Grade: 2

Module: 1

Title: What's My Value?

June 26, 2014

Module 1 Title: What's My Value?

Conceptual Lens: Relationships

Addition

- Commutative Property
- Associative Property
- Identity Property
- Symbols
- Equations
- Fluency
- Mental Math
- Money
- Add to
- Put together
- Story problems

Subtraction

- Identity Property
- Symbols
- Equations
- Fluency
- Mental Math
- Money
- Take from
- Take apart
- Compare
- Story problems

Patterns

- Skip counting
- Adding on
- Counting back
- Base-ten

Module 1 Title:

What's My Value?

Whole Numbers

- Order
- Sequence
- Equality
- Inequality
- Groupings
- Subitizing
- Compare
- Odd/Even
- Digit
- Money

Models

- Concrete
- Pictorial Representations
- Abstract

Place Value

- Ones, Tens, Hundreds
- Compare
- Standard Form
- Word Form
- Expanded Form

Module Title: What's My Value?

Conceptual Lens: Relationships

Module Overview:

In Module 1, students build fluency with addition and subtraction within 20 and mastering all addition and subtraction word problem situations. Students expand their knowledge of the inverse relationship between addition and subtraction and apply that knowledge to problem solving situations. Students first use concrete models to represent addition and subtraction situations. They progress to interpreting and creating representations and move on to symbolic representations. Students apply place value concepts to represent, compare, add, and subtract numbers.

Technology Integration (What skills do teachers or students need to use this? How much knowledge or familiarity with the use of the Internet and tools are necessary?)

Teachers should be proficient utilizing interactive whiteboard technology and internet resources such as ThinkCentral.com and other websites that provide interactive math tools. Also, teachers should demonstrate knowledge of administering online testing, interpreting data, and selecting computer based activities for students.

Standards for Mathematical Content addressed in this module:

2. OA.1	2.NBT.1	2.MD.8
2. OA.2	2.NBT.2	
2. OA.3	2.NBT.3	
	2.NBT.4	
	2.NBT.5	
	2.NBT.9	

Standards for Mathematical Practice addressed in this module:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Generalizations	*Guiding Questions* *(F = factual; C = conceptual; P = philosophical)*
1. Numbers can be represented flexibly in standard and non-standard groupings. (M, WN)	a. What number does this represent? (F) b. How can we show/represent this number? (C) c. How can you use base ten blocks to represent this number? (C) d. How can you show this number differently? (C) e. Why can you show a number multiple ways? (C) f. How does sharing your model/strategy/thinking with classmates help you see numbers differently? (P) g. What ways can you show me a given number? (C) h. How can composing a 10 help you solve this problem?(C) i. How can decomposing a number help you solve this problem?(C)
2. Analyzing number patterns builds computational fluency in addition and subtraction. (A,S,P,WN)	a. What patterns do you notice in the sums/differences? (C) b. How is skip counting like addition/subtraction? (C) c. How is counting backwards like subtraction? (C) d. How do you know what the sum will be when you add 1,2,10? (F) e. How do you know what the difference will be when you subtract 1, 2, and 10? (F) f. Using the number line, what pattern do you see between even or odd numbers. (C) g. How can you use your counters to prove the *number(n)* is an odd or even number? (C) h. How can you determine if the sum/difference will be odd/even?
3. Properties of addition and place value concepts are utilized to solve problems efficiently and accurately. (A, P, WN, M)	a. How can we use different combinations of numbers and operations to represent the same quantity? (C) b. What does "0" represent in a number? (C) c. What strategies will help me add multiple numbers quickly and accurately? (C) d. How can we solve addition problems with/without regrouping? (C) e. Which numbers are your addends? (F) f. Which number is your total/sum? (F) g. What information are you missing from this problem?(C) h. Why will I get the same answer if I change the order of numbers when I add? (C) i. What is another way you could have solved this problem? (C) j. What happens when we change the order of numbers when we add (or subtract)? (C) k. How does decomposing a number help you in a problem solving situation? (C) l. How can we represent a number in a variety of ways? (F) m. How can composing a 10 help you solve this problem mentally?(C)

Generalizations	*Guiding Questions* *(F = factual; C = conceptual; P = philosophical)*
4. Properties of subtraction and place value concepts are utilized to solve problems efficiently and accurately. (S, P, M, WN)	a. What happens when you change the order of numbers in subtraction? (C) b. Can you apply the Commutative Property to subtraction? (F) c. How can I use a number line to subtract? (F) d. How can we model and solve subtraction with and without regrouping? (C) e. In what type of situation do I subtract? (C) f. What happens to the value when I subtract 10/100? (F) g. How can mental math strategies help us when subtracting with regrouping? (C) h. How does decomposing a number help you in a problem solving situation? (C)
5. Addition and subtraction relate inversely. (A, S, P, WN, M)	a. How is this addition equation related to this subtraction equation?(C) b. How can addition help us know we subtracted two numbers correctly? (F) c. How can you use subtraction to check your answer? (C) d. How are addition and subtraction alike and different? (C) e. How can we use subtraction to solve an addition problem? (C) f. How can we use addition to solve a subtraction problem? (C)
6. Word problems represent addition and subtraction situations. (M, A, S, WN)	a. What is the missing addend? b. Are we looking for a total or a part? c. Which words help you determine whether this is an addition or subtraction word problem? d. How can you represent the information in the story problem? (C) e. Can you explain how you are using your counters to help you figure out how many are there now? (C) f. What strategies are you using to help you find out how many are there now? (C) g. How did you find out how many there are now? (C) h. Why do you think your partner would be able to make sense of your model? (C) i. Is there a way you could have solved this problem differently?(C) j. How can we show that addition and subtraction are related? (C) k. How can we find what is left when we take one quantity from another? (C) l. What does the = sign mean? (F) m. When is it appropriate to use the equal sign? (C)

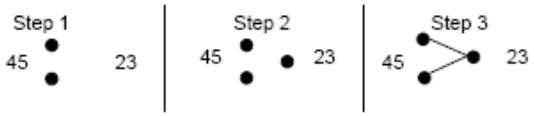
7. Place value determines the magnitude of a number. (PV, WN, P)	a. How can changing the position of a numbers digits change the magnitude of a number? (C) b. If we have 2 or more numbers, how do we know which is greater/less? (C) c. How can place value help locate a number on a number line? (C) d. What is the difference between place and value? (C) e. What place value is the digit in? (F) f. What is the value of the ___ digit? (F) g. Why should we understand place value? (P) h. How does the value of a digit change when it's position in a number changes? (C) i. How can I draw a model to represent this number?(C)
8. Effective mathematicians utilize appropriate tools and strategies to solve problems and justify solutions. (A, S, P, WN, M, PV)	a. How does using ten as a benchmark number help us add and subtract? (C) b. How can I learn to effectively calculate sums and differences in my head? (C) c. How does mental math help us calculate quickly and develop and internal sense of numbers?(C) d. How can jumps of tens and ones on a number line help us add or subtract? (C) e. Why might it be important to be able to prove that your solution is correct?(P)

Critical Content *What Students Will Know*	*Key Skills* *What Students Will Be Able to Do*
Addition • Use properties to add. • Use symbols appropriately to solve equations • Use fact strategies to build fluency and mental math. • Use strategies to solve all addition situations Subtraction: • Use properties to subtract. • Use symbols appropriately to solve equations • Use fact strategies to build fluency and mental math. • Use strategies to solve all subtraction situations Patterns • Use patterns to solve addition and subtraction situations and equations. Models • Use models to solve addition and subtraction situations and equations. Place Value • Explain place value relationships. • Use place value to add and subtract within 100. • Compare numbers based on place value. Whole Numbers • Use whole number concepts to fluently add and subtract within 100 • Use whole number concepts to compare numbers. • Add whole number money amounts.	2. OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1] 2. OA.2. Fluently add and subtract within 20 using mental strategies.[2] By end of Grade 2, know from memory all sums of two one-digit numbers. 2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. 2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. 2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s. 2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. 2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds tens and ones digits, using >, =, < symbols to record the results of comparisons. 2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. 2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations 2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Suggested Timeline	*Learning Experiences*	*Assessments (Suggested and Required**)*	*Differentiation (For Support and Extension)*	*Resources*
Days 1-7	**Review addition/subtraction situations using concrete objects (i.e. two-color counters, Unifix cubes, kinesthetic movements). Then, move on to pictorial representations (i.e, drawings, number bonds, number lines). Lastly, move on to equations.** Discuss properties of addition and subtraction using number bond relationships. (G:3,4,8) Discuss appropriate vocabulary. (G:6) Model the Commutative Property and Property of Zero (G:5,3) Relate unknown addends to subtraction. (G:5) For addition, have students model the counting-on strategy using objects, kinesthetic movements, and drawings. (G:3,8) Review fact strategies with students (i.e. make a 10, doubles, mental math, etc.) to build fact fluency. (G:1,2,8) ** ***All learning experiences allow for student discourse.***	** **Performance Task (End of Module)** Teacher Observation Math Expressions *Formative Assessment:* *Check Understanding* *Quick Quiz* *Unit Tests*	Math Expressions Unit 1: refer to *Differentiated Instruction* pages in T.E. or on Think Central • RTI • Challenge Cards Intervention: *Online Soar to Success* Extension: *Online Destination Math*	Grade 2 Unpacked Standards Math Expressions Unit 1 www.eduplace.com Hands On Standards Common Core Gr. 2, ETA hand2mind @ 2012 Think Central: • iTools Primary • MegaMath engageny.org grade-2 - module-1

Suggested Timeline	*Learning Experiences*	*Assessments (Suggested and Required**)*	*Differentiation (For Support and Extension)*	*Resources*
Days 8-13	**Discuss and model patterns in numbers using objects, number chart, number line, drawings, etc. (i.e. adding on or counting back)** (G: 2,1, 8) Use objects to prove if a number is odd or even. (G:2, 1, 8) Model multiple addition/subtraction strategies (doubles, doubles plus, making a ten. (G:3, 4, 6) ** ***All learning experiences allow for student discourse.***	Teacher Observation Math Expressions *Formative Assessment: Check Understanding* *Quick Quiz* *Unit Tests*	Math Expressions Unit 1: refer to *Differentiated Instruction* pages in T.E. or on Think Central • RTI • Challenge Cards Intervention: *Online Soar to Success* Extension: *Online Destination Math*	Grade 2 Unpacked Standards Math Expressions Unit 1 www.eduplace.com Hands On Standards Common Core Gr. 2, ETA hand2mind @ 2012 Think Central: • iTools Primary • MegaMath Module One Lessons (see attached) *Different Paths Same Destination* *Our Number Riddles* *Story Problems* *Number Hop* (patterns) *What's in the Bag* (odd/even)
Days 14-20	**Model three or more addends with concrete objects. (i.e. two-color counters, unifix cubes, kinesthetic movements). Then, move on to pictorial representations (i.e, drawings, number bonds, number lines). Last, move on to equations.** Model the Associative Property to *make a ten* using multiple addends without regrouping. (i.e 6+3+4, 6+4=10 +3=13) Extend grouping numbers to other sums.(G:3) ** ***All learning experiences allow for student discourse.***			

Suggested Timeline	*Learning Experiences*	*Assessments (Suggested and Required**)*	*Differentiation (For Support and Extension)*	*Resources*
Days 21-30	**Model addition/subtraction situations using concrete objects (i.e. two-color counters, unifix cubes). Then, move on to pictorial representations (i.e. drawings, number bonds, number lines). Lastly, move on to equations.** Model *Add To* and *Take From* word problems with unknowns in all positions. Connect words with symbols. G: (6, 3, 4) Model *Put Together* and *Take Apart* word problems with unknowns in all positions. Connect words with symbols. G: (6, 3, 4) Model *Compare* word problems with unknowns in all positions. Connect words with symbols. G: (6, 4, 3) Model two-step word problems. G: (6, 3, 4) **** All learning experiences allow for student discourse.***	Teacher Observation Math Expressions *Formative Assessment: Check Understanding* *Quick Quiz* *Unit Tests*	Math Expressions Unit 1: refer to *Differentiated Instruction* pages in T.E. or on Think Central • RTI • Challenge Cards Intervention: *Online Soar to Success* Extension: *Online Destination Math*	Grade 2 Unpacked Standards Math Expressions Unit 1 www.eduplace.com Hands On Standards Common Core Gr. 2, ETA hand2mind @ 2012 Think Central: • iTools Primary • MegaMath

Suggested Timeline	*Learning Experiences*	*Assessments (Suggested and Required**)*	*Differentiation (For Support and Extension)*	*Resources*
Days 37-42	**Model place value situations to compare numbers (include 3-digit numbers) with concrete objects (i.e. base 10 blocks, number cards, unifix cubes, kinesthetic movements, etc.). Then, move on to pictorial representations (i.e. drawings, number lines, etc.). Lastly, move on to comparison statements.** Have students model comparing numbers using objects, base ten blocks, etc. and articulating the comparison in a full sentence from left to right.(G:8, 6) Students can then move on to symbols, using the strategy of 2 dots next to the greater number and 1 dot next to the lesser number to then draw the symbol. (G:8, 7, 6)  ** ***All learning experiences allow for student discourse.***	Teacher Observation Math Expressions *Formative Assessment: Check Understanding* *Quick Quiz* *Unit Tests*	Math Expressions Unit 2: refer to *Differentiated Instruction* pages in T.E. or on Think Central • RTI • Challenge Cards Intervention: *Online Soar to Success* Extension: *Online Destination Math*	Grade 2 Unpacked Standards Math Expressions Unit 2, Big Idea 1 www.eduplace.com Hands On Standards Common Core Gr. 2, ETA hand2mind @ 2012 Think Central: • iTools Primary • MegaMath

What:

Why:

How:

Materials:

Assessment Procedure:

Grade 2 Module 1 Performance Task

Grade 2 Module 1 Performance Task Rubric

CONSTRUCTING TASK: Number Hop

Approximately 3 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

(Information quoted from Van de Walle and Lovin, Teaching Student-Centered Mathematics: Grades K-3, pages 143-145)

"Children in the second grade should be thinking about numbers under 100 first, and, soon after, numbers up to 1,000. Quantities larger than that are difficult to think about. Where are numbers like this?"

"In our number system, some numbers are "nice." They are easy to think about and work with. What makes a nice number is sort of fuzzy. However, numbers such as 100, 500, and 750 are easier to use than 94, 517, and 762. Multiples of 100 are very nice, and multiples of 10 are not bad either. Multiples of 25 (50, 75, 425, 675, etc.) are nice because they combine into 100s and 50s rather easily, and we can mentally place those between multiples of 100s. Multiples of 5 are a little easier to work with than other numbers."

"A number line with nice numbers highlighted can be useful in helping children select neat nice numbers. A blank number line can be labeled in different ways to help students with near and nice numbers."

(Information adapted from North Carolina DPI Instructional Support Tools)

Second grade students should have experience working with a 99 chart. A 99 and/or Hundreds chart should be displayed prominently in the classroom environment. Skip counting skills may

be quite difficult for children. As they become more comfortable with skip counts, you can challenge the students to skip count without the aid of the 99 or hundreds charts.

This standard calls for students to count within 1,000. This means that students are expected to count on from any number and say the next few numbers that come afterwards.
Understand that counting by 2s, 5s and 10s is counting groups of items by that amount.

Example: What are the next 3 numbers after 498? 499, 500, 501

When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198
This standard also introduces skip counting by 5s and 100s. Students are introduced to ten more or ten less in First Grade. When students add or subtract by 5s, the ones digit alternates between 5 and 0. When students add or subtracts by 100s, the hundreds digit is the only digit that changes, and it increases by one number.

It is important to vary the starting numbers so that students begin to understand the interesting and useful patterns in numbers. For example, do not always start with a multiple of ten when skip counting by 10's.

ESSENTIAL QUESTIONS

- How can we use skip counting to help us solve problems?
- What number patterns do I see when I use a number line?

MATERIALS

- 3 game surfaces out of chalk on a sidewalk, masking tape on a rug, etc.
- 0-99 chart (3 per student to highlight multiples)
- Highlighters
- "My Skip-Counting Recording Sheet" student task sheet
- Multiples written on index cards (1s, 2s, 5s, 10s)
- A recording board to record scores (example chalkboard, marker board, chart paper)
- Number Hop Assessment

GROUPING

Large Group, Small Group, Individual

TASK DESCRIPTION, DISCUSSION, AND DEVELOPMENT

Prior to the lesson, create **3** game surfaces out of chalk on a sidewalk or masking tape on rug, or squares on the floor (see diagram on right.) Ten squares in a row for each game surface should be enough. Leave the inside of each square blank, but make the squares big enough for your students to jump in and out of easily.

Part I
Give each student the skip-counting recording sheets and a highlighter. Have students highlight the first chart showing the numbers said when you skip count by 2s. Using the class 99 chart, call upon students to highlight these numbers (Highlight numbers when skip counting by 2 and beginning at 0, 2, 4, 6, 8, 10 etc.) Discuss the patterns they see on the chart. Display this chart in the room. Do the same counting by 5s (starting at 0) – highlighting the multiples and discussing the pattern. Finally, do the same activity for the multiples of 10 (starting at 0) – highlighting the multiples and discussing the pattern.

Part II
Divide class into 3 groups each with their own game surface. Have students line up behind the game surface with their group. Each group will go one at a time and have to skip-count by a given number. Be sure to use a variety of starting numbers in addition to 0. Each child that is able to correctly skip-count through the entire game surface earns a point for their team (no matter how slowly they may need to go).

Record the points each group gets using tally marks. When a student reaches the end of the game surface counting correctly, let them try to jump the hopscotch backward using the same number to earn a bonus point for their team. For example, "Twenty, eighteen, sixteen, fourteen, twelve, ten, eight, six, four, two." It is much harder backwards, both jumping and counting, so allow them a reasonable amount of time. If this is the case, they may turn around and jump forward but count backward. After each round a different multiple is called, (1s, 2s, 5s, 10s) and the hopping and counting continues. Keep in mind, students will not be able to jump from 0 to 10; instead they say the multiple and jump one square for each new number until they've gone 10 jumps of whatever the multiple is.

Part III
This part of the task should be completed outdoors or in the gymnasium. In advance, the teacher should create enough game surfaces (20 to 30 squares each) so that students can work in small groups. (Upper grade students might be recruited to create these in advance as a service project)

Have a student volunteer roll a pair of large foam dice. This gives a two-digit starting number for the student to start from. Then ask the students how to skip-count (by 1s, 2s, 5s, or 10s) and the direction to skip-count (forward or backward). Allow students to create strategies to demonstrate their skip counting to their group.

Each child that is able to correctly skip-count through the entire game surface earns a point for their team (no matter how slowly they may need to go). Record the points each group gets using tally marks.

For example, if a student rolls a 4 and a 5, the starting number would be 9. The students would begin with the number nine and skip count by the designated pattern until they reach the end of the game board. (Skip Count by 10's: 9, 19, 29, 39, etc).

Part IV
Give students a copy of the "Number Hop Assessment." Are the students able to connect their knowledge of number lines with their knowledge of skip counting?

After students have completed the "Number Hop Assessment", look over their work and consider which students have a solid understanding of how a number chart and a number line are connected, and how they use a number line to skip count.

Part V
Ask each child to draw a number line for the numbers 0-20 (or an open number line, depending on what you have been using within your recent instruction). Then ask the students to show you how to skip-count by 2s on their number line. Monitor the students' work and then allow students to model their mathematics by sharing their number line with the class. Use this opportunity to allow the class to discuss their strategies. Repeat this process for the numbers 5 and 10 with a larger number line. This creates an opening to present open number lines. Model this same process with an open number line.

****Additional related materials for skip counting can be found on pages 138-139 in *Teaching Student Centered Mathematics* by Van de Walle. Skip counting skills show a readiness for multiplication.**

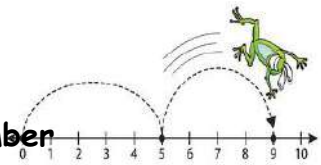
FORMATIVE ASSESSMENT QUESTIONS:

- Do you think we will find patterns on the number chart?
- How do you know what number to jump to next?
- How does skip counting help you solve problems?
- Do you think we will find patterns on a number line?

DIFFERENTIATION
Extension
- Skip-count beyond 100 or skip-count by other increments such as 3s, 4s, etc.
- Count by 2s starting at an odd number

Intervention
- Provide students with a number line to help them skip-count.

Number Hop!



Lilly the Frog only hops by 10s. If she is on the number 20, how many hops will it take to land on the number 100? Use a visual representation to show your answer.

If Lilly the Frog hops by 5s, how many hops will it take to get to 75 if she starts on the number 40? Use a visual representation to show your answer.

CONSTRUCTING TASK: The Importance of Zero

Approximately 1 day (Adapted from Gourmet Curriculum Press, Inc.)

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."
b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

MCC2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

According to Van de Walle, as children progress to 3-digit numbers, difficulties may arise when students are represented with numbers that contain zeros. This is especially evident when students write numbers involving no tens. For example, a child may write 7002 for "seven hundred two." Understanding the meaning of numbers in the oral base-ten language is a prerequisite skill for writing numbers.

The arrow cards provided create numbers up to 9,999, however, students in the second grade are only reading and writing numbers within 1,000. Use the higher numbers as an extension for students that are ready to move onto higher numbers.

Students should have had prior experiences and/or instruction with place value with ones and tens. This task will review and expand on this understanding by introducing larger numbers. Students should also have experience using base-ten blocks. While using base ten blocks, use the opportunity to discuss with your students the three forms in which a numeral can be displayed:

using base-ten numerals (both standard form and modeling), number names, and expanded form. Incorporate this throughout the three parts of this task.

ESSENTIAL QUESTIONS

- Why should we understand place value?
- What is the difference between place and value?
- What happens if I add one to the number 9? The number 19? The number 99? The number 109? Etc.
- What does "0" represent in a number?

MATERIALS

- 4 envelopes with flaps folded back, or library pockets, each labeled with a place value (ones, tens, hundreds, and thousands)
- 1 set of place value number cards 0 – 9 with numbers on the top of each strip
- Groupable counters such as unifix cubes or pre-grouped counters such as base ten blocks
- Set of stackable expanded notation arrow cards
- Suggested Book: *A Place for Zero* by Angeline LoPresti (optional)

GROUPING

Whole Group/small group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

Before task is implemented, have four envelopes labeled thousands, hundreds, tens, and ones on the pockets. Prepare four sets of place value number cards 0- 9 with the numbers written on top of each strip. (Make sure number is visible above pocket.) Optional: Read "A Place for Zero."

1. Place a digit in the ones pocket. Have the students discuss what this number represents. (The number can be represented with base ten manipulatives as the number is discussed.)
2. Continue to add one to this digit until you reach 10. Ask: What happens if we add one to the number 9?
3. Repeat this process to discuss what happens after numbers like 19, 99, 109, 199. Etc.
4. With each situation, discuss what the "0" represents. Why is the "0" important? Also demonstrate what each digit is worth when it is placed in various pockets. Discuss that a 4 in the hundreds pocket is worth 400 while a 4 in the tens pocket is worth 40.
5. Create them with the stackable place value cards and write the expanded form of the numbers as you create them **or** discuss what happens if a "0" is used as a digit. (Ex. 207 = 200 + 7.) What is the importance of zero?

Part II

Working in groups of three, students will create the base-ten number, number names, and expanded form. Each student in the groups will be assigned a number form and record their work within their math journals or on a piece of paper.

- The student assigned "base-ten number" will create a three digit number using the 0-9 number cards. This number **must include a 0** and will be used by all three students to fulfill their number form. This student will also create a base ten model of the number.
- The student assigned "number names" will write the number name of the number created by their partner. This student will write out the number in word form. This should be written both as "three hundred fifty-seven" and "three hundreds, five tens, seven ones."
- The third student will be assigned "expanded form". This student will create the number using the arrow cards and write an expanded form addition sentence for this number.

Once every student has completed their job, the jobs rotate and the next student with the "base-ten number" job must move the 0 to a different place value position. Rotate these until each student has performed every job at least once, each time recording their work within their math journals or on a sheet of paper.

FORMATIVE ASSESSMENT QUESTIONS

- What is the importance of zero?
- What is the difference between place and value?
- How can you show me this number in expanded form?
- How do you write this number in word form?
- How do you write this number in standard form?

Corresponding activities can be found in *Teaching Student Centered Mathematics Grades K-3* by Van de Walle. (pg. 140)

- Activity 5.14 - "Say It/Press It"
- Activity 5.15 - "Show It/Press It"

DIFFERENTIATION

Extension

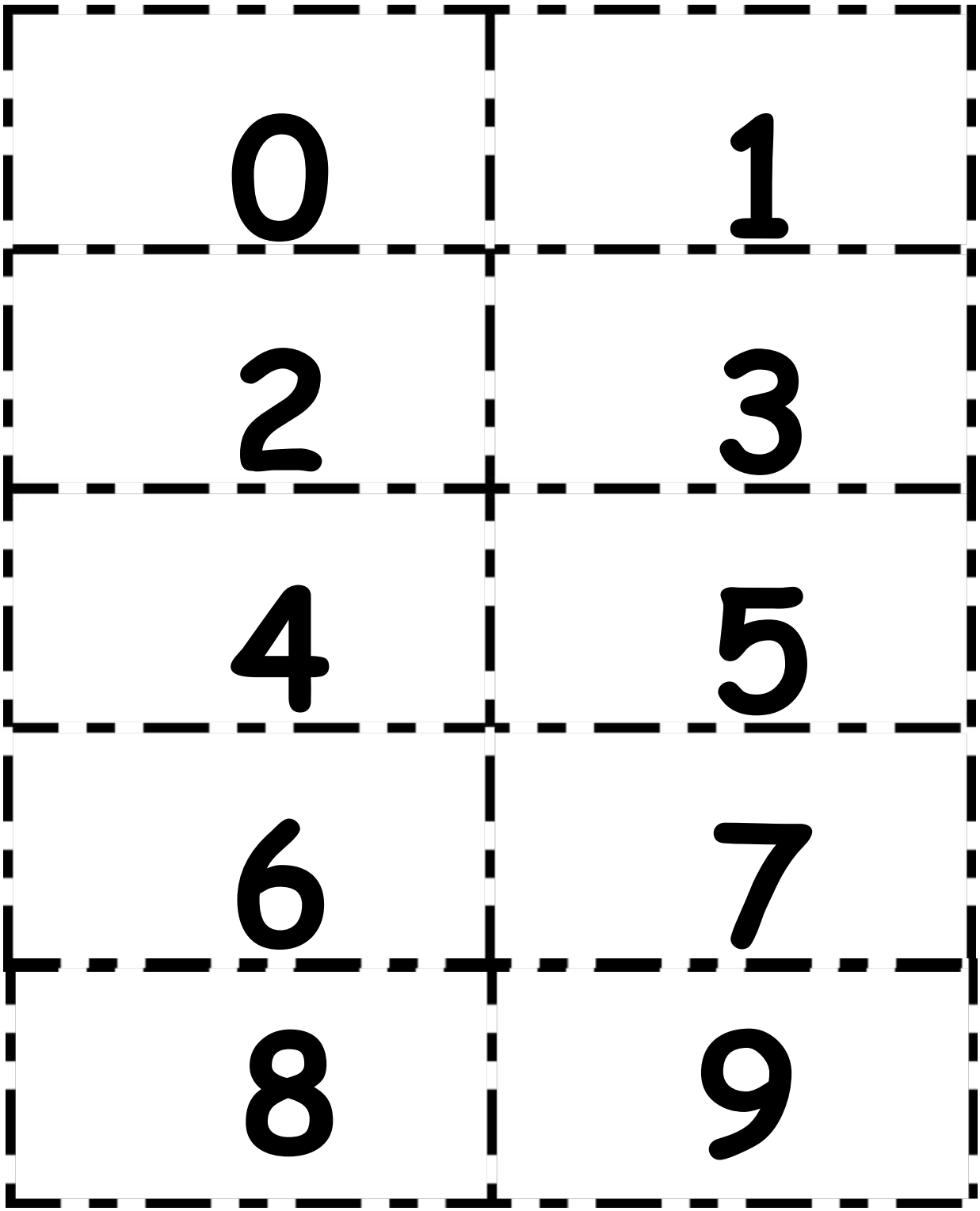
- Display models of ones, tens, and hundreds in mixed arrangements. Encourage students to say the amount shown in base-ten language (Five hundreds five ones), in standard language (Five hundred five), in written language (505), and in expanded notation (500 + 5).

Intervention

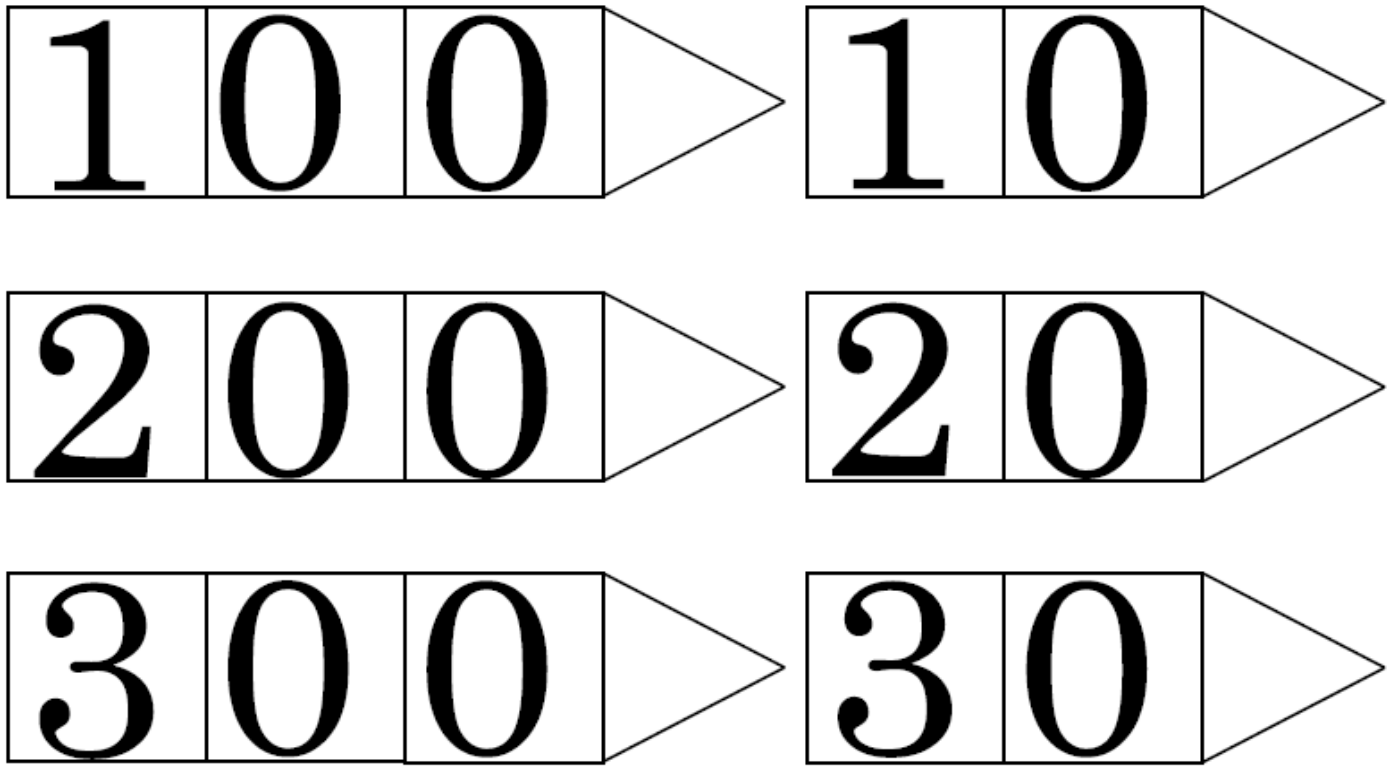
- Say the number name for a number with either two or three digits.

- Allow students to use their own base ten models to show that number and press it on a calculator (or write it). Pay special attention to the teens and the case of zero tens.

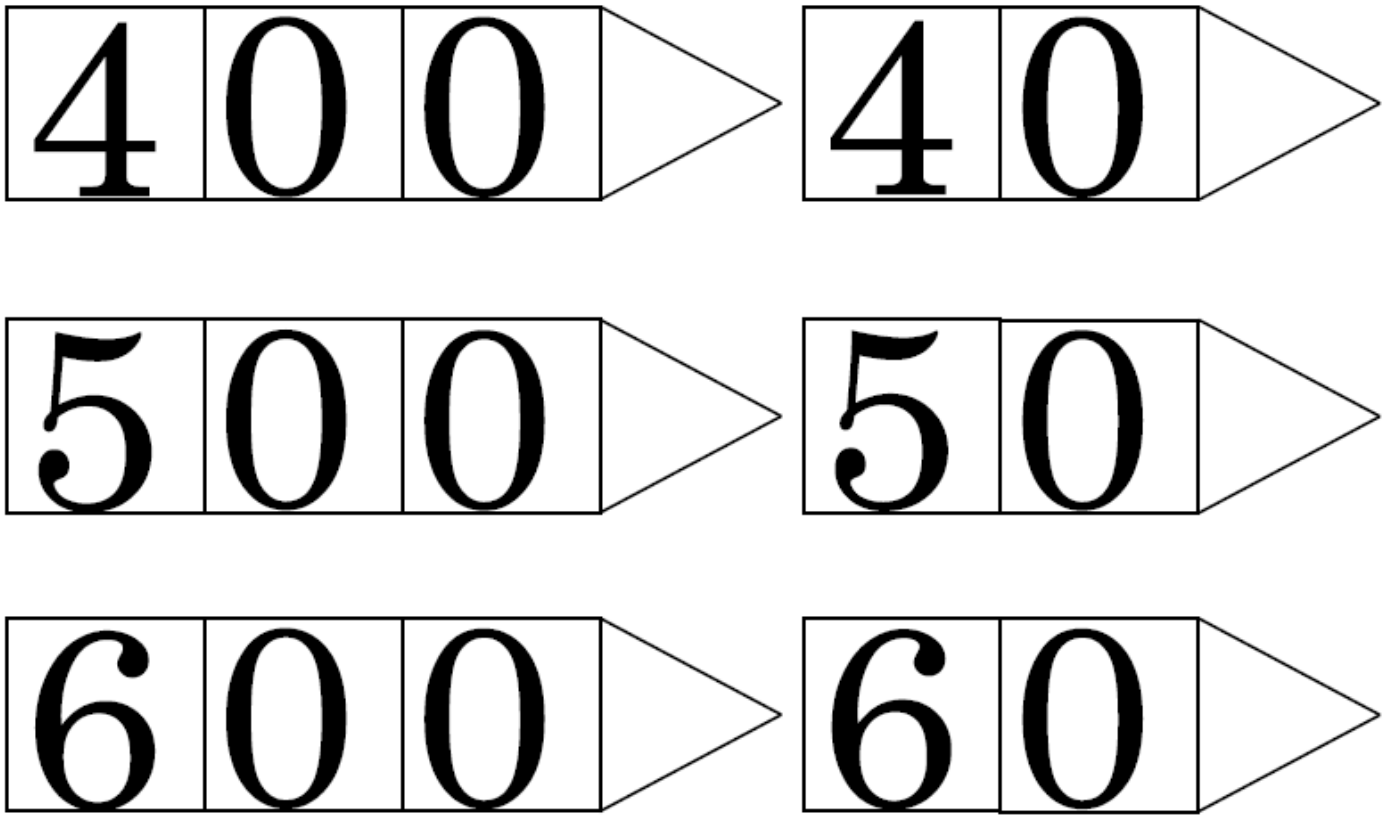
Place Value Number Cards



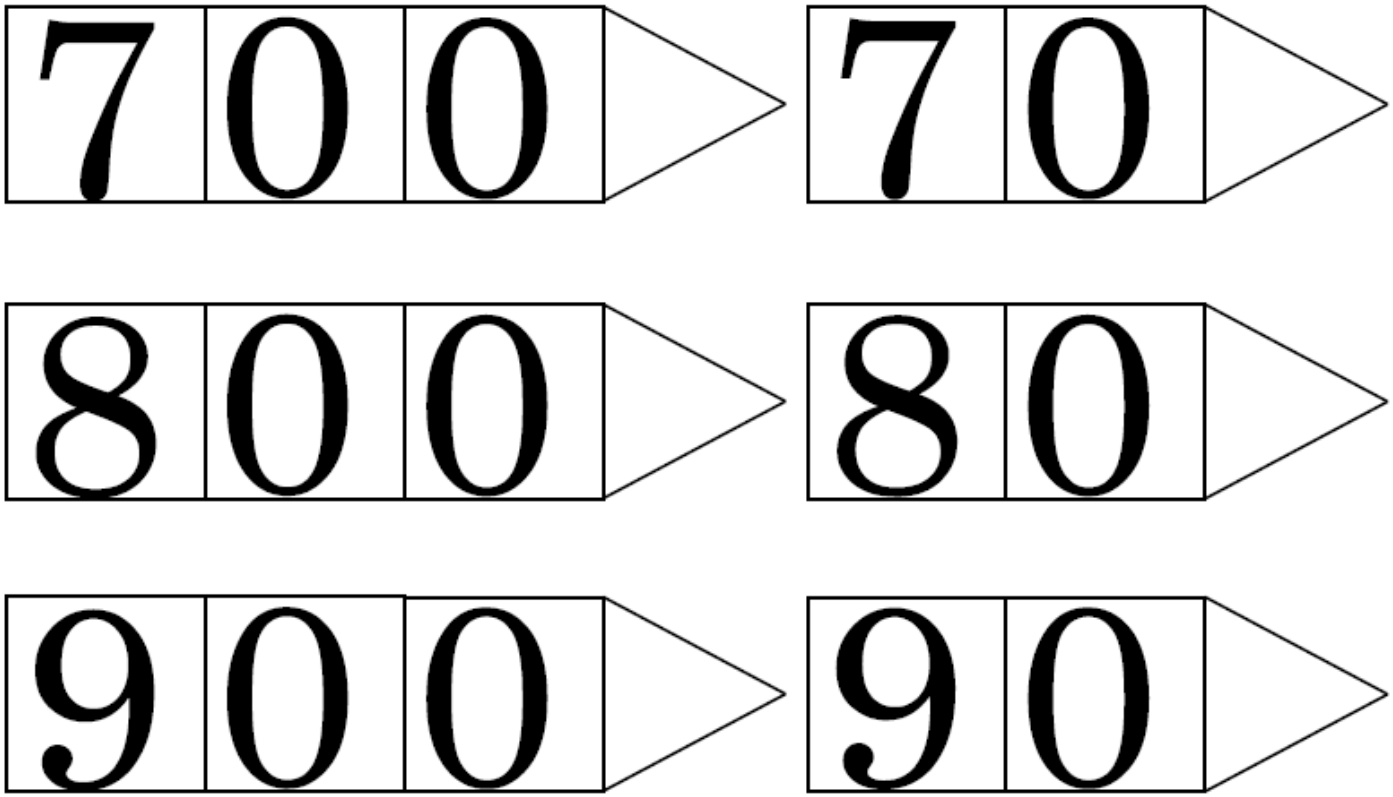
Material Master 4-14 **Arrow Cards** *Book 4, pages 13,26; Book 5, page 11*



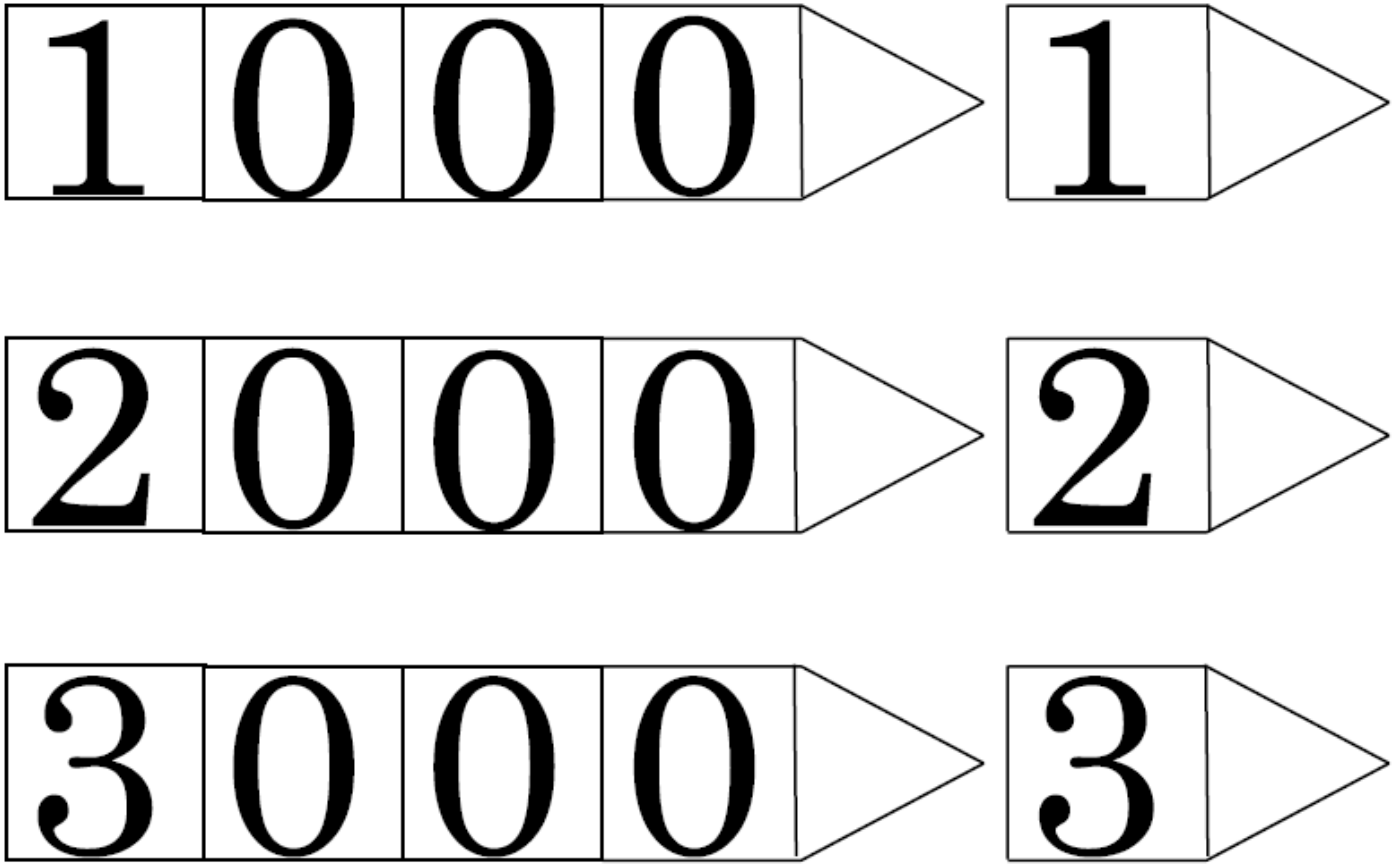
Material Master 4-14 **Arrow Cards** *Book 4, pages 13,26; Book 5, page 11*



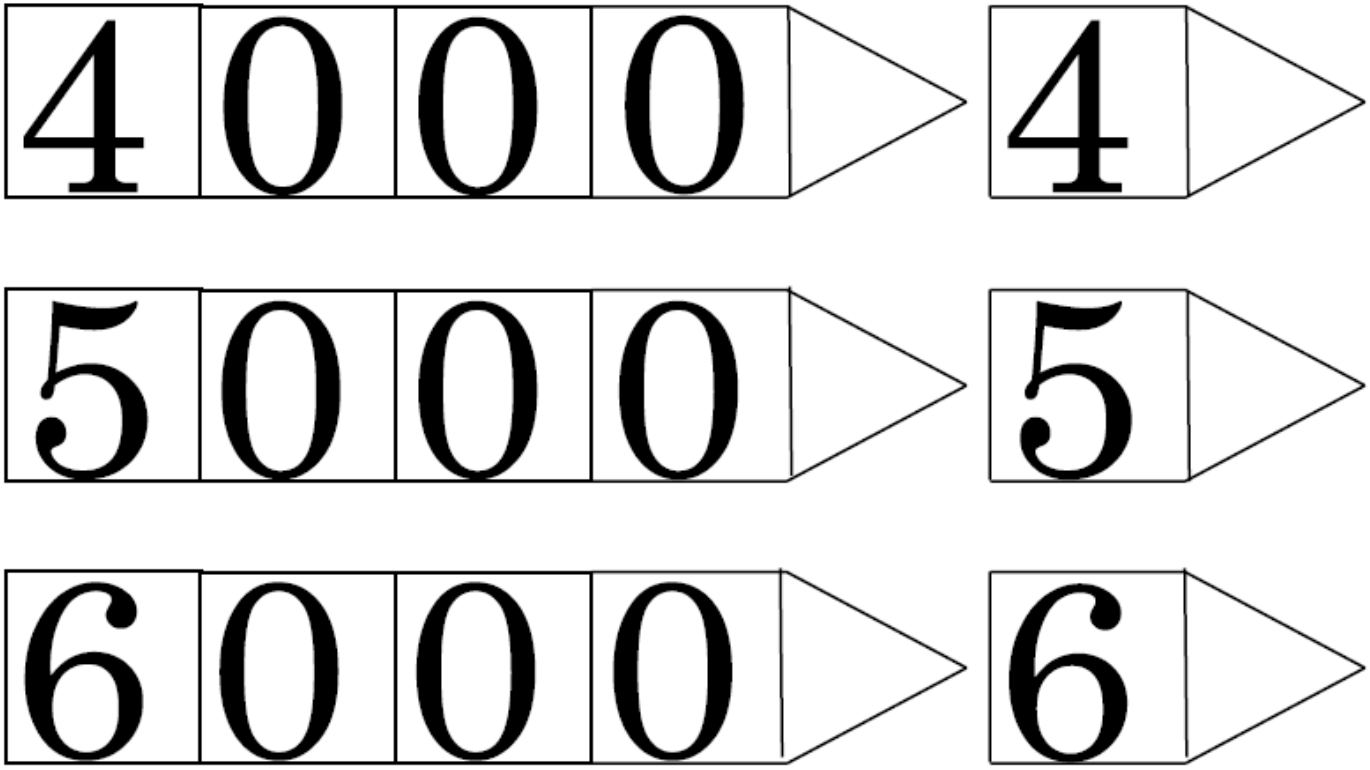
Material Master 4-14 **Arrow Cards** *Book 4, pages 13,26; Book 5, page 11*



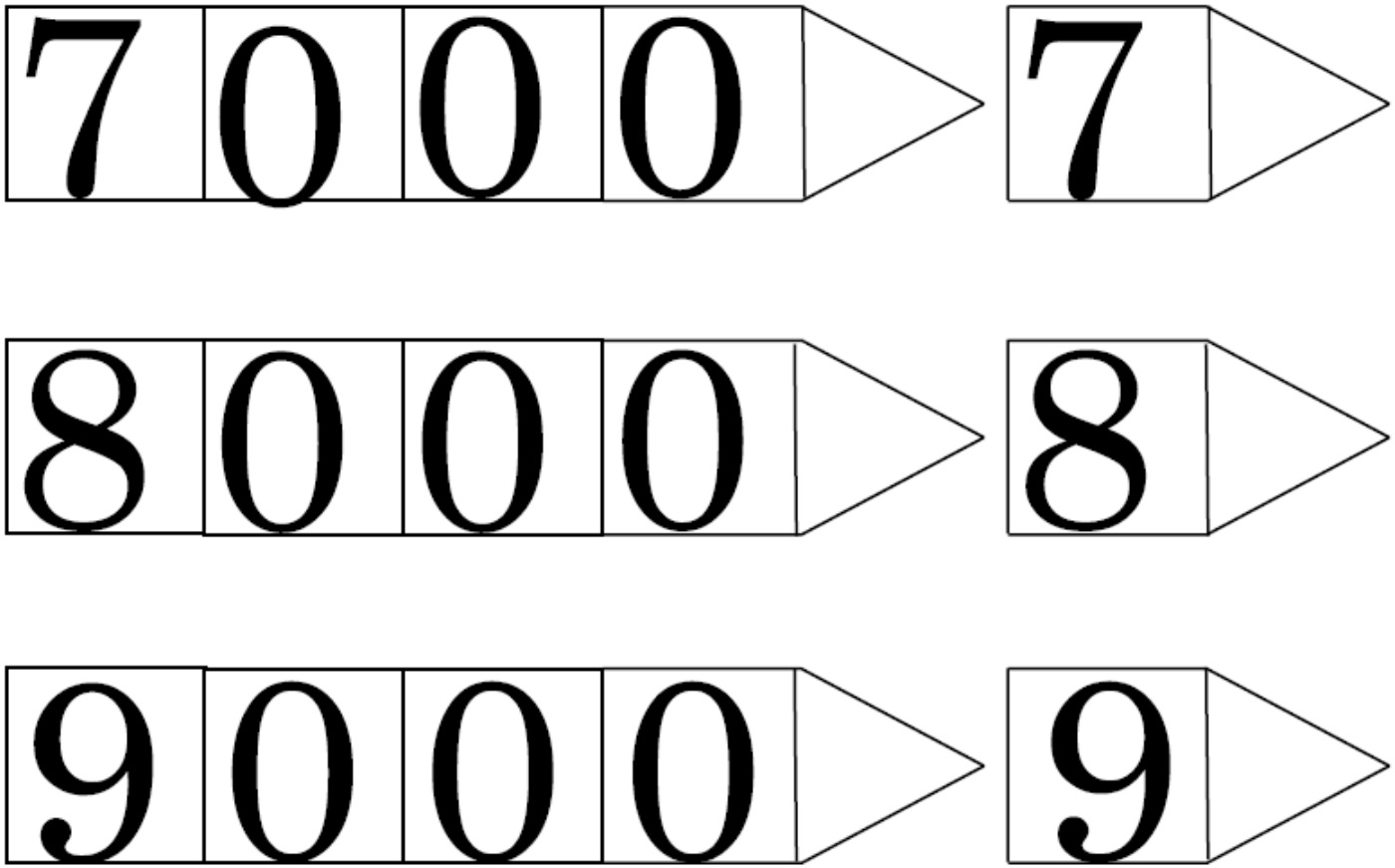
Material Master 4-14 **Arrow Cards** *Book 4, pages 13,26; Book 5, page 11*



Material Master 4-14 **Arrow Cards** *Book 4, pages 13,26; Book 5, page 11*



Material Master 4-14 **Arrow Cards** *Book 4, pages 13,26; Book 5, page 11*



CULMINATING TASK: Carol's Numbers

Approximately 2 Days (Adopted from NYC Department of Education)

STANDARDS FOR MATHEMATICAL CONTENT:

MCC2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a. 100 can be thought of as a bundle of ten tens — called a "hundred."
b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

MCC2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.

MCC2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

MCC2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

By this point in the unit, students have had experience:

- understanding the value placed on the digits within a three-digit number
- recognizing that a hundred is created from ten groups of ten
- using skip counting strategies to skip count by 5s, 10s, and 100s within 1,000
- representing numbers to 1,000 by using numbers, number names, and expanded form
- comparing multi-digit numbers using >, =, <

ESSENTIAL QUESTIONS

- How can place value help us tell which of two or more numbers is greater?
- Why should you understand place value?
- What are different ways we can show or make (represent) a number?
- What is the difference between place and value?

MATERIALS

- Assessment Carol's Number's Part 1
- Assessment Carol's Number's Part 2

GROUPING

Individual

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSON

This culminating task represents the level of depth, rigor, and complexity expected of all second grade students to demonstrate evidence of learning of standards stated above. Students will show their understanding of manipulating digits in each place value position. Students will also be placing numbers on an open number line. Skip counting is then addressed, if your students have not had adequate practice skip counting by any number refer back to the Number Hop task. Finally, students will be comparing numbers and writing numbers in expanded form, refer back to the Base Ten Pictures task and What's my Number for students that need more clarification on these skills.
(Task adopted from New York Department of Education, Common Core Aligned Task with Instructional Supports, http://schools.nyc.gov/NR/rdonlyres/CAC1375E-6DF9-475D-97EE-E94BAB0BEFAB/0/NYCDOEG2MathCarolsNumbers_Final_020112.pdf)

Assessment should be administered on two separate days.

FORMATIVE ASSESSMENT QUESTIONS

- What strategies do you use to compare two numbers?
- What is different about counting forwards and counting backwards? What is similar?

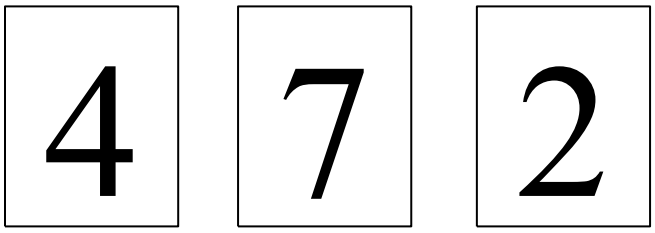
***See sample grading rubric that follows assessment.**

For examples of scored student work, please visit:
http://www.scboces.org/17621092392658243/lib/17621092392658243/2nd_Grade_-_Carols_Numbers.pdf

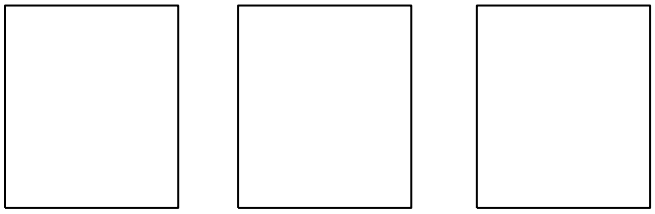
Name _____

CAROL'S NUMBERS - Part I

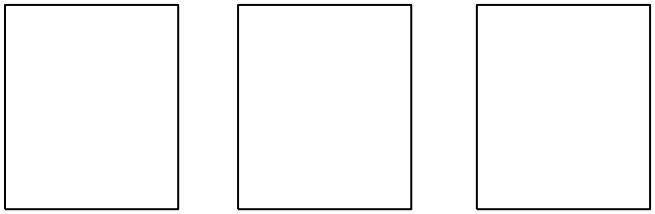
Carol has three number cards.



1. What is the largest three-digit number Carol can make with her cards?



2. What is the smallest three-digit number Carol can make with her cards?



Explain to Carol how she can make the smallest possible number using her three cards.

Carol's teacher drew a number line on the board.

3. About where would 85 be? Place 85 on the number line where it belongs.

4. About where would 21 be? Place 21 on the number line where it belongs.

5. About where would 31 be? Place 31 on the number line where it belongs.

Tell Carol how you knew where to place 31 and why.

Name: _____

Carol's Numbers - Part II

Carol likes to jump rope. When she jumps, she likes to skip count by 5's, 10's and 100's.

If Carol skip-counts by 5's, how many jumps will it take to reach 45? _____

How do you know?_____

Skip count by 10's - What comes next?

32,_____,_____,_____,_____,_____, _____

Skip count backwards by 100's - What comes next?

920,_____,_____,_____,_____,_____, _____

When Carol skip counts by 100, which digit changes and which digits stay the same? Explain your answer.

Carol also likes to draw with sidewalk chalk.

She wrote the following numbers. Use the symbols <, >, and = to compare the numbers that she wrote.

345 ◯ **342**

99 ◯ **102**

580 ◯ **508**

Help Carol write in expanded notation, write the following numbers in expanded form. (ex. 496 = 400 + 90 + 6)

672 = _____

999 = _____

205 = _____

Write 500 + 5 in standard form. _____

How would you write 205 with words?

What is the value of 7 in 672? _____

What is the value of 6 in 672? _____

What is the difference between place and value? _____

_____

Grade 2 Math: Carol's Numbers Rubric

Performance Level Descriptions

Performance is reported at four levels: 1 through 4, with 4 as the highest.

Level 1: Demonstrates Minimal Success

The student's response shows few of the elements of performance that the tasks demand as defined by theCCGPS. The work shows a minimal attempt on the problem and student struggles to make a coherent attack on the problem. Communication is limited and shows minimal reasoning. The student's response rarely uses definitions in their explanations. The student struggles to recognize patterns or the structure of the problem situation.

Level 2: Performance Below Standard

The student's response shows some of the elements of performance that the tasks demand and some signs of a coherent attack on the core of some of the problems as defined by the CCGPS. However, the shortcomings are substantial and the evidence suggests that the student would not be able to produce high-quality solutions without significant further instruction. The student might ignore or fail to address some of the constraints of the problem. The student may occasionally make sense of quantities in relationships in the problem, but their use of quantity is limited or not fully developed. The student response may not state assumptions, definitions, and previously established results. While the student makes an attack on the problem, it is incomplete. The student may recognize some patterns or structures, but has trouble generalizing or using them to solve the problem.

Level 3: Performance at Standard

For most of the task, the student's response shows the main elements of performance that the tasks demand as defined by the CCGPS and is organized as a coherent attack on the core of the problem. There are errors or omissions, some of which may be important, but of a kind that the student could fix, with more time for checking and revision and some limited help. The student explains the problem and identifies constraints. The student makes sense of quantities and their relationships in the problem situations. S/he often uses abstractions to represent a problem symbolically or with other mathematical representations. The student response may use assumptions, definitions, and previously established results in constructing arguments. S/he may make conjectures and build a logical progression of statements to explore the truth of their conjectures. The student might discern patterns or structures and make connections between representations.

Level 4: Achieves Standards at a High Level

The student's response meets the demands of nearly all of the tasks as defined by the CCGPS, with few errors. With some more time for checking and revision, excellent solutions would seem likely. The student response shows understanding and use of stated assumptions, definitions and previously established results in constructing arguments. The student is able to make conjectures and build a logical progression of statements to explore the truth of their conjecture. The student response routinely interprets their mathematical results in the context of the situation and reflects on whether the results make sense. The communication is precise, using definitions clearly. The student looks closely to discern a pattern or structure. The body of work looks at the overall situation of the problem and process, while attending to the details.

CONSTRUCTING TASK: Different Paths, Same Destination

Approximately 2-3 Days

STANDARDS FOR MATHEMATICAL CONTENT

MCC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

MCC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

STANDARDS FOR MATHMATICAL PRACTICE

Practice Standards:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson.**

*** BACKGROUND KNOWLEDGE

This game will address many different standards and involve listening and problem solving strategies.

Students are usually proficient when they focus on a strategy relevant to particular facts. When these facts are mixed with others, students may revert to counting as a strategy and ignore the efficient strategies they have previously learned. Providing a list (perhaps on chart paper) of facts that includes strategies the students use for solving the facts can be a helpful reference for students. Make sure before posting any strategies that students explain why they chose that particular strategy for that particular fact and have shown show (explain) how to use it.

ESSENTIAL QUESTIONS

- How can different combinations of numbers and operations be used to represent the same quantity?
- How can we use skip counting to help us solve problems?
- How does using ten as a benchmark number help us add or subtract?

MATERIALS

- 99 chart per student
- Class 99 Chart
- Paper/math journals
- Transparent counters or highlighters

GROUPING

Large Group, Partners

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I
Gather students in the meeting area. Display the class the 99 chart. Give each student a 99 chart. Select a starting number. Have students place a transparent counter on it or highlight it. Give students directions one at a time using the terms add 10, subtract 10, add 1, subtract 1, 10 more, 10 less, 1 more, and 1 less. After each clue, give students the opportunity to count up using their chart, if they need to and then have students move their transparent counter to the new number. Model this with the class, using only 3 or 4 directions. When the last direction has been given, ask students what number their transparent counter is on.

Sample direction set:

- Place your counter on 16.
- Add 10. (students should move their counter to 26)
- Subtract 1. (students should move their counter to 25)
- Move ahead 10 more. (students should move their counter to 35)
- What number is the counter covering? (35)

Repeat this activity several times as a class making sure to vary directions to include subtracting, moving back 1 or 10, 10 more, 10 less etc. Once students are comfortable with following the given directions, proceed to part II of the task.

Part II
Tell the students the game directions have now changed. Explain to the students that you need their help to create the directions to get to the number 45 from the number 14. Use the large class 99 chart to model the directions offered by students. Ask students to suggest directions. Possible scenario may include "Add 10 to 14." Now where are we? (24) "Add another group of ten." Where are we now? (34) Add 10 once more. (44) We are almost there, what should I add now? (1 more) "Where did we end?" (45)

Students directions will vary, ask students to share. Encourage conversations about the difference in addition strategies presented. It is important to discuss how adding and subtracting 10 is more efficient. This also allows students to practice using 10 as a **benchmark number**. Helping

students to see that adding 12 done faster by adding 10 and then 2 more. Working with groups of 10 in this task gives students more practice with understanding benchmarks of 10.

Continue with several classroom examples until students appear comfortable with creating directions. Include examples with numbers that have a larger starting point than ending point, so that subtraction is involved.

Allow students to work with a partner to create their own set of directions for a specific number. The teacher will provide the ending point, but will allow students to select their own starting point. For instance, 27 may be the end point the teacher designates. One set of partners may choose to start at 48 and another at 7; however they will all end at 27. Allow time for several partners to share their different pathways to 27. Using their 99 chart and their math journals, have students record their directions to 27. Make comments about various ways to get to the number 27, encouraging students to use benchmark numbers to navigate the numbers.

Part III

Allow students to select any number they choose as their final destination. Then instruct the students to create 3 different paths to the same destination (same number). Also instruct students to include subtraction in at least one of the paths.

FORMATIVE ASSESSMENT QUESTIONS

- What happens to a number when we add ten to it? When we subtract ten from it?
- Are you counting by ones when you add on a ten? Why?
- What does it mean to "skip count" by ten? Why would we want to do this?
- How do you think adding or subtracting by twenty would relate to adding and subtracting by ten?

DIFFERENTIATION

Extension

- Play the "I Have, Who Has?" games. Examples and direction cards are available at http://math.about.com/od/mathlessonplans/ss/ihave.htm These games can be printed on cardstock and laminated for extended use.

Intervention

- Teacher can select numbers which would allow students to focus on using directions, "I am 1 or 10 less than_____, I am 1 or 10 more than____. What is the number?" This could be done with a sentence frame for students.

Name_____ Date_____

99 Chart

0	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

CONSTRUCTING TASK: Our Number Riddles

Approximately 3-4 Days

STANDARDS FOR MATHEMATICAL CONTENT

MCC.2.OA.1 Use **addition** and **subtraction** within 100 to solve one- and two-step word problems involving situations of **adding to**, **taking from, putting together, taking apart,** and **comparing,** with **unknowns** in all positions, e.g., by using drawings and **equations** with a symbol for the **unknown** number to represent the problem.

MCC.2.OA.2 Fluently **add** and **subtract** within 20 using mental strategies. By end of Grade 2, know from memory all **sums** of two one-digit numbers.

MCC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

STANDARDS FOR MATHMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

Students may revert to counting one by one as a strategy and ignore the efficient strategies they have learned when they are writing and completing/figuring out riddles. Providing a list/chart of facts and strategies your students have come up with for solving different facts is a helpful resource for them to refer to while creating their riddles. It is important in this task to make sure students are explaining why they are selecting the clues for their riddle.

These riddles will address many different standards and involve listening and problem solving strategies. This task builds on work in previous tasks – Different Paths, Same Destination and Number Destinations. Please make sure to review these tasks if you have not already completed them with your students.

When assessing student work, keep in mind that the focus should be on the clues that correctly describe the number. Arrangement of the clues from general to specific is ideal but not expected.

This arrangement of clues is ideal, "I am odd. I am a 2-digit number. The sum of my digits is 10. I am one less than 74." However, any arrangement should be accepted as mastery.

ESSENTIAL QUESTIONS

- How can different combinations of numbers and operations be used to represent the same quantity?
- How can we use skip counting to help us solve problems?
- How does using ten as a benchmark number help us add or subtract?

MATERIALS

- 99 chart per partner set for reference
- Sticky notes
- "Number Riddles" student task sheet
- "Make Your Own Number Riddles" student task sheet

GROUPING

Large Group, Partners

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I
Provide a copy of the 99 chart for each student. The teacher thinks of a two-digit number less than 20. (Example – 18). Do not tell the class what it is. Instead, write it on a Post-it note that cannot be seen by the students. Then have students record their guess of what number is written on the post it note. Have students place their sticky note on their palm and come stand in a circle in the meeting area. Begin saying clues about your number, one at a time. "My number is an even 2 digit number." Students who have an even number on their sticky note will raise their hands. Anyone without their hand raised sits down in the circle. The teacher should verify student responses and ask questions if needed. The students with even numbers should remain standing. Continue with the next clue, such as "My number is a 2 digit number." Students who have a two digit number should remain standing and raise their hand. The teacher then verifies their number and others will sit down. The teacher then gives an additional clue, "My number is ten more than 8." If needed, teacher continues with another clue, "My number has an 8 in the ones place." Students who have 8 in the ones place will remain standing and teacher will verify that a student has chosen 18 as their number.

Continue with various examples to develop student's fluency with this game. As students become more comfortable with the game, provide more challenging clues.

Some other examples of number riddles are:

- My number is even/odd.

- My number is a_____digit number.
- My number is 10 less than_____.
- My number is 10 more than_____.
- My number is 1 less than_____.
- My number is 1 more than_____.
- My number is 5 more than_____.
- My number is 5 less than_____.
- My number is 2 less than_____.
- My number is 2 more than_____.

More challenging examples of clues are:

- If you subtract 3 from my number, you get_____.
- If you start at 0 and count by 5's, you will say my number.
- My number has 2 digits, one is even and one is odd.
- My number is the sum of 10 and 12.
- If you add the digits in my number you get_____.
- If you subtract the digits in my number you get_____.
- My number is 10 more than 40 and ten less than 60.
- I am the value of 6 nickels and 3 pennies.

Part II

Students work with a partner to complete the "Number Riddles" task sheet.

After ample time to complete the task sheet, gather students together and share answers from sheet. Then allow partners to share the riddle they created as part of the task sheet.

Part III

Students work with a partner to complete "Make Your Own Number Riddles" task sheet.

After ample time to complete the task sheet, each set of partners will team up with another set of partners and take turns solving each other's riddle.

Part IV

Special Comment- This part of the task is for individual practice

Ask the children to work individually to choose a number and write at least 3 clues about the number they chose. The students should write their secret number on the back of their work and the clues on the front.

Once the students have written their clues, select a few students to share his/her clues and see if the class can determine his/her number. The child that correctly determines the number gets to share their clues next. Listen for the use of benchmark numbers such as 10 as students are reading their clues.

FORMATIVE ASSESSMENT QUESTIONS

- How did you decide what clues to write in your riddle?
- Where did you include skip counting in your clues?
- Is there a clue that talked about the money value of your number? If so how did you figure out the amount? How did you count it?
- Did you include a clue about your number being even or odd?
- How do you know if a number is even or odd?

DIFFERENTIATION

Extension

- Challenge students to create numbers riddles for numbers larger than 100.
- Using the number riddle they have written for numbers larger than 100, have students write successive clues so the next clue is built on from the first clue. They will have to hold on to first clue when next one is added.

Intervention

- Limit the numbers students work with to less than 20.
- Provide 99 chart, manipulatives and numberline for students.
- Students complete Number Riddles Version #2 task sheet.

Name_____

Number Riddles

	Clues	Secret Number
1	I am 10 more than 60? What number am I?	
2	I am 1 less than 32. What number am I?	
3	I am the sum of 3 groups of 10. What number am I?	
4	I am an even number. If you have 5 groups of me, you have 10. What number am I?	
5	I am the value of 5 dimes. What number am I?	
6	I am 10 more than 80 and 10 less than 100. What number am I?	
7	I am an odd number. I have 7 tens and 5 ones. You can also discover me by having three quarters. What number am I?	
8	I am the sum of 4 and 5. What number am I?	
9	I am greater than 20. I am less than 22. I am an odd number. What number am I?	
10	Create your own number riddle with your partner.	

Name_____

Make Your Own Number Riddles

Clues	Secret number
I am 10 more than_____? What number am I?	
I am one less than_____. What number am I?	
I am the sum of_____groups of 10. What number am I?	
I am a/an_____number. If you have_____groups of me, you have_____. What number am I?	
I have_____tens, and_____ones. I am a/an _____ number. What number am I?	
I am the value of_____dimes. What number am I?	
I am 10 more than_____and 10 less than_____. What number am I?	
I am greater than_____. I am less than_____. I am a/an_____number.	

CONSTRUCTING TASK: Story Problems

Approximately 1 Day

STANDARDS FOR MATHEMATICAL CONTENT

MCC.2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

MCC.2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

MCC.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

MCC.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

STANDARDS FOR MATHMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson. *****

BACKGROUND KNOWLEDGE

Students should be able to discuss how to solve the word problems. They should also be able to think about what is happening in a story and picture the story in their minds including the objects and actions in the story. The following questions would be used to guide their thinking prior to this task:

- What happened first? What happened next?
- What does each amount in the story represent?
- How could we draw a picture to show what is going on in the story?

They should solve the problems using pictures, words, and numbers. They should act out the story to make sure pictures, words, and numbers that were used make sense.

ESSENTIAL QUESTIONS

- How do we solve problems in different ways?
- How can we show/represent problems in different ways?
- How can different combinations of numbers and operations be used to represent the same quantity?
- How is addition and subtraction alike and how are they different?
- How does using ten as a benchmark number help us add and subtract?

MATERIALS

- A large selection of manipulatives
- Paper
- "Story Problems: Part 1" student task sheet (1 per partner set)

GROUPING

Partner, Individual

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Comment
Students are completing each of the problems in this task individually. In order to be successful in the task, students should have had multiple experiences solving problems involving addition and subtraction. This standard calls for students to add and subtract numbers within 100 in the context of one and two step word problems. Students should have ample experiences working on various types of problems that have unknowns in all positions using drawings, objects and equations. Students can use place value blocks or number charts, or create drawings of place value blocks or number lines to support their work.

Part I

Have a brief discussion with the class where you do a few example problems such as:

Gumdrops cost 2 cents each. I bought 4 gumdrops. How much did I spend?

Jake had 41 stickers in his book, 14 in his desk, and 26 under his bed. Sara has 50 stickers total. Who has more stickers? How many more do they have?

Present "Story Problems" task sheet and allow students to complete individually. Students can solve the problems any way they choose using any manipulatives and tools they need. Remind

students to record their solutions with pictures, words, **and** numbers. Students should be prepared to share their solutions with the class.

FORMATIVE ASSESSMENT QUESTIONS

- What strategies did you use to solve the problems?
- Did you try to solve the problem more than one way?
- How did you determine which way, (equation, picture, words) to represent the number?
- Did you use skip counting to help you solve any of the problems? If so which ones and how?
- How do you determine if an amount can be shared equally? Why should it be shared equally?

DIFFERENTIATION

Extension

- Have students show two strategies to solve each problem

Intervention

- Provide a 99 chart or number line to help with skip-counting.

Name _____

Story Problems

1. Mrs. Evans has 3 dimes in her purse. Then she found 1 quarter and 2 pennies in her coat pocket. Does she have more in her purse or coat pocket? How do you know? Show your work.

2. Donald lives on a farm with 10 horses, 43 cows, 4 dogs and 1 cat. How many animals live on Donald's farm? Show your work.

3. Create a story problem of your own, using items you have in your classroom. Solve your story problem using pictures and words.

Scaffolding Task: What's in the Bag?

Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.OA.3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*****Mathematical Practices 1 and 6 should be evident in EVERY lesson*****

BACKGROUND KNOWLEDGE

(Information adapted from North Carolina DPI Instructional Support Tools)

Students should have had prior experiences and/or instruction with addition. They should begin to relate multiplication as repeated addition. Please see Units 2 and 4 for addition support.
If you have not already done tasks where students have split a group of 20 (or fewer) items into two equal groups then this needs to be done before attempting this task. Provide several experiences where students are able to investigate all the numbers 0-20 to see which ones can be split into two equal groups. This is a good opportunity to review the concepts of "not bumpy" (even) and "bumpy" (odd) numbers and now build on the understanding of how this connects to repeated addition. Having students write addition equations for the even numbers they are able to split into two equal groups is a good way to introduce the concept of repeated addition. Students should recognize that all even numbers can be expressed using two of the same addends (ex. 2+2=4, 3+3=6, again focusing on equal addends sets the stage for repeated addition, leading into multiplication.)

This task will focus on the use of strategies; however, it is important to note the focus is on conversations as students engage in experiences with repeated addition. Initially, students apply base-ten concepts and use direct modeling with physical objects or drawings to find different ways to solve problems. They move to inventing strategies that do not involve physical materials or counting by ones to solve problems. Student-invented strategies likely will be based on place-value concepts, the commutative and associative properties, and the relationship between addition and subtraction. These strategies should be done mentally or with a written record for support. It is vital that student-invented strategies be shared, explored, recorded and tried by

others. Recording the expressions and equations in the strategies horizontally encourages students to think about the numbers and the quantities they represent instead of the digits. Not every student will invent strategies, but all students can and will try strategies they have seen that make sense to them. Different students will prefer different strategies.

ESSENTIAL QUESTIONS

- How do I determine if a number is odd or even?
- What strategies can I use to tell if a number is odd or even?
- What is odd? What is even?

MATERIALS

- Various manipulatives (counters, base-ten blocks, unifix cubes, beans in bags labeled A – J, 1 set per partner)
- Paper, crayons, pencils

GROUPING

Whole Group, Small Group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Special Note: This task can be repeated several times in small groups or in a center.

Part I
Gather students together in class meeting area. Display the questions, "What is even? What is odd?" The teacher will need to guide discussion into mathematical talk and not story sharing. Be prepared to guide students thinking into conversations about something such as sharing carrot snacks between two friends.

Part II
Have two students come up and practice sharing the cubes the teacher has placed in front of them. For example, the teacher would place 6 cubes in front of 2 students and ask them if they can share the total evenly (fairly). As students are sharing, record each shared quantity on a chart labeled "We can share equally between 2 groups/ We cannot share equally between 2 groups." After several student pairs share the cubes (different quantities each time), lead class in discussion about information on the chart. The conversation should be directed to build the understanding that groups shared evenly are called even numbers and ones which do not share evenly are called odd numbers. The chart can be relabeled as EVEN and ODD.

Part III
Students work in partners with of 10 different bags of items. These should be made in advance and could be shared between various partners. Each bag should be labeled A –J. Once students have determined which groups are odd and which are even, they will work together and create bar graph the number of odd and even draws they had with their partner. Students should be prepared to share their graph with others.

Part IV
Students individually will create their own number line from 0-20. The teacher calls out numbers
and students first label the numbers as they teacher calls them out and then students labels as odd or even using red and blue crayons. Students will share with a table partner to check their labeling.

FORMATIVE ASSESSMENT QUESTIONS

- What strategies are you using to determine how many_____are in your group?
- Can you show that answer in a different way?
- How can you demonstrate this with a picture?
- How could you write this in a number sentence?
- Do you have the same number of any of your objects? Why do you think this is the case?
- What information did you use to decide if a number of odd or even?

DIFFERENTIATION

Extension

- If students complete the task, allow them to determine whether or not they can come up with a rule for any number that would tell whether or not the number is odd or even. Have students record their rule on an anchor chart and present their even/odd rule to the class.

Intervention

- Some students will need to use manipulatives to help to determine or represent the number of objects in each group.
- Give the student a 0-20 chart to help them skip count to determine the number of objects in each group.