Georgia Department of Education

Common Core Georgia Performance Standards
First Grade

Common Core Georgia Performance Standards: Curriculum Map						
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Creating Routines Using Data	**Developing Base Ten Number Sense**	**Understanding Shapes and Fractions**	**Sorting, Comparing and Ordering**	**Operations and Algebraic Thinking**	**Understanding Place Value**	**Show What We Know**
MCC1.NBT.1 MCC1.MD.4	MCC1.NBT.1 MCC1.MD.4	MCC1.G.1 MCC1.G.2 MCC1.G.3 MCC1.MD.4	MCC1.MD.1 MCC1.MD.2 MCC1.MD.3 MCC1.MD.4	MCC1.OA.1 MCC1.OA.2 MCC1.OA.3 MCC1.OA.4 MCC1.OA.5 MCC1.OA.6 MCC1.OA.7 MCC1.OA.8 MCC1.MD.4	MCC1.NBT.2 MCC1.NBT.3 MCC1.NBT.4 MCC1.NBT.5 MCC1.NBT.6 MCC1.MD.4	**ALL**
These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units. All units will include the Mathematical Practices and indicate skills to maintain.						

NOTE: Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics.

Grades K-2 Key: CC = Counting and Cardinality, G= Geometry, MD=Measurement and Data, NBT= Number and Operations in Base Ten, OA = Operations and Algebraic Thinking.

First Grade Math
Van de Walle/Frameworks/Internet Resources Crosswalk

CCGPS Unit	Standards	VDW Activities/Pages	K-5 Math Resource	Other Resources
Unit 1 **Creating Routines** **Using Data**	NBT.1 MD.4	2.29 (p. 57) 2.30 (p. 58) Expanded Lesson (p. 329)	Literature Link Rooster's Off to See the World One Duck Stuck 1 Hunter The Very Hungry Caterpillar Two of Everything Domino Addition -recording sheet	

CCGPS Frameworks

Mathematics

First Grade
Creating Routines Using Data

Dr. John D. Barge, State School Superintendent
"Making Education Work for All Georgians"

Unit 1: Creating Routines Using Data

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<u>OVERVIEW</u>

In this unit, students will:
- establish daily math routines to be carried out throughout the year, such as lunch count, daily questions, calendar activities, working with a 0-99 chart, etc
- rote count forward to 120 by Counting On from any number less than 120
- represent the number of a quantity using numerals
- locate 0-120 on a number line
- use the strategies of counting on and counting back to understand number relationships
- explore with the 99 chart to see patterns between numbers, such as all of the numbers in a column on the hundreds chart have the same digit in the ones place, and all of the numbers in a row have the same digit in the tens place
- read, write and represent a number of objects with a written numeral (number form or standard form)
- build an understanding of how the numbers in the counting sequence are related—each number is one more (or one less) than the number before (or after)
- work with categorical data by organizing, representing and interpreting data using charts and tables
- pose questions with 3 possible responses and then work with the data that they collect

All mathematical tasks and activities should be meaningful and interesting to students. Posing relevant questions, collecting data related to those questions, and analyzing the data creates a real world connection to counting. The meaning students attach to counting is the key conceptual idea on which all other number concepts are developed. Students begin thinking of counting as a string of words, but then they make a gradual transition to using counting as a tool for describing their world. They must construct the idea of counting using manipulatives and have opportunities to see numbers visually (dot cards, tens frames, number lines, hundreds charts, arithmetic rack- ex: small frame abacus and physical groups of tens and ones). To count successfully, students must remember the rote counting sequence, assign one counting number to each object counted, and at the same time have a strategy for keeping track of what has already been counted and what still needs to be counted. Only the counting sequence is a rote procedure. Most students can count forward in sequence. Counting on and counting back are difficult skills for many students. Students will develop successful and meaningful counting strategies as they practice counting and as they listen to and watch others count. They should begin using strategies of skip counting by 2's, 5's, and 10's.

As students in first grade begin to count larger amounts, they should group concrete materials into tens and ones to keep track of what they have counted. This is an introduction to the concept of place value. Students must learn that digits have different values depending on their position in numbers.

Although the units in this instructional framework emphasize key standards and big ideas at specific times of the year, routine topics such as counting, time, money, positional words, patterns, and tallying should be addressed on an ongoing basis through the use of calendars, centers, and games.

This first unit should establish these routines, allowing students to gradually understand the concept of number and time.

Students in first grade are only asked to construct tables and charts. Picture graphs and bar graphs are not introduced until 2nd grade. Although students are not expected to count money in first grade, they should use money as a manipulative for creating and identifying number patterns and relationships, skip counting and any additional counting activities.

STANDARDS FOR MATHEMATICAL CONTENT

Extend the counting sequence.
MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Represent and interpret data.
MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

STANDARDS FOR MATHEMATICAL PRACTICE

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

Students are expected to:

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

ENDURING UNDERSTANDINGS

- Count on starting at any number less 100 and continue to 120.
- Read, write and represent a number of objects with a written numeral.
- Quantities can be compared using matching and words.
- Recognize and understand patterns on a 99 chart. (tens and ones)
- A number line can represent the order of numbers.
- Problems can be solved in different ways.
- Important information can be found in representations of data such as tallies, tables, and charts.
- Tables and charts can help make solving problems easier.
- Questions can be solved by collecting and interpreting data.

Coins are not explicitly taught in first grade, but the connections to number patterns and relationships should be made. Coins can be used as a manipulative for patterns, skip counting and counting.

ESSENTIAL QUESTIONS

- Why do we need to be able to count objects?
- How can we use counting to compare objects in a set?
- How do we know if a set has more or less?
- How can tally marks represent a set?
- How can I use a tens frame to represent a number?
- How can tally marks help us organize our counting?
- How can we use tally marks to help represent data in a table or chart?
- How do tables and charts help us organize our thinking?
- What information do we get from a table or chart?
- How can we use information from questions to create a table or chart?
- How can we represent a number using tens and ones?
- How many ones do we use to create a ten?
- What happens when we collect ten ones?
- What does a number represent?
- What can a number line show us?
- How can use a number line?
- How can I use a number line to help me count? Or count on?
- How can we collect data?
- How can number benchmarks build our understanding of numbers?
- How can I use patterns to help me skip count?
- How can a number line help me count forwards and backwards?
- How can a number line help me skip count?
- How can I use a number line to help count on from any number?
- How can large quantities be counted efficiently?

- How can words be used to illustrate the comparison of numbers?
- How can benchmark numbers build our understanding of numbers?
- How can benchmark numbers help us compare quantities?
- How can I use a 99 chart to help me count?
- What patterns do you see on the 99 chart?
- How are a number line and 99 chart alike? Different?
- How can we count from a variety of starting points?
- What do less than, greater than, and equal to mean?
- What patterns do I hear when I am counting aloud?

CONCEPTS/SKILLS TO MAINTAIN

- Counting to 100 by ones and tens
- Count forward beginning from a number other than one
- Represent a number of objects with a numeral
- Writing numbers through 20
- Comparing sets of objects (equal to, more than, or less than)
- One to one correspondence
- Equivalence
- Using five or ten as a benchmark
- Compose and decompose numbers 11-19
- 11-19 are composed of a ten and some ones

SELECTED TERMS AND SYMBOLS

The following terms and symbols are often misunderstood. These concepts are not an inclusive list and should not be taught in isolation. However, due to evidence of frequent difficulty and misunderstanding associated with these concepts, instructors should pay particular attention to them and how their students are able to explain and apply them.

The definitions below are for **teacher reference only** and are not to be memorized by the students. Teachers should present these concepts to students with models and real life examples. Students should understand the concepts involved and be able to recognize and/or demonstrate them with words, models, pictures, or numbers.

- **benchmark**
- **chart**
- **compare**
- **counting on**
- **data**
- **equal to**
- **less than**

- **more than**
- **number line**
- **same**
- **table**
- **tally mark**
- **ten frame**

STRATEGIES FOR TEACHING AND LEARNING

Extend the counting sequence.

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Instructional Strategies

In first grade, students build on their counting to 100 by ones and tens beginning with numbers other than 1 as they learned in Kindergarten. Students can start counting at any number less than 120 and continue to 120. It is important for students to connect different representations for the same quantity or number. Students use materials to count by ones and tens to a build models that represent a number, then they connect this model to the number word and its representation as a written numeral. Students learn to use numerals to represent numbers by relating their place-value notation to their models.

They build on their experiences with numbers 0 to 20 in Kindergarten to create models for 21 to 120 with groupable (examples: dried beans and a small cup for 10 beans, linking cubes, plastic chain links) and pregroupable materials (examples: base-ten blocks, dried beans and beans sticks (10 beans glued on a craft stick), strips (ten connected squares) and squares (singles), ten-frame, place-value mat with ten-frames, hundreds chart and blank hundreds chart). Students represent the quantities shown in the models by placing numerals in labeled hundreds, tens and ones columns. They eventually move to representing the numbers in standard form, where the group of hundreds, tens, then singles shown in the model matches the left-to-right order of digits in numbers. Listen as students orally count to 120 and focus on their transitions between decades and the century number. These transitions will be signaled by a 9 and require new rules to be used to generate the next set of numbers. Students need to listen to their rhythm and pattern as they orally count so they can develop a strong number word list. Extend hundreds charts by attaching a blank hundreds charts and writing the numbers 101 to 120 in the spaces following the same pattern as in the hundreds chart. Students can use these charts to connect the number symbols with their count words for numbers 1 to 120. Post the number words in the classroom to help students read and write them.

Represent and interpret data.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Instructional Strategies
In first grade, the students will sort a collection of items in up to three categories. Then ask questions about the number of items in each category and the total number of items. Also ask students to compare the number of items in each category. The total number of items to be sorted should be less than or equal to 100 to allow for sums and differences less than or equal to 100 using the numbers 0 to 100. Connect to the geometry content studied in Grade 1. Provide categories and have students sort identical collections of different geometric shapes. After the shapes have been sorted, ask these questions: How many triangles are in the collection? How many rectangles are there? How many triangles and rectangles are there? Which category has the most items? How many more? Which category has the least? How many less? Students can create a Venn diagram after they have had multiple experiences with sorting objects according to given categories. The teacher should model a Venn diagram several times before students make their own. A Venn diagram in Grade 1 has two or three labeled loops or regions (categories). Students place items inside the regions that represent a category that they chose. Items that do not fit in a category are placed outside of the loops or regions. Students can place items in a region that overlaps the categories if they see a connection between categories. Ask questions that compare the number of items in each category and the total number of items inside and outside of the regions.

COMMON MISCONCEPTIONS

Students have difficulty with ten as a singular word that means 10 things. For many students, the understanding that a group of 10 things can be replaced by a single object and they both represent 10 is confusing. Help students develop the sense of 10 by first using groupable materials then replacing the group with an object or representing 10. Watch for and address the issue of attaching words to materials and groups without knowing what they represent. If this misconception is not addressed early on it can cause additional issues when working with numbers 11-19 and beyond.

EVIDENCE OF LEARNING

By the conclusion of this unit, students should be able to demonstrate the following competencies:
*   Represent and count quantities up to 120 in multiple ways, including words, pictures, and numerals.
*   Represent a number by the appropriate numeral
*   Use counters and pictures to represent numbers in terms of tens and ones
*   Pose questions, collect, sort, organize, and record data
*   Interpret tables and charts

TASKS

Scaffolding Task	Constructing Task	Practice Task	Performance Tasks
Tasks that build up to the constructing task.	Constructing understanding through deep/rich contextualized problem solving tasks	Games/activities	Summative assessment for the unit.

Task Name	Task Type/ Grouping Strategy	Content Addressed
Making sets of more/less/same	Scaffolding Task *Individual or Partner*	Make and Compare sets of More/Less/Same Represent Numbers up to 100 in tens and ones
How many are here today?	Constructing Task *Large Group*	Collect and represent data with tally marks and charts
Group it and Move it	Practice Task *Large Group, Partners*	Compose Numbers to 30 with an understanding of place value
Spin and Represent	Performance Task *Individual or Partner*	Compose numbers using ten frames and tally marks with an understanding of more and less
Creating a Number Line	Scaffolding/Constructing Task *Large Group, Individual*	Understand the magnitude of numbers to 50and represent them on a number line
Hop To It	Scaffolding Task *Large Group, Individual*	Skip Counting on Number Lines
Exploring the 99 Chart	Constructing Task *Large Group, Partners*	Exploring the 99 chart and patterns
Graphing with Classmates	Performance Task *Large Group, Individual*	Collect and represent data with tally marks and charts
Trashcan Basketball	Practice Task *Partners*	Collect and represent data with tally marks and charts
Bunch of Bananas	Performance Task *Individual or Partners*	Compose sets with a deep understanding of numbers
Oh No 99 Chart!	Practice Task *Small Group*	Counting forward and backward on a 99 chart
Favorite Sports	Performance Task *Individual*	Collect and represent data with tally marks and charts

SCAFFOLDING TASK: Making Sets of More/Less/Same
Approximately 2 days   Adapted from VDW activity 2.1

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

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.

BACKGROUND KNOWLEDGE

Students must construct the idea of counting, not just memorize the sequence. Only the counting sequence is a rote procedure. The meaning attached to counting is the key conceptual idea on which all other number concepts are developed. The concepts of more, less and same are basic relationships to the overall understanding of numbers. Students should be able to distinguish the difference with two sets that are obviously different in number. Students should be familiar with the language of comparing sets using the terms more, less and same. Students have many opportunities to explore the concept of more but have limited exposure to the word less. Frequently pair the word "more" with "less" making a conscious effort to ask, "Which is less?"

ESSENTIAL QUESTIONS

- Why do we need to be able to count objects?
- How can we use counting to compare objects in a set?
- How do we know if a set has more or less?

MATERIALS

- More, Less, Same cards
- Dot cards
- Small counters
- *Just Enough Carrots* by Stuart Murphy or similar book
- Carrot picture cards

GROUPING

Individual or partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Gather students together. Read aloud the book *Just Enough Carrots* by Stuart J. Murphy. While reading, discuss the different sets the characters are comparing at the grocery store.
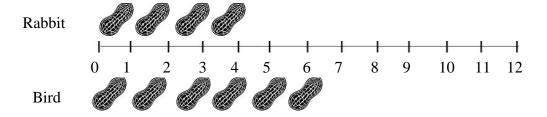*What math language are the characters using that is important?*
Tell students that today they comparing the amount of objects in different sets. Discuss what it means to create a set, and then the process of comparing.

Part I
Pose this example on the board.
Rabbit has 4 bags of peanuts. Bird has 6 bags of peanuts. Who has more peanuts?
Draw a number line on the board and have the students help you label the numbers. Draw a picture to represent each peanut. Show students how you can line up each peanut to see who has more. You may also draw both picture representations on top. Discuss how a number line can help them see *more* or *less*. Complete multiple examples allowing students to compare numbers on a number line.

Part II
Cut out the *MORE, LESS* and *SAME* cards and the carrot picture cards. You will use these to model the idea of creating and comparing sets. Have the students sit in a circle on the floor. Choose a number of carrots less than 10. Model how you would create a set that is the same. Use the carrot picture cards to represent this set. If you choose 5 carrots, then use the *Same* card and show five carrot pictures under this word. The teacher will then demonstrate how to create a set that is *More* and *Less*. Allow the students to take part in creating these sets and have conversations about why the sets are the same, more or less. Encourage the students to begin with the equal group and then create a less than/more than group. Continue to model this activity with multiple numbers until students understand the process.

Part III
Next, students will be given a set of dot cards with arrangements from 4-12, set of small counters and word cards labeled *More, Less,* and *Same*. Students will cut out the cards prior to starting the activity. Turn all the dot cards face down in a stack and lay out the *More, Less,* and *Same* cards. Students will take turns flipping over the top cards and creating 3 different sets using the counters. They will create one set that is less, one set that is more, and one set that is equal. The students will talk through their thinking to their partner. The partner will check to make sure the sets are correct making adjustments as needed. Students continue taking turns until all the dot cards have been used.

Part IV - Closest to 10 Game
Lastly, students will play *Closest to 10.* This is a game where two students are comparing their numbers to see which player's number is closest to 10. Students will play with a partner. Each pair will need a set of playing cards without the face cards and 20 small counters. (Ace-10 of each suit with the Ace representing a 1) One player deals the cards evenly between the two players and places the counters in a pile in the center. Both players turn over their top card. Each player determines how close their number is to ten. The player whose number is closest gets a counter from the center pile. A number line or blank tens frame and set of counters may be used if needed to help students identify the distance to ten. If the numbers are the same, both players are awarded a chip. The game is over when the chips are gone and the player with the most chips wins.

FORMATIVE ASSESSMENT QUESTIONS

- Can you find more than one way to make a set less than ____?
- Can you find more than one way to make a set more than____?
- Can you tell me a sentence that describes your sets using the term less, more or same?
- Tell me how you know that ____ is less or more than ____?
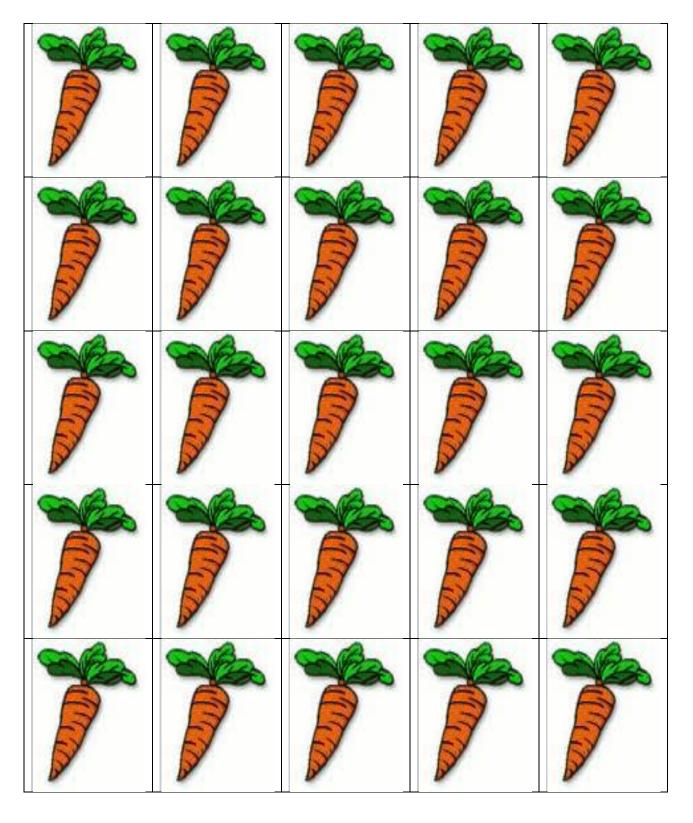
DIFFERENTIATION

Extension
- Allow students to use larger numbers and create additional dot arrangements on index cards. Be sure to give students additional counters for larger numbers.

Intervention
- Allow students to use smaller numbers and make only one comparison at a time. Offer a blank tens frame to place the counters in as they count and compare.
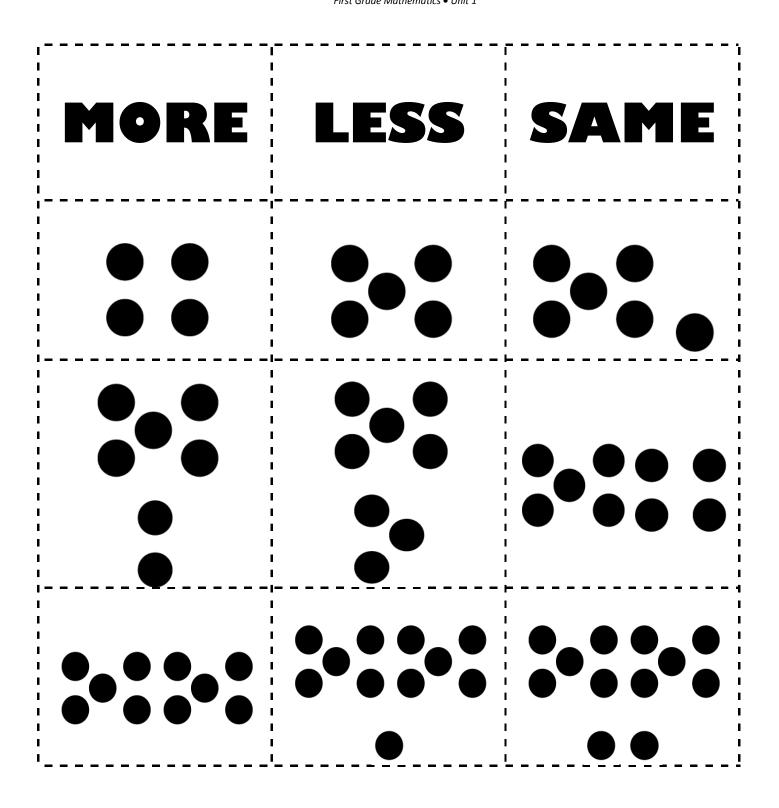
MORE LESS SAME

CONSTRUCTING TASK: How Many Are Here Today?

Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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.

BACKGROUND KNOWLEDGE

Students should have had prior experiences and/or instruction with classifying and counting objects in a category in Kindergarten. Creating tally charts was not a standard in kindergarten; however, some students may be familiar with using tally marks to keep track of information for graphing.

ESSENTIAL QUESTIONS

- How can we use tally marks to help represent data in a table or chart?
- How do tables and charts help us organize our thinking?
- What information do we get from a table or chart?
- How can we use information from questions to create a table or chart?

MATERIALS

- *Tally O'Malley* by Stuart J. Murphy or similar book about tally marks
- chart paper for class graph
- dry erase board or scratch paper

<u>**GROUPING**</u>

Large Group

<u>**TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION**</u>

Part I
Gather students together in a common place. Read aloud the book <u>*Tally O'Malley*</u> by Stuart J. Murphy. While reading, discuss how Tally keeps track of data. Tell students that today they will be keeping track of data using a tally chart. Review the format of tally marks and have students practice constructing a tally mark.
Ask the students *"Why do you think we would make the fifth mark cross the other four?"* *"How does that help us count the tally marks?"*
Tell students that they will work together to determine the total number of students present today by creating a class tally chart. The teacher will start with having all the students close their eyes. Have the students predict how many students are present. Record the students' predictions on the board and discuss what an accurate prediction might be. On the large piece of chart paper, draw two columns, one for boys and one for girls. Allow each student to come to the front of the room and draw one tally mark on the chart in the correct column. Use this whole-group experience as an opportunity to discuss the proper formation of tally marks. Students should have previous knowledge from prior tasks but this is a great opportunity to review the formation with larger numbers. Once the chart is complete, generate a discussion using the formative assessment questions below about the attendance for today.

Part II
Next, the teacher will provide students with the following word problem. The students will act out the word problem and create a tally chart on the board. Discuss how the tally marks were created and how they can check to make sure they have the correct number for each animal.
At the Veterinarian Office today, the doctor saw 5 dogs, 8 cats and 2 birds. How many animals did the doctor see in all?
Provide students with additional word problems and allow them time to create a tally chart to represent the information from the problem. Put a problem on the board and ask the students to chart the tally marks on a scratch sheet of paper or on a dry erase board. There are 3 examples below about a Veterinarian Office.

1. At the Veterinarian Office today, the doctor saw 7 dogs and 13 cats. How many animals did the doctor see in all?
2. At the Veterinarian Office today, the doctor saw 11 dogs, 6 cats and 9 birds. How many animals did the doctor see in all?
3. At the Veterinarian Office today, the doctor saw 22 animals. Draw a tally chart and show how many dogs and cats the doctor could have seen.

Part III
Students will play the number tally game. Players will play on their own with a dice. Roll the dice and record one tally mark for the number rolled. The tally mark represents that the number has been rolled one time. Students should continue playing until a number has been rolled 10 times. Students will answer the two questions at the bottom of the chart and play again. Are the results the same or different this time? Why do you think this is the case?

FORMATIVE ASSESSMENT QUESTIONS

- How many are here today?
- How can we find out how many boys are present today?
- How can we find out how many girls are present today?
- What makes counting our tallies easier?
- How does this help?
- Why are we putting tally marks? What is the purpose of the tally marks?
- How could we find the total number of students present today?
- How can we find the number of students who are absent?
- Why do you think a tally chart is a good way to present this information?
- Can you think of other times when using tally marks would be helpful?

DIFFERENTIATION

Extension
- Students may be given the opportunity to create a graph with tally marks that represents the number of students present in class, students who like particular objects or have certain hobbies. This will require the teacher to allow time for the students to survey their peers regarding the chosen topics.
- Create a class collection of questions they could answer through the use of tally marks and tally charts.

Intervention
- Fold a sheet of paper in half and label one side red and one side blue. Fill a container with up to 20 cubes, some red and some blue. Have the student take out one cube at a time and record the color they selected with a tally mark. Repeat this activity until they can demonstrate that they understand that the tally mark represents the item they selected.

Number Tally

1	2	3	4	5	6

Which number scored 10 tally marks first?_____

Which number scored the least amount of tally marks?_____

1	2	3	4	5	6

Which number scored 10 tally marks first?_____

Which number scored the least amount of tally marks?_____

PRACTICE TASK: Group It and Move It
Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
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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.

BACKGROUND KNOWLEDGE

Students should have experience representing numbers through models and objects. Students should also be able to count to 100 by tens and ones. This activity may be many students' first experience with place value. Its purpose is to provide students with a hands-on, conceptual way of experiencing place value.

ESSENTIAL QUESTIONS

- How can we represent a number using tens and ones?
- How many ones do we use to create a ten?
- What happens when we collect ten ones?

MATERIALS

- Large sheet of butcher paper cut to form a tens and ones place value chart
- Student size place value chart
- Large dice or regular dice (1-6)

- Ten sets of two small dice or number cards
- Base-ten blocks
- At least two ropes for grouping students in sets of ten (jump ropes or ribbon work well)

GROUPING

Large Group, Partners

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
Gather students together in a common area. Tell the students you have a story to tell them so they need to listen carefully.

"I have a story to tell you about my nephew Aaron. His mom told him he had too many video games. Aaron said, "No, I do not!" Aaron tries to count them, but he loses count around 33 when his sister walks in and asks him a question. So Aaron decided that there must be a better way to count the video games. Can you all help Aaron solve his problem?"

Students should talk with their elbow buddies then share with the group. At least one group should suggest making groups of 10. If not, you may need to lead this to this strategy. Discuss how Aaron could use the groups of 10 to help him keep track of his counting. Have counters available for a student to model how to make groups.

Part II
Create a large place value chart on the floor (using butcher paper, masking tape, or using sidewalk with chalk and play the game outside). Create a large tens frame with chart paper or masking tape in the ones column. Make sure the chart is largest enough to fit a tens frame for students to sit inside of in the ones column and 2 groups of ten in the tens column. Using a large dice, roll a number. Ask the class for volunteers and have that number of students sit in the ones column. Explain that each student will sit in one spot in the tens frame. Roll or draw another number. Ask for more volunteers and add that many more students to the ones column. The area might be getting a little more crowded now. If the group consists of ten or more then have ten students link their arms and wrap a length of rope around those 10 students and move them to the tens place. The teacher will tell the students that the 10th student in the ones column picks up the group and moves over to the tens column. It is important that the students understand that this student does not sit. This gives a false impression that ten ones "fit" in the ones column. If there are any extra students, ask "Where will these students go? Why don't they go in the tens column? Will they ever get to the ten's column? When?" Example: If a 6 is rolled, six students go into the ones column. If a five is rolled next ask, "Can 11 ones fit into the ones column? What happens when we have 11?" You may want to use a large piece of string to "rope" the group of ten into the tens column. Repeat the game as needed until students have a good understanding of the transition of numbers into the tens column. It is very important to stress that when the tens frame is full, it must move over to the tens column. The full tens frame is 1 ten. Continue with the game by rolling the die until all the students are standing on the board. Have

students explain what is happening and why groups are moving. While playing the game, ask the following questions as appropriate.

- What will happen when 10 people get into the ones column?
- Is there room for any more students in your column? How do you know?
- How do you know that more students can join you in the ones column?
- How many students are now in the ones column?
- Do we have enough students to make a group of ten?
- Are there any students left over?
- Where do these students go?
- How many more students do we need before we can make a group of ten?

Part III   Game-Build 30
Gather the students in a common place a model the game prior to students playing independently. They will need to have a clear understanding of how to model each number and record each turn on the recording sheet.

Each group will need 2 place value charts, 2 recording sheets, base ten blocks and a dice. The first player will roll the dice and place that many units in the ones column on their place value chart. They will also record this representation on their own recording sheet. The next student will take a turn, rolling the dice and making the number on his or her own place value chart and filling in their own recording sheet. When the students have reached ten ones then they must trade for one ten rod. You will need to model this trade for the students to reinsure they understand that the ten rod replaced the ones. The students will take turns rolling, trading their ones and tens rods, and recording on their own sheet. The first student to reach thirty wins. While students are playing, circulate the room asking questions to ensure understanding. You may extend the game to 50 once students have a deep understanding.

FORMATIVE ASSESSMENT QUESTIONS

Part II
- How many students are now in the ones column?
- Do we have enough students to make a group of ten?
- How many more students do we need before we can make a group of ten?
- Why have we moved this group to the ten's place?
- Where will these students go? Why don't they go in the tens column?
- Will they ever get to the ten's column? When?

Part III
- What number is now represented on the place value chart?
- How many units are now in the ones column?
- Do you have enough units to make a group of ten?   How do you know?
- Why have you moved this group to the ten's place?

- What number is now represented on the place value board? Explain how you determined the number.
- How would you write this number? What do these two digits stand for?
- What is the amount in the tens place?
- What is the amount in the ones place?
- Why do you have to group numbers by tens?

DIFFERENTIATION

Extension
- Some students may be developmentally ready to work with numbers larger than 30. These students can play the game race to fifty or one hundred. Students continue playing the game until someone reaches one hundred by having ten base ten blocks in their ten's place. Once the students reach one hundred, the teacher can introduce the students to the regrouping of their ten tens into a hundred flat.

Intervention
- Use connecting cubes to aid students in connecting single units to create a ten rod. Use a tens frame in the ones column to help students understand when to group and move.

Name:_____   Date:_____

Build 30!

Roll #	Number rolled	Tens	Ones	Number

~~НН~~ II

PERFORMANCE TASK: Spin and Represent
Approximately 1 day

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.

BACKGROUND KNOWLEDGE

Students should have experience representing numbers through models and objects. This activity may be the students' first experience with drawing tally marks.   Most students have more than likely been exposed to tally marks, but some may not been instructed to create them. It is very important that students understand the connection with the grouping of 5 tally marks and the benchmark number 5. Discuss why this benchmark number is so important.
 Students will also be expected to use a paperclip spinner. Place a pencil point inside one end of the paper clip and hold with one hand. Use the other hand to flick the paperclip and it will spin. You may want to allow additional time for students to practice this concept. Plastic clear spinners may also be used if available.

ESSENTIAL QUESTIONS

- Why do we need to be able to count objects?
- How can tally marks represent a set?
- How can I use a tens frame to represent a number?
- How can tally marks help us organize our counting?

MATERIALS

- 1-10 spinner and paper clip
- Small counters
- blank tens frame
- Small pieces of yard for creating tally marks

- Roll and Represent recording sheet

GROUPING

Individual or partner

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
Gather the students to a common area. Discuss how to create tally marks and how they help make counting easier. Give students a dry erase board/marker or scratch paper. Allow the students to practicing creating tally marks as you count aloud. Discuss ways that you can count tally marks. If a student does not bring up counting by fives, then lend to the connection of skip counting by 5's. Next discuss how a tens frame can help up keep track of counting. Give each student a blank tens frame and counters. Allow the students to practice placing the counters on the tens frame as you count aloud. Discuss any connections that the students find with the tally marks and tens frame. Pose questions that allow the students to think about the benchmarks that tally marks and tens frames lend themselves to.
Why do we think tally marks are grouped in fives? How does this make it easier to count? How does the tens frame help us see number easily up to ten?

Part II
Tell students that they will represent a number with tally marks and a tens frame. Each student will need ten popsicle sticks to create tally marks, a blank tens frame, small counters, 1-10 spinner, paperclip and the Spin and Recognize recording sheet. These materials should be prepared for each student prior to start of the lesson.

First, the students will spin the spinner and record the number. They will use this number and create the number on the blank tens frame using the counters. Record this representation on the recording sheet. Next they will create a representation that is less than the number on the spinner, more than then number on the spinner and record both on the recording sheet. They will repeat this process with the popsicle sticks. Represent the number using the popsicle sticks as tally marks and record the representation. Next they will create a representation that is less than the number on the spinner, more than then number on the spinner and record on the recording sheet. It is very important that the students understand how to make a number more and how to make a number less.

FORMATIVE ASSESSMENT QUESTIONS

- How do tally marks help us keep track of counting?
- How do tens frame help us count a number?
- Explain how you would represent the number ___ in tally marks. How can you count this amount easily?

- Explain how you would represent the number ___ in a tens frame. How can you count this amount easily?
- What benchmark numbers help us keep track of counting?

DIFFERENTIATION

Extension
- Allow students to spin two numbers and combine them to create a larger number. Be sure to provide additional materials for these students to create the larger numbers. Pose these questions to students and allow them to explore different explanations: What numbers are easy to count using tally marks? What numbers are easy to count using tens frames?

Intervention
- Use a die with numbers up to six for creating smaller numbers. Allow time for a small group with additional guidance and one-on-one assistance with students as needed.
- Create a spinner up to 5 and use a five frame.
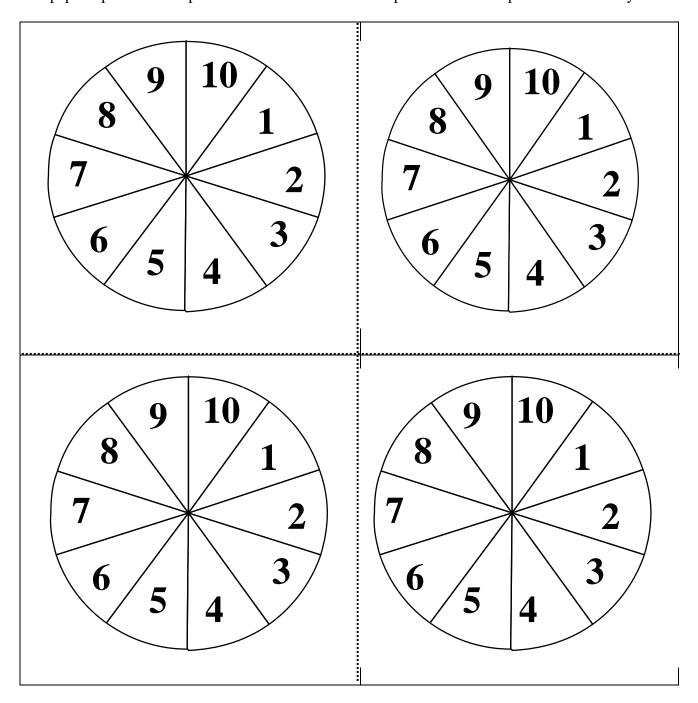
Name:_____   Date:_____

Spin and Represent Recording Sheet

1. My number: _____

Tens Frame	More	Less
Tally Marks	**More**	**Less**

2. My number: _____

Tens Frame	More	Less
Tally Marks	**More**	**Less**

3. My number: _____

Tens Frame	More	Less
Tally Marks	**More**	**Less**

Each student will need their own spinner. Provide a paper to use with the spinners. Place a pencil point inside one end of the paper clip and hold with one hand. Use the other hand to flick the paperclip and it will spin. Students will need to have practice with this prior to this activity.

CONSTRUCTING TASK: Creating a Number Line

Approximately 2-3 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

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.

BACKGROUND KNOWLEDGE

Students should have experience representing numbers using pictures and objects. Students should also be able to count correctly in a sequence to 100. This may be the first experience with number lines up to 50 for several students.
When creating a number line with students, be sure to use 0 as a starting point on the number line. This will communicate to students that zero is a number, not merely a placeholder, and that it is even. Having zero on a number line will give it status as a number and, as other numbers, tells how many.
(About Teaching Mathematics: A K-8 Resource, by Marilyn Burns)

ESSENTIAL QUESTIONS

- What does a number represent?
- What can a number line show us?
- How can (or why would) we use a number line?
- How can I use a number line to help me count? Or count on?

MATERIALS

- 50 sheets of paper
- Crayons or markers
- About 20 ft of ribbon, yarn or string
- Masking tape
- 50 clothespins (you could use tape if needed)
- Clothing cards with numbers (You could copy these on colored paper, rather than ink to print)
- Laundry basket or small basket

GROUPING

Large Group, Individual

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
Tell students that we will make our very own class number line. Assign each student a number or allow each student to choose a number. If you assign students a number at the beginning of the year then you may let them use their assigned number. Have the student write the number in large print on a sheet of construction paper or white copy paper. Then, have the student represent the number as many ways as they can. Encourage students to think outside the box: symbols, words, coins, bills, tally marks, time, addition/subtraction problems, dots, pictures, etc. (Have the number words available for students on the math word wall). After students have created their number card, take a field trip to the hallway. The students will place the number cards in order.

After all the students have finished placing their numbers, ask "*There is a very important number missing, who knows what it is? (zero) What do you think the zero number card would look like? (nothing on it but the numeral 0 and the word zero)*"

Once this discussion has taken place have a volunteer put the zero number card on the number line. Then have the class use the number line to help them count up to the number of students in the classroom. Allow students to check at this time to see that the numbers are in the appropriate order on the number line. If there are any incorrect number placements, have a discussion with the students about how they know these numbers are in the wrong place, what needs to be done to put them in the correct place, and how they will know the new placement is correct.

Discuss how the classroom number line can help during math. You may tape the pieces of paper together and leave at the back of the classroom. Students will enjoy walking the number line to count, solve word problems and much more. This may be several students' first experience with a number line. Allow the discussion to continue as long as the students are engaged.

While students are working on their number cards, ask questions such as:

- What number are you representing for the number line?
- How are you representing this number?
- How are you self-checking to see that your number matches your picture representation?
- Where did you look to find the spelling for your number word?
- Who lives next door to your number?
- Now that you know your numbers neighbors, can you show us which one comes before your number and which one comes after your number? How did you figure that out? Are these numbers more or less than your number? How do you know?
- How can the class number line help you?

Part II
Share a scenario about lining up the clothes in number order. Create a clothes line in your classroom using string or ribbon. It works best if you tape up the clothes line to a wall or the board. (place 2 pieces of tape on the ends and then equally space 4 additional pieces in between) Before the task, collect a laundry basket or small basket, print and cut the various clothes below with numbers on each item. As students draw an item out of the basket, have them place the item where they think it should go on the clothes line using a clothespin. Students may have several turns to get all the numbers 0-50 on the clothes line.
As students place the items, ask questions like: *Why did you decide to place the 7 there? What information did you use to place the 2 in that position/place? Do any of the clothing items need to be moved? How do you know this?*

Draw students' attention to the class number line. Ask students what they already know about the number line.
- What number does our class number line begin with? (Make sure it is zero!)
- How far up does the class number line count to? Could we keep going? Why do you think we can or cannot keep going?
- Can there be numbers before or after what is displayed on the classroom number line? How about in between the numbers?
- What do you notice about the spacing between the numbers?
- How are the numbers sequenced on the number line?
- Can someone show us where 15 lives? Who are 15's neighbors?
- Who can tell us one of 32's neighbors? What number is not a neighbor of 32? Who is it a neighbor of? How did you figure that out?
- Are all numbers included on the number line? How do you know?

Part III – Line It Up
Play the game "Line It Up". The teacher will use the clothes cards with the numbers for this game. Hand out one number card to 8 different students. All the number cards must be there to create a sequential order but they do not have to start with 0. The students will line up facing the remaining students. When the teacher says "GO" the students must put themselves in order without talking. The remaining students at their desks will give a thumbs up if they are in the correct order or a thumbs down if they need to try again. Once all students are giving a thumbs up the students may count the numbers to double check the order. Repeat with a different set of numbers and students. Example: The teacher passes out the following number cards 16, 19, 15, 17, 18, 14, 20, 13. As the students get the card they go to the front of the room. The teacher says "GO" and the students look at each others cards and put themselves in order without talking. The students have put themselves in this order 13, 14, 15, 16, 17, 18, 19, 20. The remaining students show thumbs up. The class counts the order out loud and they are correct.

FORMATIVE ASSESSMENT QUESTIONS

- How can you represent the number _____using numerals, pictures, and words?
- How can you place a group of numbers in the correct counting sequence?
- Who lives next door to your number?
- Now that you know your numbers neighbors can you show us which one comes before your number and which one comes after your number? How did you figure that out? Are these numbers more or less than your number? How do you know?
- Can there be numbers before or after what is displayed on the classroom number line? How about in between the numbers?
- What do you notice about the spacing between the numbers?
- How are the numbers sequenced on the number line?

DIFFERENTIATION
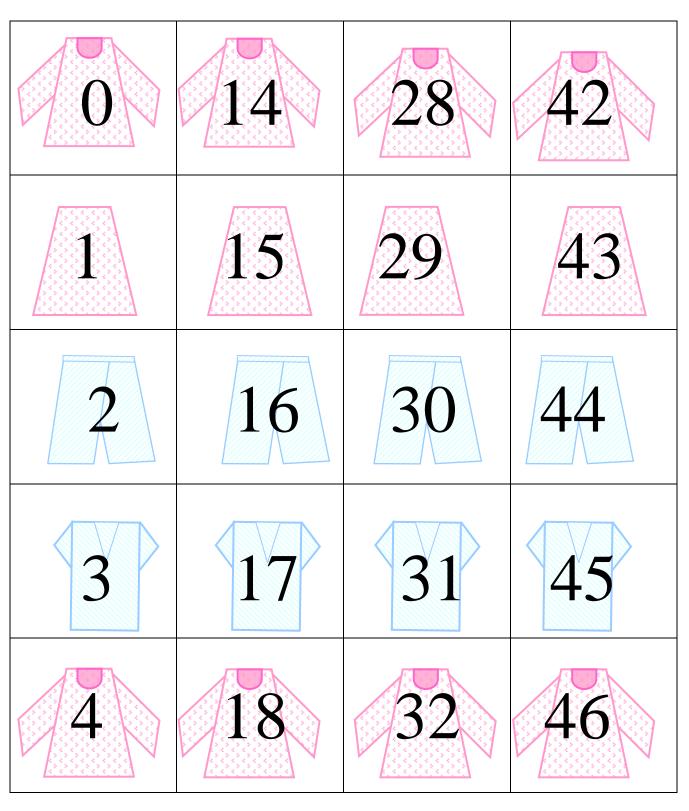
Extension
- Students can experiment with sequencing numbers from 0-100 or higher on a number line. Use index cards or the blank clothes cards to students to add larger numbers.

Intervention
- Some students may need to use manipulatives to help count out objects before drawing the corresponding number of objects on their paper.

0	14	28	42
1	15	29	43
2	16	30	44
3	17	31	45
4	18	32	46

5	19	33	47
6	20	34	48
7	21	35	49
8	22	36	50
9	23	37	13

10	24	38	27
11	25	39	41
12	26	40	

SCAFFOLDING TASK: Hop To It

Approximately 2-3 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

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.

BACKGROUND KNOWLEDGE

Students should have had prior experiences with counting to 100 and identifying the skip counting patterns. Counting plays an important role in constructing base-ten ideas about quantity and connecting these concepts to symbols and oral names for numbers (Van de Walle, page 125). Even though this is a difficult skill for students to master, repeated modeling and practicing should help students through this task.

ESSENTIAL QUESTIONS

- How can I use patterns to help me skip count?
- How can a number line help me count forwards and backwards?
- How can a number line help me skip count?
- How can I use a number line to help count on from any number?

MATERIALS

- *Two Ways to Count to Ten* by Ruby Dee
- frog strips – each student will need two copies of the frog strips (10 strips each)
- Scissors
- Tape
- Crayons
- Small counters
- Recording sheet

- dice

GROUPING

Individual, Whole Group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Gather students together. Read aloud the book *Two Ways to Count to Ten.* While reading, have the students predict how the animals will count. Stop reading before the end and take the students outside (or in a room with high ceilings) and allow them to throw up a ball and count to ten. Make a list of the different ways the students might be able to count to ten. Finish the book and discuss how the antelope won the competition.

Part 1
Tell the students that they will create their very own number line. Model for students how to cut apart the frog strips. Once each student has the ten strips cut, ask each student to pick up one strip and write a zero on the frog and a nine at the other end of the strip. Explain and model how to fill in the numbers in between. Students may fold the strips or use benchmark numbers (5's) to help guide where the missing numbers belong. Make sure each student has correctly labeled the first strip before moving on. You may use a 99 chart to guide students as needed. Repeat this process with the 2nd strip. Ask the students which number they think belongs on the frog. Have them write the 10 on the frog and 19 on the other end. Students may choose their own strategy to fill in the missing numbers. Continue until all 10 strips are completed.
Next, lay the 0-9 strip and the 10-19 strip beside each other, lining up the numbers in order. Place a piece of clear tape over the edge to connect the two pieces. Repeat with the remaining strips until each student has a long number connected number line 0-99. This number line may be used to help students with multiple skills or a variety of activities. Students may fold the number line (accordion style – back and forth) to store in their desk, or in another accessible place, to refer to during another activity.
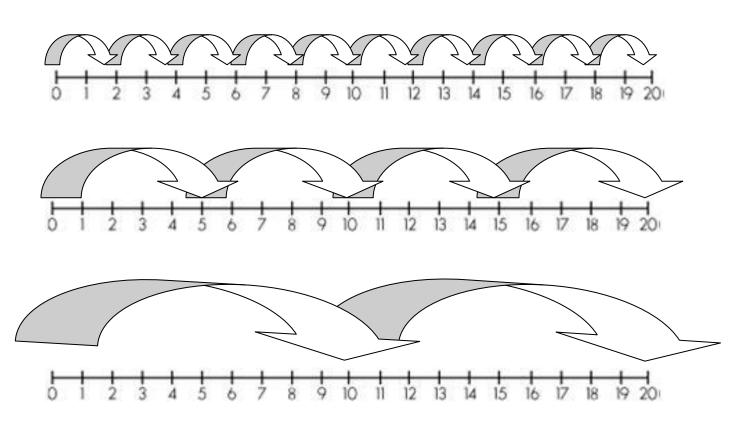
Part II
Using the number line created in Part I, the students will practice counting by 1's, 2's, 5's and 10's from any given number. Use a clear counter to hop the numbers as the class counts aloud. Model this on the board with a number line so the students can track the jumps between numbers (see models below). Ask all students to place their counter on the zero. Count by ones to 20. Count by ones starting at 25 and end at 50. Practice counting from multiple starting points, so that students develop proficiency with counting to 120 from any given number less than 100. This is a very difficult concept and students will need repeated practice with this skill. Ask the students to bring the counter back to zero and skip count by 2's out loud to 50, by 5's out loud to 100 and by 10's out loud to 100. As students are counting, ask for any prior knowledge connections. This is a great time to discuss even and odd. Ask the students how you know if a number is even or odd. Use counters to model the numbers to allow students to see that all even numbers have a partner. Choose a few students to model the skip counting jumps with the number line on the board. Students count aloud

as the student at the board model counting using the number line. Use the example below as a reference. After several rounds of practice, have the students complete the recording sheet. The students will model skip counting on a number line.

Part III
Play "Hop to 99". Students will play with a partner. Each student will use their own number line 0-99 and each group will need a dice and 2 counters. Players will take turns rolling the dice and moving, or "hopping", the counter on the number line that many spaces. It is important that the students count aloud as they are moving so their partner can check their counting and the correct number of spaces they "hop". Players continue to take turns until a player reaches 99, which makes them the winner.
The students may also play "Hop to 0". This is the same game, but you start at 99 and hop back to 0. The first player to reach zero wins. This version focuses on counting backwards.

FORMATIVE ASSESSMENT QUESTIONS

- What patterns do you recognize when skip counting on a number line?
- How many ways can you count on a number line?
- Did you use any strategies when playing the game? If so, what strategies?

<u>**DIFFERENTIATION**</u>
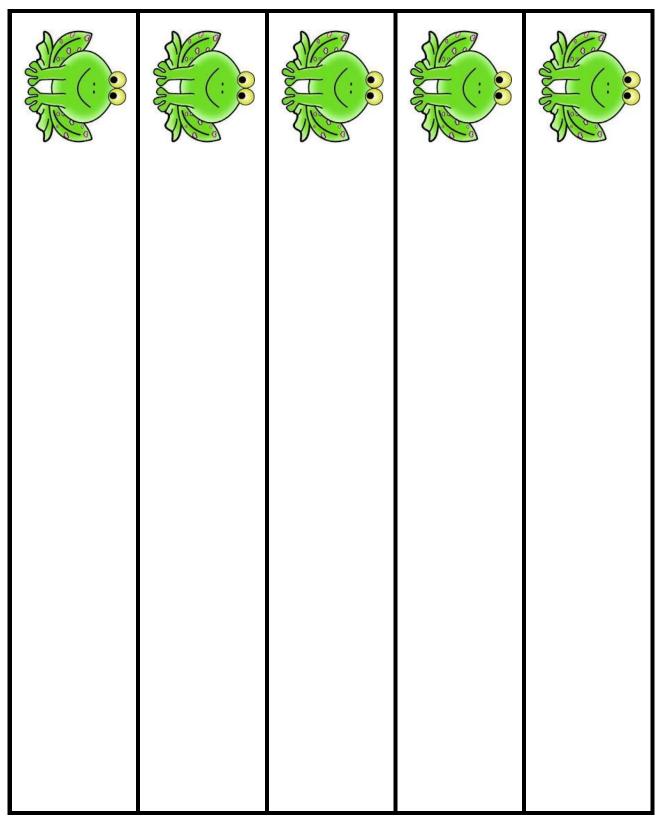
Extension
- Ask the students to explore the number line and see if they can find any other skip counting patterns.
- Have the students play "Hop to 0". This is the same game but you start at 99 and hop back to 0. The first player to reach zero wins. This version focuses on counting backwards.

Intervention
- Have the student model the skip counting pattern with counters on a 99 chart, leaving a counter on each number they count. Some students may be successful using smaller hops. Then use this as a guide to hop the patterns on the number line. Look for the student to make connections between the two representations.
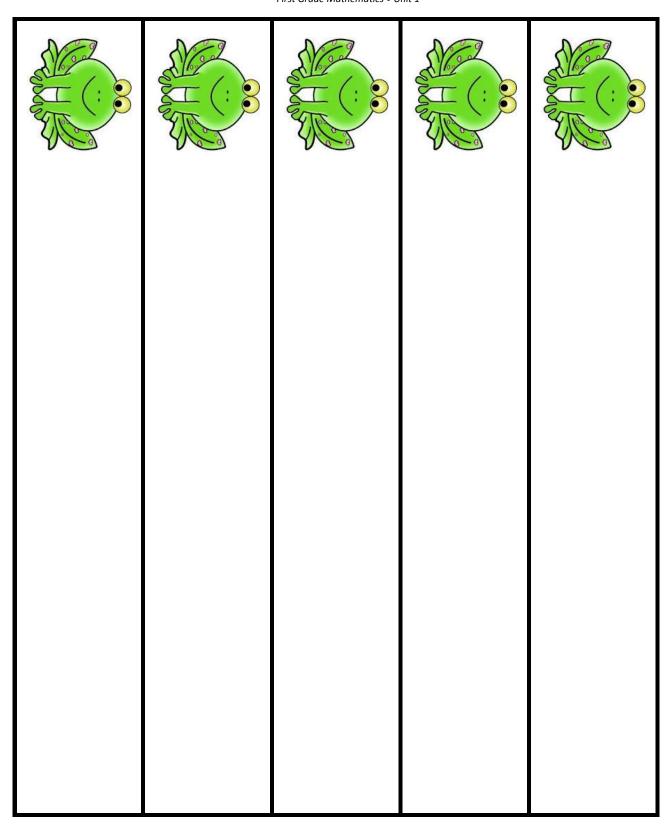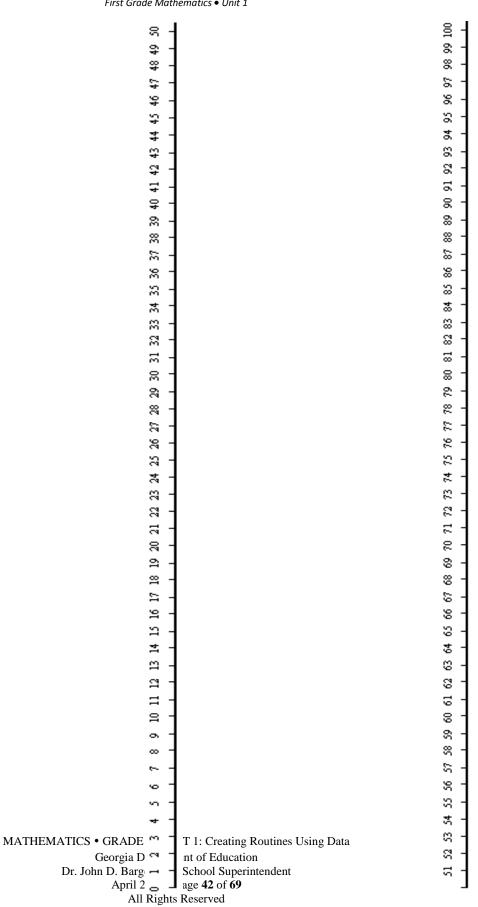
Hop To It Recording Sheet

Directions: Use crayons to model skip counting on the number line below. You will need a red crayon to record skip counting by 2's, a blue crayon to record skip counting by 5's, and a green crayon to record skip counting by 10's.

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 99 100

CONSTRUCTING TASK: Exploring the 99 Chart

Approximately 3 or more days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

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.

BACKGROUND KNOWLEDGE

Students should have experience counting numbers to 100. This may be students' first experience with the 0-99 chart or 1-100 chart. It is important for the students to be exposed to both. However, developmental understanding should happen with a 99 chart. Listed below are several reasons that support use of a 99 chart:

- A 0-99 chart begins with zero where a hundred's chart begins with 1. We need to include zero because it is one of the ten digits and just as important as 1-9.
- A 100 chart puts the decade numerals (10, 20, 30, etc.) in the wrong row. For instance, on a hundred's chart 20 appears at the end of the teens row, where it simply doesn't belong because it is not a teen number. The number 20 is the beginning of the 20's family; therefore it should be in the beginning of the 20's row like in a 99's chart.
- A 0-99 chart ends with the last two digit number, 99, whereas a hundred's chart ends in 100. Again, this is the wrong place for the number 100, it should begin a whole new chart because it is the first three digit number.

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

ESSENTIAL QUESTIONS

- What patterns exist on the 99 chart?
- How can number benchmarks build our understanding of numbers?

MATERIALS

- Two 99 charts for each student (optional: demonstration sized chart)
- 99 chart with missing numbers
- Clear counters
- Scissors
- Sandwich size plastic bags
- *Centipede's 100 Shoes* by Toni Ross or similar story

GROUPING

Individual, partners, small group

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I
Gather the students in a common area. Read the story *Centipede's 100 Shoes* by Toni Ross or a similar story. Discuss what happens to the centipede in the story. What do you notice about the number of feet that animals have? (even number of feet….Can you think of any that have an odd number?) Using chart paper, make a list of facts, connections, or ideas that we have learned about with the 99 chart or 100 chart.

Part II
In this task, students will be complete a variety of activities with the 99 chart to build a deeper understand for the number sequence.   These activities could be presented as centers or a series of small group activities.

Activity 1: Special Numbers! Give each student a set of counters and a 99 chart. Ask each student to cover 3 numbers that are special to them. It could be their age, street address, number of family members, birthday, favorite sport's jersey number, etc.   Partner up the student to share their special numbers. Call on a few students to share with the class.

Activity 2: What's My Picture? The teacher will call out numbers or directions and the students will cover the number with a clear counter. Teacher calls out the following numbers: 58, 4, 67, 23, 48, 52, 24, 45, 27, 26, 38, 32, 74, 42, 76, 15, 35, 63, 25. Ask the student what the picture resembles. It should resemble an apple.

Activity 3: All Scrambled Up! Give each student a copy of the 99 chart. Have the students cut up the chart into at least 10 pieces. ***It is very important that the students cut only on the bold lines. They may not diagonally through a number.*** Have the students think of this activity like they are creating a puzzle. Place all the pieces into a sandwich size plastic bag. Trade bags with a partner and put their 99 chart back together in the correct order.

Activity 4: Counting Patterns! Give each student a 99 chart and a set of counters. Begin with the first row of numbers 0-9 and have the students cover the even numbers. Discuss how we know these numbers are even. What do we call the numbers that are not covered in the first row? Now ask the students to cover the even numbers in the second row of numbers 10-19. Repeat with the third row and ask the students if they notice a pattern. Discuss the pattern and have the students predict where the counters will go on the rest of the chart.
If we count the numbers that are covered, what skip counting pattern would we be counting?
 Count by two's aloud as a class. Clear the counters and repeat the activity with covering the numbers when counting by 5's and 10's. Discuss the patterns seen on the 99 charts. Practice skip counting by 2's, 5's and 10's as a class.

Activity 5: Who's Missing? Give students a 99 chart with some of the numbers omitted. Tell students to use a math strategy to determine the missing numbers and write each in the appropriate position on their 99 chart. Have students look closely at each number they added to the chart and determine what multiple of ten each number lives closest to. Ask students, "Which ten is my closest friend?" Select a number that was added such as 14. Create an example for finding its closest friend: The multiples of ten that 14 is between are 10 and 20. 14 is 4 spaces from 10 and 6 spaces from 20. So, 14 is closest to ten. Have students pick 5 of the numbers they added to the chart and complete the sentences that describe to which multiple of ten the number is closest.

Part III – Fill the Stairs
Play the game "Fill the Stairs". Each player will need a game board. Students will take
turns rolling two 0-9 sided dice or spinner and creating a two digit number. For each turn, the player writes the number created in any space. The object of the game is to keep the numbers in order between 10 and 100, climbing down the stairs. The stairs climb down to resemble the visual of the 99 chart. The numbers start small at the top and get larger and you work down the chart.   If there is no space to write a number, that player loses that turn. The student that fills in their stairs first wins. Students may use a 99 chart as a guide if needed. The position of the numbers on the 99 chart gives some students a visual of where the number might be best placed on the stairs.

<u>FORMATIVE ASSESSMENT QUESTIONS</u>

- How do you know the following numbers are in the correct counting sequence?
- How do you know if a number is even or odd?
- What skip counting patterns can you identify on the 99 chart? How do these patterns help you count?

- How can you tell which ten a missing number is closest to?
- Explain why the numbers with a five in the ones place are in the same column? Why the numbers with a five in the tens place are in the same column?

DIFFERENTIATION

Extension
- When calling out numbers for the students to cover in "What's My Picture?" use terms like one more than or one less than the number listed. Example: instead of calling out the number 67 to cover, you would say "cover the number one more than 66".
- In "All Scrambled Up!", cut the 99 chart into smaller sections, this will provide more of a challenge for students to put it back together.
- Have students create their own 99 chart that is blank below by filling in all numbers. Have them color every number they would say when counting by 2's with yellow. Tell them to write in their journals what pattern they see. What if you colored all the things you would say when counting by 5's? Color the multiples of 5 orange. What pattern do you see? What if you colored all the numbers you would say when counting by 10's? Color the multiples of 10 red. What pattern do you see? Write 3 interesting things you notice about these different patterns.

0									

Intervention
- In "All Scrambled Up!", cut the 99 chart into larger sections, this will make it easier for students to put it back together.

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

Name _____ Date_____

Who's Missing? 99

0	1		3	4	5	6	7	8	9
10		12	13		15		17		19
20	21		23	24	25			28	29
	31	32	33		35		37	38	
40			43	44		46	47		49
50	51	52		54	55			58	
	61	62		64	65	66	67		69
70		72	73		75	76		78	
80	81		83		85		87	88	
90	91	92		94	95		97	98	99
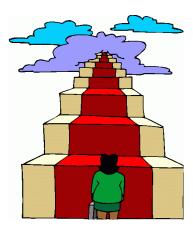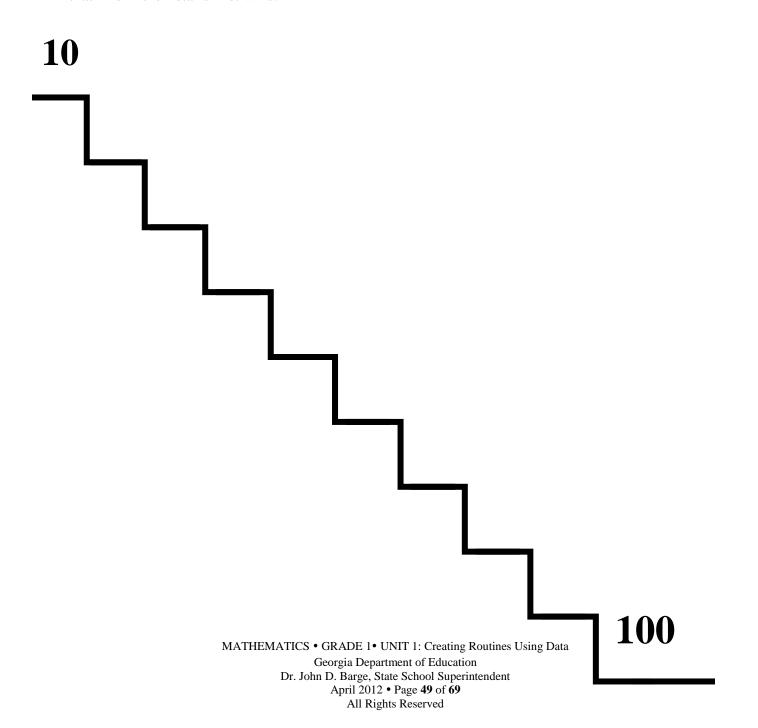
Fill the Stairs

Materials: Gameboard, two 0-9 dice or spinners
Directions: Each player will need a game board. Students will take turns rolling the dice and creating a two digit number. For each turn, the player writes the number created in any space. The object of the game is to keep the numbers in order between 10 and 100. If there is no space to write a number, that player loses that turn. The student that fills in their stairs first wins.

10

100

Performance Task: Graphing with Classmates
Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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.

BACKGROUND KNOWLEDGE

Students should have had prior experiences and/or instruction with classifying and counting objects in a category in Kindergarten and previous tasks. Creating tally charts was not a standard in kindergarten; however, some students may be familiar with using tally marks to keep track of information for graphing.
Van de Walle stated that the use of graphs for number relationships and for connecting numbers to real quantities in the children's environment is a more important reason for building graphs than the graphs themselves (page 60).

ESSENTIAL QUESTIONS

- How can we collect data?
- What information can we get from a chart?
- How do tables and charts help us organize our thinking?

MATERIALS

- Recording Sheet
- Chart paper to display Special Snack charts
- markers
- *Best Vacation Ever* by Stuart Murphy or similar book

GROUPING

Individual, Whole Group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I
Gather the students in a common space. Read *The Best Vacation Ever* by Stuart Murphy, or a similar text. Why is the girl using charts in the story? How are these charts going to help her? Discuss how the decisions are made in the story. How can charts help us in the classroom? Tell the students that you are going to create 3 charts to decide on the best option for a Special Snack. Explain that the students will close their eyes and vote by raising their hands. This prevents students from voting by persuasion. Ask the 3 questions below and fill in the responses on the students. After the charts are complete show the students. Ask them how to find the total amount in each column. The column with the largest number is the majority for that chart. Guide the students in making a tally chart to show the data collected for each question. Allow a class discussion to decide on the best option for a Special Snack. The teacher may provide this snack as a special reward that the students must earn.

1. *Would you like something sweet or salty?*

Student Name or Number	Sweet	Salty
1		
2		
3…continue for number of students in the class		

2. *Would you like something soft and chewy or hard and crunchy?*

Student Name	Soft/Chewy	Hard/Crunchy
1		
2		
3…continue for number of student in the class		

3. *Would you like one big piece or several small pieces?*

Student Name	Big Piece	Small Pieces
1		
2		
3…continue for number of students in the class		

Part II
Students will create their own question to ask classmates that have at least three categories to represent. Allow them to ask 6 students the question about their graph. You may group the students or have them choose their own classmates to survey. The students will begin by filling out the title, question and three answer choices on their recording sheet. Once all of the student forms have been checked, they may find classmates to ask their question. Students need to make sure that they are giving 3 answer choices for the students to choose from. When the students have had ample time to collect the data, the teacher will call time. Students will then return to their seats to interpret the data they have collected. Use chart paper to create a list of questions students may ask each other. Use the questions below as a guide. On the back of the Data Collections recording sheet, have students create a tally chart to show their results.

FORMATIVE ASSESSMENT QUESTIONS

- Which group had the most? Least?
- Can you tell me more about the charts?
- What are two questions you could ask the class to answer about your graph?
- Can you explain your chart to the class?
- Can you determine common features about charts? (most, least, total number of objects, etc.)
- Explain how charts and tables help organize your thinking?
- Can you formulate questions to ask about a graph?
- Can you answer questions about your own graph?

DIFFERENTIATION

Extension
- Students may extend the data collection process to 10 different students. Try to create 4 questions about your data that other students could answer.

Intervention
- Some students may need assistance in identifying a question or answer choices for collecting the data. Offer multiple examples for students to use.

Name:_____   Date:_____

<u>Data Collection</u>

Title: _____

Question:_____

_____

Student Names	Choice1: _____	Choice2: _____	Choice3: _____
1.			
2.			
3.			
4.			
5.			
6.			

<u>Write 2 questions that you could ask someone about your data.</u>

1._____

_____

2._____

_____

PRACTICE TASK: Trashcan Basketball

Approximately 1 day

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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.

BACKGROUND KNOWLEDGE

Students should be familiar with using tally marks, counting and comparing sets. Students should know behavioral expectations in your classroom before beginning this activity. Rules should be set as a class regarding appropriate actions as this task is being completed. Students should be familiar with tally charts and how to correctly create tallies.

ESSENTIAL QUESTIONS

- What information can we get from a chart?
- How do tables and charts help us organize our thinking?

MATERIALS

- paper basketball
- trash can/bucket for each pair group
- masking tape
- tally recording sheet

GROUPING

Partners

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

Bring the sports section of the newspaper to share with students. Read through several statistics from recent sporting events. Discuss the use of charts and tallies to report information about sports. Tell students that today they will have the opportunity to be basketball stars and sports reporters. Inform students that the basketball star will have to make 30 shots. Have each student predict how many shots they will make. While he or she is shooting, the sports reporter will keep track of the shots the basketball star makes and misses using tally marks. Tell the students that once the teacher calls time, the star and reporter will then switch jobs. Have students decide upon rules for the game. For example, the shooter must be behind the masking tape line. Record the rules of the board prior to the start of the activity. Discuss possible ways to record this information. Students will create their own way to record this information.

Part II

After students have completed their tally chart, have them answer the following questions individually using their chart. Additional questions may be added.

- How many shots did you make?
- How many shots did you miss?
- How many more shots did you make than miss?
- How many total shots did you take?
- What else can you tell me about your chart?
- Write a question for the rest of the class to answer about your chart.
- Create a sentence using greater than, less than or equal to about you and your partners correct shots.

FORMATIVE ASSESSMENT QUESTIONS

- Did you use tally marks to accurately record data? How can you be sure?
- Can you explain/interpret your partners chart?
- Can you make up a question about your chart?
- Can you answer other questions about different charts?

DIFFERENTIATION

Extension:
- In Part II the students could create a new set of questions to be answered. Find a new group of partners to answer their questions.

Intervention
- Students could build a representation using connecting cubes for each shot that a player made or missed. Using two separate color towers may help students see a better visual.

PERFORMANCE TASK: Bunch of Bananas
Approximately 1 day

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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.

BACKGROUND KNOWLEDGE

Students should have prior knowledge with making sets, counting sets and comparing sets. The problem solving steps should be modeled or established in the classroom prior to this task.

ESSENTIAL QUESTIONS

- How can large quantities be counted efficiently?
- How can making equal groups of ten objects deepen my understanding of the base ten number system?
- How can words be used to illustrate the comparison of numbers?
- How can benchmark numbers build our understanding of numbers?
- How can benchmark numbers help us compare quantities?

MATERIALS

- "Bunch of Bananas" student task sheet
- Various small manipulatives (cubes, counters, etc.)

GROUPING

Individual or partner

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I
Gather students together in meeting area. Discuss previous experiences at the zoo. Ask the students what they think monkeys eat. Present the following on the board or chart paper:

> *Monkeys like to eat an even number of bananas for lunch and each monkey must receive the same number of bananas. They never eat more than five bananas because their bellies are too small. The zoo keeper needs to figure out how to share the basket of bananas between the monkeys for lunch. Show different ways the zoo keeper can share the bananas with 8 monkeys.*

Discuss how this problem can be solved (using blocks to represent monkeys and circles or boxes to represent bananas making drawings etc.) Discuss different plans for solving the problems. Allow students to share strategies such as draw a picture, act it out, make a list, guess and check, find a pattern, create a graph, work backwards, etc.

Have students work with a partner to carry out a plan. The teacher should ask student pairs about their plan including if the plans make sense, etc. Ask questions such as: What led you to choose this particular plan? How do you know your plan makes sense? Tell me about these numbers, are they odd or even?

Observe students as they work. Have the students record strategies and solutions on their paper. They should use pictures, words, and numbers to explain the solutions and justify their thinking.

Part II
After ample work time, have students share their ideas. Discuss the similar plans and the unique plans. This is an open-ended question and will have different combinations of responses. Encourage students to discuss how they arrived at each solution.

FORMATIVE ASSESSMENT QUESTIONS

- What is your plan to solve the problem?
- Can you use pictures to communicate thinking?
- Can you write a number sentence or use words to communicate your thinking?
- How do you know if a number is odd or even?
- How many of tens and ones in a given number?
- How effective was the plan?

DIFFERENTIATION

Extension
- Present this problem to the students:

  Monkeys like to eat an even number of bananas for lunch and each monkey must receive the same number of bananas. They never eat more than five bananas because their bellies are too small. The zoo keeper needs to figure out how to share 28 bananas between the 8 monkeys for lunch. Show the best way to share the bananas with the monkeys

Intervention
- Provide students with manipulatives to represent the monkeys and bananas. Present this problem to the students:

  Monkeys like to eat an even number of bananas for lunch and each monkey must receive the same number of bananas. They never eat more than five bananas because their bellies are too small. The zoo keeper needs to figure out how to share the 12 bananas between the monkeys for lunch. Show different ways the zoo keeper can share the bananas with 3 monkeys.

Name _____

Bunch of Bananas

Monkeys like to eat an even number of bananas for lunch and each monkey must receive the same number of bananas. They never eat more than five bananas because their bellies are too small. The zoo keeper needs to figure out how to share the basket of bananas between the monkeys for lunch.

Show different ways the zoo keeper can share the bananas with 8 monkeys. Use pictures, words, and numbers to prove your math thinking.

PRACTICE TASK: Oh No 99 Chart!

Approximately 1 day

STANDARDS FOR MATHEMATICAL PRACTICE

MCC1.NBT.1 Count to 120, starting at any number less than 120. In
this range, read and write numerals and represent a number of objects with a written numeral.

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.

BACKGROUND KNOWLEDGE

Students should have had prior experiences with counting to 100. Students should also be familiar
with a 99 chart and how to read it.

ESSENTIAL QUESTIONS

- How can I use a 99 chart to help me count?
- What patterns do you see on the 99 chart?
- How are a number line and 99 chart alike? Different?

MATERIALS

- 99 chart
- Dice
- Clear counter
- Rules Poster
- Deck of cards

GROUPING

Small group

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

Tell the students that they will play a game with the 99 chart. Gather the students in a common area. Introduce the game and play a model game. Choose 3 students to play with the teacher. It is important that students understand the flow of this game. Modeling the game will allow the teacher a chance to answer any questions or clear up any misconceptions. The teacher may ask the following questions during the game.

- How many rolls do you think it will take to get to 99?
- How could we get to 99 faster?
- What number is the group on at the moment?
- How many tens and ones are in this number?
- What number comes before this number?
- What number comes after this number?
- What cards should you keep in your hand? Why?
- How do you know when a player wins?
- What strategy did you use when playing this game?

Part II

The students will play the game in a small group. The small groups should consist of no more than 4 students. Each group will need a die, 99 chart and 1 counter to use as a game piece. All members of the group will use the same game board. The directions are as follows:

1. Shuffle the deck of cards and deal 4 cards to each player. The remaining cards are placed face down in a pile.
2. Place the counter at 0.
3. The tallest student begins the game.
4. The first player will take one card and turn it face up on the table. This begins the running total. (Example: the first player turns over a 7. This player will count 7 spaces from the zero and end up at the 7. This is where the next player begins.)
5. At the end of each turn the player must draw one card from the pile. All players need 4 cards in their hands at all times.
6. Player 2 will turn over a card and follow the directions based on the card values. The player will count forward or backward depending on the value of the card but using the number where the game counter is as the starting point. The counter will end up at the new running total. Player 2 will draw a card.
7. Play continues until one player forces his/her opponent to go over 99. The first player forced off the 99 chart is not the winner. Players can continue game from previous starting point until one player remains on the 99 chart as the winner.

FORMATIVE ASSESSMENT QUESTIONS

- What number is the group on at the moment?
- How many tens and ones are in this number?
- What number comes before this number?
- What number comes after this number?
- How do you know if this number is even or odd?
- What number is ten more than this number?
- What number is ten less than this number?

DIFFERENTIATION

Extension
- Students can write the number sentences that match their turn. Ex: The group counter is currently on 62. The player turns over a 5 and writes the number sentence 62+5=67.

Intervention
- Use numbers 0-49 and only allow 2 students in a group. The teacher may remove any cards that may not be appropriate for the group.

Oh No 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

Oh No 99 Chart!

Card values and rules:

A=Ace	count forward 1
J=Jack	count backward 1
Q=Queen	WILD card- move forward up to 10 or backward up to 10
K=King	*FREEZE-* stay in the same spot
All other 2-10	count forward the number on the card

Oh No 99 Chart!

Card values and rules:

A=Ace	count forward 1
J=Jack	count backward 1
Q=Queen	WILD card- move forward up to 10 or backward up to 10
K=King	*FREEZE-* stay in the same spot
All other 2-10	count forward the number on the card

PERFORMANCE TASK: Favorite Sports
Approximately 1-2 days

STANDARDS FOR MATHEMATICAL PRACTICE

MCC1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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.

BACKGROUND KNOWLEDGE

Students should have prior experiences creating a tally chart. Students should be able to answer questions about a chart including which sport has the most and least votes.

ESSENTIAL QUESTIONS

- What information can we get from a chart?
- How do tables and charts help us organize our thinking?
- How can I collect data from my classmates?

MATERIALS

- Chart paper for class tally chart
- Favorite Sport Graphing Sheet
- Sports Ball Pictures

GROUPING
 Individual

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

Ask students if any of them like to play or watch sports. Allow students a few minutes to share their experience with sports. Tell the students that your elementary school is thinking about offering some sporting events after school and would like to know which sport would be the best to offer. Ask students for ideas on how they could collect this data for the class to share with the principal. Allow students to share their ideas for recording. After class discussion, lead the class in creating a chart using tally marks. Create a chart like the one below on chart paper. Allow students to place a tally mark on the chart to show their favorite sport. After all the tally marks have been recorded, ask students the following questions:

- How did we represent each student's vote?
- How many people chose (football) as their favorite sport?
- Which sport did students like the most?
- Which sport did students like the least?
- Can you think of other questions we can ask that could be answered by the information on this graph?

Part II

After discussing the tally chart, tell students that when you collect data from a variety of people, you get different results. Have the class take their data sheet onto the playground. Choose at least 15 students to collect data from.

While students are working, circulate and ask students questions such as:
- How many students have you surveyed so far? How do you know?
- How many more people like (football) than (soccer)?
- Which sport is the most popular so far? How do you know? Least popular?

Allow students to compare their findings with a partner. Have students discuss any similarities and differences they may see within each other's charts.

FORMATIVE ASSESSMENT QUESTIONS

- Can you identify the sport with the most and least votes?
- Can you explain your chart?
- Can you come up with questions about your chart?
- Can you explain how charts and tables help you organize your thinking?

DIFFERENTIATION

Extension
- You may challenge students by having them write additional questions about their graphs that their classmates can answer.

Intervention
- Students may survey a smaller group of students on the playground.

Favorite Sports

Data collection by _____

Fill in the question and answer choices below. Find 30 students on the playground and ask your question below. Be sure to provide the answer choices when asking the question.

Question:_____

_____

Answer Choices: 1._____ **2.**_____ **3.**_____

Sport	Tally Marks	Total Number Of Votes
1.		
2.		
3.		

Write 2 questions that you could ask a friend about your chart.

1._____

2._____