



Place the Value the Fun Way

By Kimberly Wilson, 2016 CTI Fellow
Grand Oak Elementary

This curriculum unit is recommended for:
4th and 5th grade Mathematics
Teach in general education and Resource setting

Keywords: place value, dots, base ten blocks

Teaching Standards: See [Appendix 1](#) for teaching standards addressed in this unit.

Synopsis: This unit will focus on building the foundation of place value concepts to students who are at least a grade level behind in elementary mathematics. The motivation behind this unit is to provide innovative ways to teach students who have some challenges with understanding mathematical concepts such as place value. It will allow the students to learn while having fun by understanding place value with the use of games, and models.

I plan to teach this unit during the coming year to 6-8 students in fourth and fifth grade Math in the general education and resource setting.

I give permission for Charlotte Teachers Institute to publish my curriculum unit in print and online. I understand that I will be credited as the author of my work.

Place the Value the Fun Way

Kimberly Wilson

Introduction

As a Special Education Teacher challenges are presented when the expectation for the students who are more than one grade level behind in elementary mathematics to perform on their current grade level. I have found that students become frustrated when they have to perform a task that is challenging to them because they lack some foundational skills, especially number sense. Place value is essential to building number sense and is foundational to arithmetic. The students must understand the value of numbers and be able to grasp the concepts rather quickly in order to perform grade level work presented in fourth grade.

To alleviate the frustrations that some of my students' encounter, I chose to do Place the Value the Fun Way. While enhancing their skills with number sense as it relates to place value, the student will learn through step by step lessons using fun and innovative activities. When you make learning fun, students are more acceptable to taking on the challenges.

School/Student Demographics

I am a Special Education teacher and I currently teach grades K-5 at Grand Oak Elementary School. Grand Oak ES is a brand new (third year), suburban elementary school(K-5) in the northern part of the Charlotte Mecklenburg Schools (District 1) and is located in Huntersville, NC. Grand Oak has approximately 561 students enrolled in K-5. Student diversity is very minimal with approximately 85% of the student population being White, and 1% being African Americans, Asian, and Hispanic.

The Exceptional Children population is made up of approximately 50-55 students which includes our two Autistic classes. My caseload consists of 17 students K-5 who are serviced in the resource and inclusion setting. I teach 6 fourth grade students, and 3 fifth grade students in mathematics. Their Individual Education Plan provides me with particular areas to address as it relates to math. Even though the students are on different levels, they all lack a strong foundation in place value. A strong foundation in place value will assist them reaching their individual goals.

Our school is a personalized learning school and the goal is to prepare the students to become 21st century learners and prepare for future graduation of high school. This year the focus is to find new ways to better engage students by tying in their passions for

learning and building in more student choice through innovative scheduling approaches. I plan to build on the interest of the students as they build a stronger foundation in place value. Each student will be presented with activities/lessons that meet their learning style and their mathematical needs. The program used in the EC resource room is Number Worlds. Number Worlds is an intensive intervention program that focuses on students who are one or more grade levels behind in elementary mathematics. It provides all the tools teachers need to assess students' abilities, individualize instruction, build foundational skills and concepts, and make learning fun. (Griffin, Sharon et al, *Numbers World* (Ohio: SRA, 2007), T3.. In the general education setting, the district adopted the math curriculum Investigations, however other resources are used like EngageNY. I will be taking math resources from Number Worlds, Eureka Math, and the National center on intensive intervention. All of which will address Common Core Standards and each student's math goals in their Individual Education Plan.

Content Standards

The standards in this unit will come from Common Core State Standards Initiative, and I will focus on the fourth grade Common Core Math Standards. The goals will be centered around the place value foundations, which is the bases of math concepts. I will also use objectives from the Number Worlds program that addresses number sense which focuses on place value.

Common Core Standards

Since I support the EC students in the general setting as well as the resource setting, I will be aligning with the standards that are being taught in the fourth grade classroom. Unit 1 addresses Place Value and targets the following Common Core math standards that I'll use for the student:

4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize $700 \div 70 = 10$ by applying concepts of place value and division.

The goal is for the student to explain that each place is 10 times greater than the place to the right. Since grasping this concept can be challenging for some students, activities using place value models with visual representations will give students understanding on this concept. Eureka math specifies models to use to teach students this standard. It uses place value disks which represent the numbers on the place value chart. This visual model shows how 10 is multiplied in the place to its right. To assist some of the students that struggle with understanding the concept, I will be incorporating lessons from Number Worlds. With the Numbers World lessons, the students will explore different ways to visualize and represent numbers and become familiar with equivalent representations of the same number. Students will understand the importance of 10 and the fundamentals of regrouping.

4.NBT.2 Read and write multi-digit whole numbers using base ten numerals, number names, and expanded form. Compare two multi digit numbers symbols to record the results of comparisons.

The goal here would be for the student to represent numbers in a variety of ways up to the millions place and to compare numbers. Models to do this will be taken from Eureka math, which demonstrates how to use the place value disks to name the number and write it in expanded form. I will be using Numbers Worlds lessons to assist those students who have trouble identifying numbers up to the millions. With Number Worlds the students will learn to name and make models of numbers shown with Base Ten blocks and examining the place value of three and four digit numbers in order to compare the numbers and to write the number in expanded form.

Practices with math standards

1. [Study Jams Place Value](#)
2. [Practice Place Value Quiz](#)
3. Make 10 by combining three and four digit numbers
4. Use base-ten blocks to model place value
5. Trade and regroup numbers through the ten thousands place
6. Identify the value of digit on its position

What is Place Value?

Place value plays a key role in primary grades. It is said that a solid foundation in place value can lead to success in performing math skills that involve adding multi digit numbers, counting, and money. Even though students can count up to 100 or beyond, they need to understand that numbers can be grouped in tens, like 35 is 3 groups of 10 and 5 ones or 2 groups of 10 and 15 ones. Using models, charts, and manipulatives can aid students in grasping the understanding of the place value system.

It is important that students understand the concept of ten and how to count groups of objects. Some students have different development levels which may impact their full understanding of place value. To ensure that students can grasp this understanding, various models can be used to target their understanding. Deb Russell, who is considered a mathematics expert stated, “understanding place value fully requires many hands on experiences”ⁱ, throughout this unit students will work on various activities to understand place value. Since my students have unique learning styles and developmental levels, the approaches will accommodate their abilities. A place value chart where the words are translated into numbers, in order to know the value of the digit on its position will be used throughout the unit.

Place Value Chart

1,000,000's	100,000's	10,000's	1,000's	100's	10's	1's

Figure 1a.

The students will use this model to understand what the number represents as it relates to place value. This will help them with the power of 10 and understand that they are multiplying by 10 as they move through the value chart. This model will be used with the students in the general education setting because these students understand the place value and the value of each place value. By using the chart, the students will identify with $1 \times 10 = 10$, $10 \times 10 = 100$, $100 \times 10 = 1,000$, $1,000 \times 10 = 10,000$, $10,000 \times 10 = 100,000$.

With this chart the students will learn how to group tens, write numbers in expanded form and compare multi digit numbers.

Activities using place value models

Place value disks/dots are used as models in Eureka Math. The dots represent the value of numbers on the place value chart. Using the dots is a good way to model how a digit in the 1 place represents 10 times as much as it represents in the place to its right. This model shows that 10 ones is grouped to show 1 ten, $1 \times 10 = 10$. It shows 10 tens $\times 10 = 100$. Using this model, the students will understand that when sets of 10 are grouped, that it moves to the place to its right.

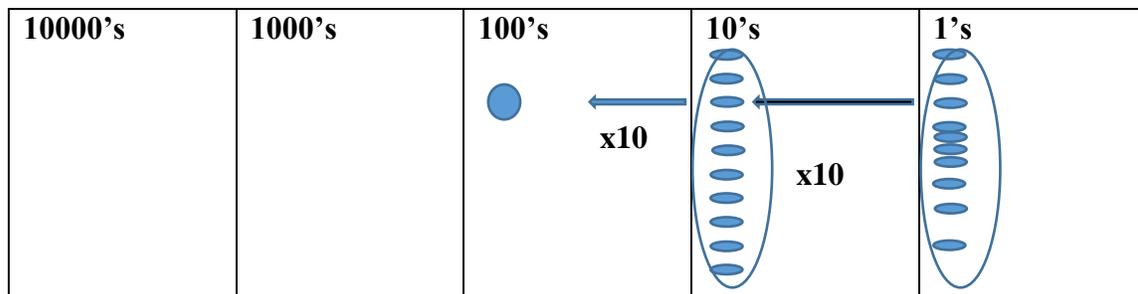


Figure 1b.

Another way to show the power to 10 is to use what James Tanton, a mathematician of St. Marks School, calls Exploding Dots. These exploding dots can be used in various of ways, but most commonly used in base ten $1 \rightarrow 10$. The dots are used to create a number in the place value chart, like the model below:

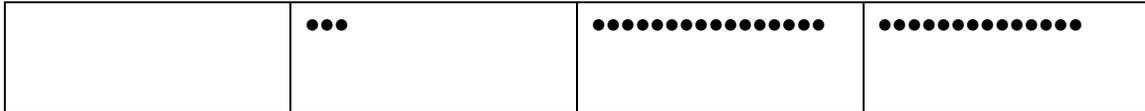


Figure 1 c.

This model shows 3 hundreds, 16 tens, and 14 ones. The concept is that 10 dots will explode and become 1 in the next column. In this scenario, 10 of the 14 ones will explode and move to the 10 columns which would make it 17 tens. Then 10 of the 17 tens will explode and move to the 100 columns which would make it 4 hundred, which will make it 4 hundred, 7 tens, and 4 ones= 474.

This model shows using the place value dots to represent a number in its place and writing it, in order to put it in expanded form. We started with 4,028 and placed the dots on the chart and wrote out the value of the numbers at the bottom of the chart. It shows $4000+20+8$ in expanded form.

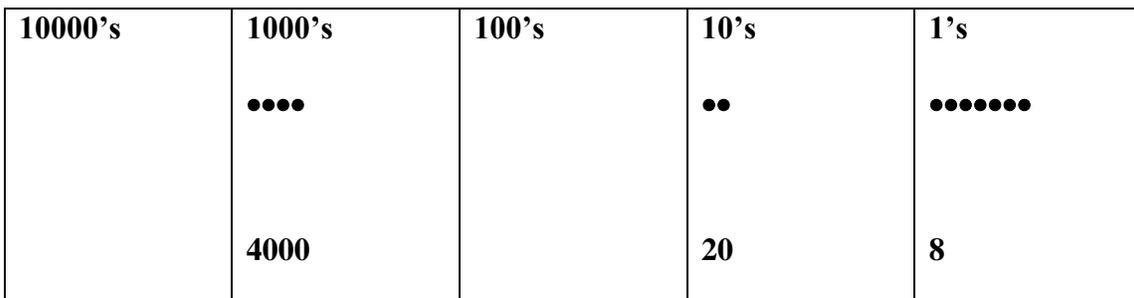


Figure 1d.

In the next model, the chart is used to help students with comparing multiple numbers by placing the numbers under its value digit place. This will allow the students to see the numbers individually and make an appropriate comparison. The first model shows 24,869 and 24,475 being compared. If the digits are the same the student will move to the next digit and so on. In this case two digits were the same in the ten thousand and thousands place, however in the hundreds place the numbers are different. The eight is bigger than the four so 24,469 is greater than 24,478. When comparing multiple numbers, the same concept will apply.

10000's	1000's	100's	10's	1's
2 	4 	8 	6	9
2 	4 	4	7	5

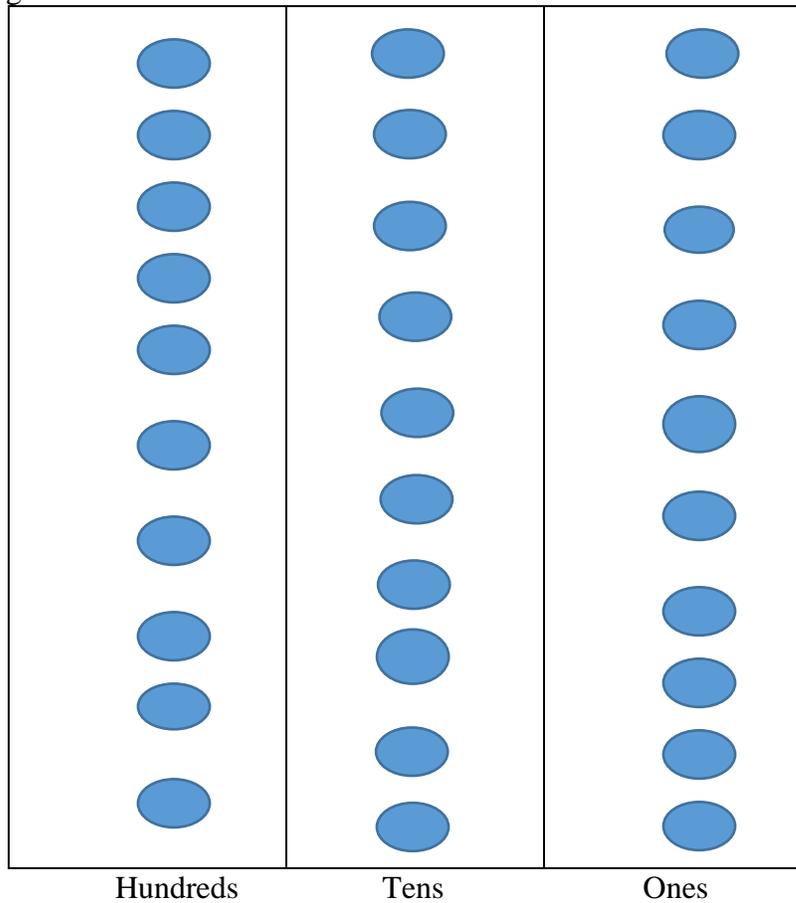
Figure 2a.

Number Worlds Strategy building

Number Worlds is an intensive intervention program that focuses on students who are one or more grade levels behind in elementary mathematics (Griffin, Sharon 2007). This math program provides the necessary tools to assist with building foundational skills and concepts, and most of all make learning fun. In this unit, students who are more than one grade level below in mathematics would benefit from using some of the strategies used in the math program. It would correlate with the content standards but modified in order for those students to have appropriate access to understanding place value.

For those students who have difficulty with the power of 10 and understanding that 10 is being multiplied through the value chart, and for those who don't quite understand the concept of 10. This chart below will be used for the students to learn how to make trades of 10. They will roll two die and use counters to build the value, once they get 10 ones they will trade for 1 ten and with 10 tens trade for 1 hundred. This will build on the concept 10 ones = 1 ten, 10 tens = 100, and 10 hundreds = 1,000.

Figure 2b.

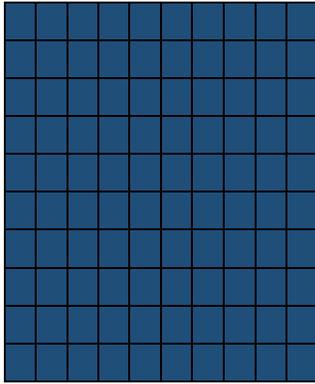


Base Ten Blocks

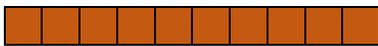
Base ten blocks can be used to support students with grouping and regrouping numbers into tens. This is another way that the students can see how the power of 10 is used in the place value system. When using the base ten blocks and the value chart, the students are given a number and with the base ten blocks they will represent that number by placing them in the chart. For example, 345, the student would put 5 green ones in the ones column, 4 orange tens in the tens column, and 3 blue hundreds in the hundreds column.

Another activity would be for the students to identify a number when given tens and ones. For example, the student would be given 7 tens and 17 ones or 5 tens and 30 ones. The student would place 17 green ones in the ones column and 7 tens in the tens column. The student would have to group tens in the ones column, which would be 1 group of ten. This one group of ten would move to the tens column, now instead of having 7 tens it would be 8 tens. The new number would be 87. This can be done with

larger numbers up to ten thousand or so. Using the base ten blocks would provide a more concrete way to demonstrate the power of 10.



Hundreds



Tens



Ones

Figure 2c.

Hundreds	Tens	Ones

Implementation

The lessons will be set up to address students in both general education setting and resource. The objectives will be the same however they will be modified for those student who more than one grade level behind in mathematics and are not meeting fourth grade standards. Those students in the general education setting will receive the same instruction delivered by their classroom teacher but supports will be provided for those who need some extra help with the content. The students in the general education will be given strategies from Eureka math because this is what the classroom teacher uses to teach the standards for place value. The classroom teacher doesn't follow the exact lessons from Eureka but implements some of the strategies outlined in the lessons. After the students work in a small group with EC teacher, they will continue working on their math pathways, as directed by their teacher. In the resource room the students will use strategies in the Numbers World program to learn place value.

The plan will show how instruction will be implemented in the general education setting (Group 1), and in the resource setting (Group 2).

Teaching strategies

Visual models

Students will use a place value chart with numbers representing the place value. This will be used for learning the power of 10, writing numbers in expanded form and comparing multiple numbers. Some students will be given a number construction mat, which will only have place values up to hundred or thousand. This is for the students who has difficulty with identifying numbers up to a million. Place value disks will be used within the place value chart to given students a visual on the value of each number being represented.

Manipulatives

Students in both the general education setting and resource setting will have access to base ten blocks, white boards, or another manipulative within the classroom setting.

Partner work/games

Students will work with a partner to engage in math games/activities outlined in the Numbers World program.

Math pathways

By the school being a personalized learning school, students are given pathways in math that target the standards being taught. The pathways are designed to meet the individual learning needs of students. On the pathways are various math activities for the student to complete, each activity aligns with the standards. The activities include watching videos and taking notes on what was learned, playing place value games, using manipulatives, and performing rigorous tasks to help gain understanding of the standard. Modified pathways are given to those students who are more than one grade level behind in mathematics. So instead of working on place value with fourth grade standards, the pathways will address the same standard in a lower a grade level. Each student will have a pathway to work during individual work time.

Classroom lessons/activities

Power of 10 Lesson (2 days)

Group 1: students in the general education setting, teacher will pull small group to teach same lesson as classroom teacher

Objective: Students will recognize a digit represents 10 times the value of what represents in the place to its right

Materials: Place value chart-(Appendix 2), base ten blocks, white

Day 1:

The teacher will give each student a place value chart up to 1,000, and base ten blocks. The teacher will hold up 1-unit cube and ask the students, “What is the name of this unit”? The students should answer 1. The teacher will direct the students to place 10 one unit cubes on the chart. Ask, how many ones do we have now? Now show the students how 10 ones can change to 1 ten and place the 1 ten-unit cube on the chart. Have the students do the same, and say, 1 ten is 10 times as much as 1 one. Repeat with 10 tens and 10 hundred, and discuss that 1 hundred is 10 times as much as 1 ten and 1 thousand is 10 times as much as 1 hundred. On the white board display: 1 ten = 10 x 1 one, 1 hundred = 10 x 1 ten, and 1 thousand = 10 x 1 hundred, have students record in their math notebook.

Allow the students to work with a partner and sets of base 10 blocks, including the thousand cube to practice representing the power 10 (how 10 is multiplied). Write: 20 ones, 40 tens, and 90 hundred on the white board and have the students represent it using base ten blocks. Check with the students to ensure they are doing it correctly and have them say the following 1 ten is 10 times as much as 1 one, 1 hundred is 10 times as much as 1 ten, and 1 thousand is 10 times as much as 1 hundred.

For independent time, students will work on the pathways as directed by their classroom teacher.

Group 2: students in the resource setting

Objective: Students will learn to trade 10 ones for 1 ten and understand that 10 ones are equivalent to 1 ten

Materials: Place Value chart-(Appendix 3), counters, 2 dice, interlocking cubes (day 2)

Day 1:

The teacher will give each student a place value chart-2, and counters. The teacher will have the students work with a partner and each pair will need 2 dice. The teacher will introduce the lesson by having the students use the counters to build a 10 using two different colors. Ask the students what did they use to build the 10, the students should respond with putting together 10 single counters to make 1 ten.

With the place value chart-2 and the counters, the students with their partner will play a game about making trades. Explain to the students that they will take turning rolling the dice, then count the dots on both dice and use counters to build that value on the chart, starting in the ones column. On their next turn the students will build onto the existing number represented on the chart. Once the first column (ones) is filled, the student will clear the column and place 1 counter in the tens column. This will continue until someone reaches 1000 by filling the hundreds column. The teacher will point to the winner's mat and ask, what number does his or her chart represent?

For independent time, students will work on their pathways.

Day 2:

For today's lesson for group 1, students will need place value chart-1 from yesterday's lesson. Instead of using base ten blocks, the students will draw place value dots on their charts. The teacher will demonstrate how to use the place value dots, first draw the chart on the white board so its visual for the students. The chart should have 1's, 10's, 100's, 1000's on the top of your chart. The teacher will draw place value dots in the ones column, that represent 3 ones (grouped by 10 which should actual have 30 ones). Circle a group of 10 ones, you should then have 3 groups of 10 circled. Show students that 10 times as many as 3 ones is 30 ones → 3 tens. Display information from yesterday's lesson: 1 ten = 10x1 one, 1 hundred = 10x1ten, 1 thousand = 10x1hundred. This display will help the students make a correlation with what is being presented.

The teacher will repeat the process 5 tens is 50 tens is 5 hundreds, and 7 hundreds is 70 hundreds is 7 thousand. Note: draw an arrow to the next position to show how the groups of ten change. Refer to the chart below for a better understanding.

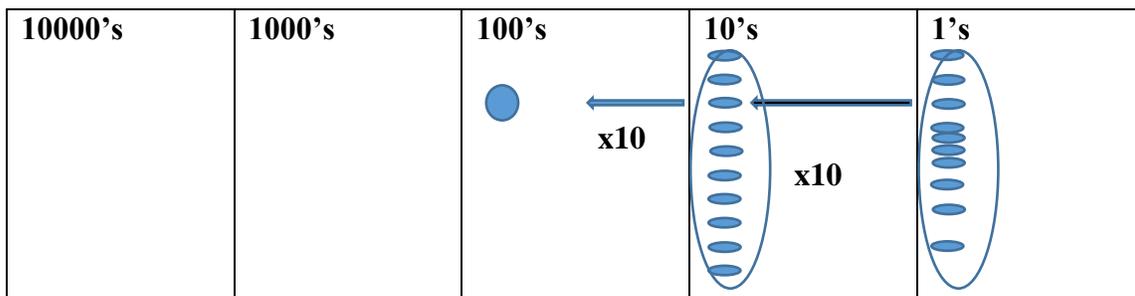


Figure 2d.

In the resource room for group 2, have the students play the game from yesterday's lesson again. After they play the game and a winner has been declared, give each student individual interlocking cubes. Explain to them that they will be regrouping the cubes into

tens and ones. The teacher will ask the students to think of a number that has 5 tens and 6 ones, and tell them to make a model by grouping the cubes into stacks of ten and leave the remaining ones unattached. The teacher will ask the following questions: How many tens did you make? How many ones did you make? Ask the student what number was represented.

The teacher will display 5 tens and 14 ones on the white board. The students will use their interlocking cubes to represent this number. Show the students that they need to make 5 tens using the cubes but leave out 14 unattached cubes. Ask them how many tens can you make out of 14 ones. The students should be able to say 1 ten, then guide them to make 1 ten out of the 14 ones. The teacher will have the students combine all the tens and the ones, and ask them, how many tens do you have? How many ones do you have? What number is represented. The students should have made the number 64. Explain that this shows that 1 ten = 10 ones and 10 ones was multiplied to 6 tens → 60. The teacher will handout worksheet-2 for the students to complete.

Expanded form lesson

Materials: place value chart-(Appendix 2)

Objective: Students will read and write multi digit numbers use base ten numerals, number names, and expanded form

Group 1: students in the general education setting, teacher will pull small group to teach same lesson as classroom teacher

Handout place value charts to each student and display your chart on the the white board. Explain to the students that today they will use their place value chart up to the millions to read and write numbers in name and in expanded form. On your cart on the white board, write 2,309. Ask the students, what is the value of the 2? 2,000, record 2,000 at the bottom of the column. Then ask what is the value of the 3? 300, record 300 at the bottom of the column. Ask what is the value of 9? 9 ones, record at the bottom of the column. Ask the students what is the value of 2,000 and 300 and 9, record the number sentence $2,000+300+9=2,309$. Now erase previous value and write 36,072, show the value of each digit at the bottom of the columns, ask the students what is 30,000 and 6,000 and 70 and 2? Explain that a zero is not necessary because it has no value so its not needed to represent the hundred place. Have the students write the number sentence, they should write $30,000+6,000+70+2$, now tell them that they are going to write the number as they speak it → thirty six thousand, seventy-two. Write $700,000+90,000+5,000+60+2$ and have the students place it on their place value chart and write it in standard form.

This should be a review from what the classroom teacher has taught so encourage the students to refer to the notes on standard form, word form and expanded form. At this time the student will work on their pathways that have various place value activities for

them to practice. While they are working on their paths, the teacher will assist the students as needed.

Group 2: students in the resource setting

Objective: Students will determine the value of each digit in a three and four-digit number.

Materials: Place value chart-(Appendix 4), number cards (Appendix 5)

The teacher will talk with the student about different ways to write numbers. On the white board write the number 19 in standard form and expanded form. Inform the students that expanded form of a number shows the value of each digit. Display a place value chart with three columns on the white board, using number 436 have the students tell you how to fill in the chart. Then ask the students, what is the value of 4? Record it at the bottom, what is the value of 3? Record it at the bottom, and then what is the value of 6? Record it at the bottom. Show the number sentence $400 + 30 + 6$ for the students to see, now tell them we are going to write the number as we speak it → four hundred thirty-six. Let them know that this is word form.

Give each student a place value chart and number cards 0-9. Have the students form a 3-digit number using the number cards and write the number on their place value chart. Invite a volunteer to come to the board and write their number in standard form, word form and expanded form. Next have the students practice making 3-digit and 4-digit numbers using the number cards. Have the students use the space that they have left on their place value chart or they can draw a chart on a separate sheet of paper. They need to write their number in standard form, word form, and expanded form.

When the students finish making about 4-5 numbers, the students can work on their pathways until the end of the class session.

Compare the numbers lesson

Materials: white board

Objective: Students will compare numbers based on meaning of digits

Group 1: students in the general education setting, teacher will pull small group to teach same lesson as classroom teacher

Have the students draw a place value chart up to ten thousand on their white boards. Tell them to draw a line in the middle of chart because they will be comparing 2 numbers, put one number on the top and the other on the bottom. Display: 4, 023 and 3, 963, and have the student write both numbers on their white board, one at the top and one at the bottom. Ask what unit has the greatest value? Thousand, since 4 is greater than 3, you would 4, 023 is greater than 3, 963. Now display 47, 653 and 47, 563 and have the

students put both numbers on the chart that they have on their white. Please make sure that they have erased the previous numbers from the board. Ask the students, what is our largest unit? Ten thousand, the students should recognize that both digits in the ten thousand place are similar so ask how do we compare when the values are equal? We have to move the thousand place, now the numbers in the thousand place are the same so move the hundreds place. In the hundreds place, the six is larger than the 5 which tells us that 47, 653 is greater than 47,563. Write the comparison statement on the board $47, 653 > 47, 563$ and you can say $47,563 < 47, 653$. For student to reference again, write the symbols on the board, $<$ less than $>$ greater than $=$ equal to.

On the board display, 67, 770 65,342 67,570, have the students place all three numbers on their chart. Once they place them on their chart, ask them is they notice that all 3 numbers in the ten thousand place. Give them some time to arrange the numbers from the greatest to the least, invite a volunteer to state how they arranged the numbers. Display the numbers from greatest to least on the board, 67,770 67,570 65,342. Ask the students if they have any questions, and then direct to go and work on their math pathways.

Group 2: students in the resource setting

Objective: Students will compare numbers with the same number of digits and identify the greater or lesser value

Materials: Place value chart (Appendix 4)

The student will need to given multiple copies of the place value chart. Have the students write a number from 1-999 on their chart. The teacher will write several numbers on a plain sheet of paper from 1-999, this will be used in a moment. After the students have written their number on the chart, organize students into pairs and have them compare their numbers. They need to first compare the digits in the hundreds columns, if they are the same then go to the tens and so forth. Repeat this at least 3 more times.

After the comparing game, the teacher will hold up a number and ask the students to compare their number with number that is held up. If their number is greater, then tell them to stand up and stretch their arms in the air. If their number is less than the teacher, then have them to squat down. As a group, the numbers will be checked to see if everyone is correct. Repeat this process 2 more times, holding up different numbers.

On the white board write $<$ means less than, $>$ means greater than, and $=$ means equal to, have the students compare the following numbers using their place value charts.

465 ___ 456

217 ___ 211

619__612

993__893

When the students are done with comparing the numbers that was written on the white board, have them work on their math pathways until the end of class session.

Place Value culminating activity

The students in both general education setting and the resource setting will work to complete their math pathways for NBT.1 and NBT.2. See Appendix 6 and 7 for the view of the pathways. After each row, the students will take a check point quiz, this will provide feedback on how well the student is mastering the skills.

For the resource students, the work recorded in their math notebooks will be checked daily for understanding. The students will complete daily sheets that align with lessons in the Numbers World program.

Appendix 1: Implementing Teacher Strategies

4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place representation ten times what it represents in the place to its right. For example, recognize $700 \div 70 = 10$ by applying concepts of place value and division.

The goal is for the student to explain that each place is 10 times greater than the place to the right. Since grasping this concept can be challenging for some students, activities using place value models with visual representations will give students understanding on this concept. Eureka math specifies models to use to teach students this standard. It uses place value disks which represent the numbers on the place value chart. This visual model shows how 10 is multiplied in the place to its right. To assist some of the students that struggle with understanding the concept, I will be incorporating lessons from Number Worlds. With the Numbers World lessons, the students will explore different ways to visualize and represent numbers and become familiar with equivalent representations of the same number. Students will understand the importance of 10 and the fundamentals of regrouping.

4.NBT.2 Read and write multi-digit whole numbers using base ten numerals, number names, and expanded form. Compare two multi digit numbers symbols to record the results of comparisons.

The goal here would be for the student to represent numbers in a variety of ways up to the millions place and to compare numbers. Models to do this will be taken from Eureka math, which demonstrates how to use the place value disks to name the number and write it in expanded form. I will be using Numbers Worlds lessons to assist those students who have trouble identifying numbers up to the millions. With Number Worlds the students will learn to name and make models of numbers shown with Base Ten blocks and examining the place value of three and four digit numbers in order to compare the numbers and to write the number in expanded form.

Appendix 2: Place Value chart up to 1 million

1,000,000's	100,000's	10,000's	1,000's	100's	10's	1's

1,000,000's	100,000's	10,000's	1,000's	100's	10's	1's

Appendix 4: Place Value chart up to 100

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Appendix 5: Number Cards 0-9

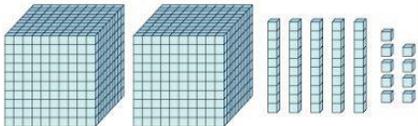
0	1	2	3
---	---	---	---

4	5	6	7
---	---	---	---

8	9
---	---

Appendix 6: Pathway

4.NBT.1 PATHWAY I can explain that a digit in one place represents ten times what it represents in the place to its right.

Teacher Checkpoint	I learn better by listening.	I learn better by seeing.	I learn better by writing/creating.
<p><i>I can explain that a digit in one place represents ten times what it represents in the place to its right.</i></p> <p>Checkpoint Score Test Code: 4NBT1A</p>	<p>Watch this Learnzillion video:</p> <p>1. Understand relationships between digits and their place value LZ Code: MAFHRWB</p>  <p>Once finished, answer the following question in your notebook:</p> <p>Tom wrote the number 45,378. Bill wrote the number 36,721</p> <p>How many times greater is the 7 in Bill's number than the 7 in Tom's number?</p> <p>Use pictures, numbers, or words to demonstrate your reasoning.</p>	<p>There are many ways that you can decompose and represent a number. For example, 2059 can be $2000+50+9$ (expanded form) or 2 thousands, 5 tens, 9 ones (unit form) or 1 thousand, 10 hundreds, 5 tens, 9 ones (unit form). I can also draw the picture</p>  <p>Select a number:</p> <p>4,857 1,236 3,028</p> <p>Use the Base-10 blocks to help you represent and/or decompose one of these numbers 5 different ways.</p> <p>You must include at least 1 expanded form, 2 different unit forms and one picture with Base-10 blocks.</p>	<p>Sam wrote the number 36,648 on said that the 6 on the left was ten times larger than the value of the 6 on the right. Taylor said the 6 on the right was 1/10 the value of the 6 on the left. Who is correct? How can you prove they are correct? Explain in sentences and pictures!</p>
Date completed			

<p><i>I can multiply and divide by 10..</i></p> <p>_____ Checkpoint Score Test Code: 4NBT1B</p>	<p>Watch these Learnzillion videos:</p> <p>1. Multiply by Powers of 10 LZ Code: 64MP5R3</p> <p>2. Divide by Powers of 10 LZ Code: GE7D3U9</p>  <p>Once finished, solve 5 of the Multiply by 10 cards in the 4.NBT.1 box. Put them in your notebook and explain.</p>	<p><u>Packaging Soup Cans</u></p> <p>Answer the questions on the response sheet in complete sentences. Use models or words to help show your reasoning. Glue your response sheet in your notebook.</p>	<p><u>Pennies, Dimes, & Dollars</u></p> <p>Answer the questions on the response sheet in complete sentences. Use models or words to help show your reasoning. Glue your response sheet in your notebook.</p>
---	---	--	--

4.NBT.2 Pathway - I can read and write multi-digit numbers in multiple and flexible ways.

Choose 3 in each row and complete at least 2 of the check-ins before moving to next row:

<p>_____ Conference</p> <p>_____ Checkpoint</p> <p>_____ Small Group</p>	 <p>Create graphic organizer of multi-digit numbers. Written reflection: What advice would you give for</p>	<p>Enoch and Jasmine are comparing numbers. Enoch has 92 and Jasmine has 108. Enoch knows that you need to start at the left when comparing</p>	<p>Play Place Value Triangle with a partner. When finished, write about it: Was this game easy, just right, or difficult and why? What is one way you would change this game to make it more challenging?</p>	 <p>https://goo.gl/36xc0p</p> <p>Watch any of the videos that you would like to learn more about or master. Take notes and</p>
---	--	---	---	---

	<p>someone else doing this task?</p>	<p>numbers. He thinks that his number is bigger because it starts with a 9 and Jasmine's number starts with a 1. Jasmine argues that her number is larger because she has more digits in her number. Who is correct and why? Use what you know about place value and the value of digits in explaining your answer.</p> <p><i>Source: HCPSS</i></p>		<p>create a way to share what you have learned!</p>
<p>_____ Conference</p> <p>_____ Checkpoint</p> <p>_____ Small Group</p>		<p>Create a Math dictionary of place value words. Be sure to include a definition, diagram example, and how you can use it in the real world.</p>	<p>Create a logo for each of the different ways to read/write numbers. Be creative!</p>	<p>How is being able to break numbers apart helpful when adding, subtracting, multiplying, or dividing? Write a letter/postcard to your choice of audience explaining your thinking with examples.</p>

Notes

¹Russell, Deb. "Understanding Place Value". About Education. October 3, 2016. Accessed November 18, 2016. <http://math.about.com/od/baseten/a/Understanding-Place-Value.htm>

Student Resources

Study Jams Place Value
Study Jams Order Numbers
Practice Place Value Quiz

Teacher Resources

This website is a great source to use to reinforce a math skill. The students will watch a video and answer some questions. It is interactive and the students seem to like it. You will need to create an account, but its free.

www.learnzillion.com

This website is helpful for interventions to use for students who have persistent learning needs.

<http://www.intensiveintervention.org/>

Materials

Base ten blocks
Visual place value charts
Manipulatives
Whiteboards

Bibliography

Griffin, Sharon, Clements, Douglas, Strama, Julie, and Booth, Sherry. "Number Worlds". (Ohio: SRA, 2007). Number Worlds is math program that is used in the resource room to assist students, who need intensive intervention in mathematics. This is a great program because it provides the necessary tools to help students gain appropriate number sense.

Great Minds. "Eureka Math 4 Module 1". Greatminds. 2016. Accessed November 5, 2016. <http://greatminds.org> Eureka math is also known as Engage NY is a complete Curriculum preK through 12. This was a great site to visit, it provides educators with a Comprehensive curriculum with support materials. It was written by a team of teachers and mathematicians who took the time to present mathematics in a logical progression from grade PK-12.

Russell, Deb. "Understanding Place Value". About Education. October 3, 2016. Accessed November 18, 2016. <http://math.about.com/od/baseten/a/Understanding-Place-Value.htm> This article on-line provided insight on how place value and how important it is to teach students early so that they can possess the necessary knowledge of place value as they progress through school. The author is considered a mathematics expert who has years of experience teaching mathematics.

Tanton, James."Exploding Dots". GdayMath. Accessed November 23, 2016. <http://gdaymath.com/about/> This website is where Mr. Tanton shares the beauty of mathematics. It is an insightful resource that provides you will course lessons on different math subjects.