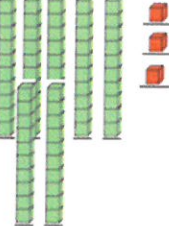
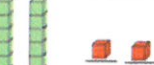
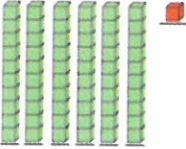
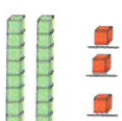
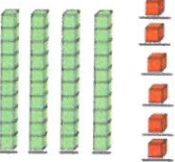
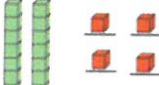

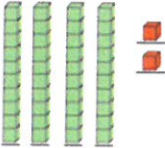
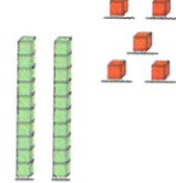
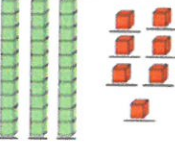
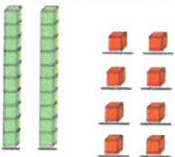
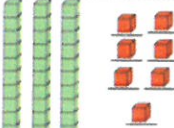
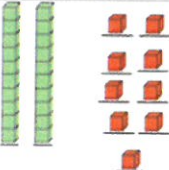
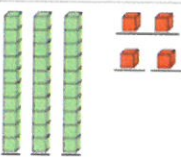

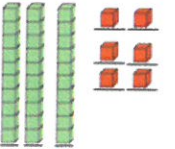
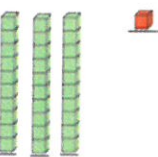
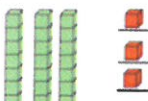
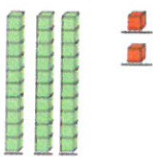
Materials: BINGO cards, scrap paper, counters

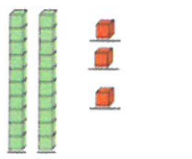
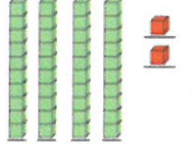
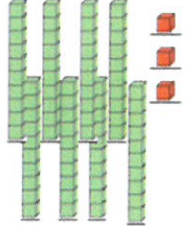
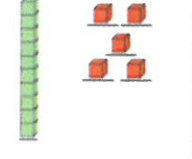
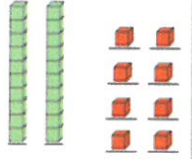
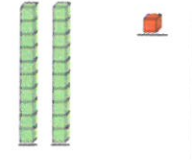
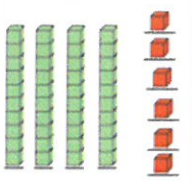

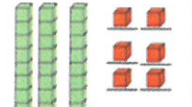
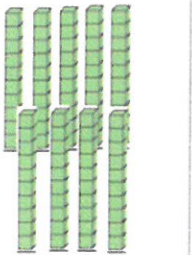
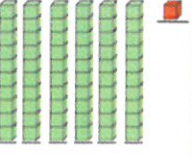
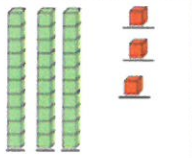

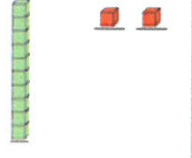
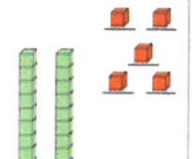
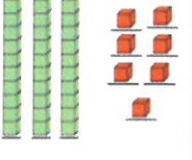

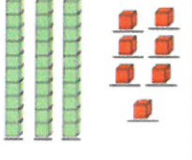
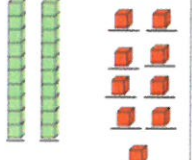
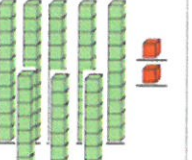
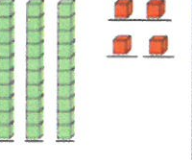
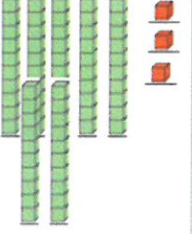
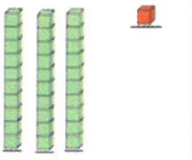
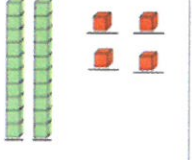
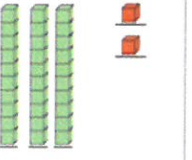
Launch: Find a YouTube video with the BINGO song.

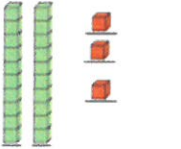
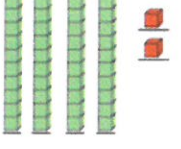
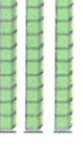
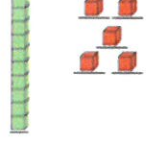
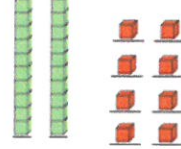
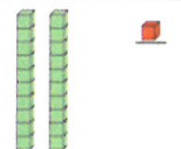
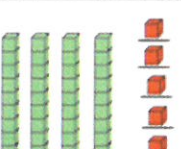
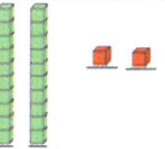
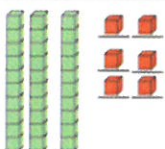
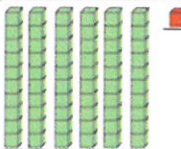
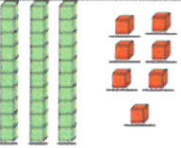
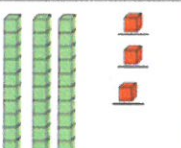

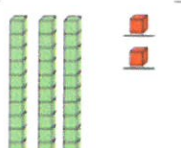
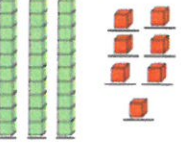
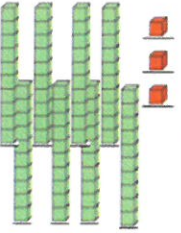
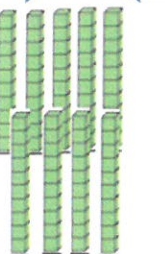
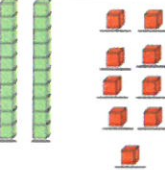
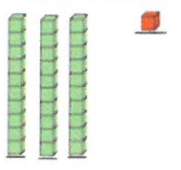
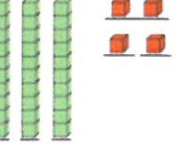
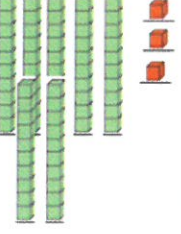
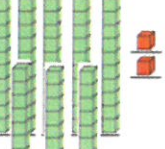
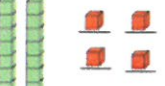
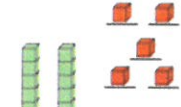
Explore: Playing the BINGO game and using multiple winning combinations. (vertical, horizontal, four corners, diagonal)

Share: Tell your neighbor the biggest and smallest place value number on your board.

Summarize: This is a fun activity to end our place value unit.

35	73	31	15	46
23	22	32	52	11
42	83	25	36	34
61	12	30	24	28
82	36	29	90	

Cut out these numbers and put in an envelope or bucket. Pull out a number, read it aloud, and have the students find the model on their board.

Post-Test

(Day 15)

MN Academic Standards: 2.1.1.1, 2.1.1.2, 2.1.1.3, 2.1.1.4, 2.1.1.5

Objective: To assess the students on their ending knowledge of number theory using place value to the ones, tens and hundreds place.

Materials: Post-Test and pencil

Launch: Today we are going to see how much we have learned in the last three weeks about place value.

Explore: Give the assessment.

Share: As students hand in their tests, ask students to explain how they came up with one of their answers.

Summarize: Students are able to write, draw and verbalize place value to the hundreds place.

2nd Grade Place Value post-test

Write the correct answer.


Draw the number using hundred boxes, ten sticks, and circles. Then write the number in expanded form.

1. 139

2. 152

What number is shown?

Write the number and the number name.

3. 

4. 