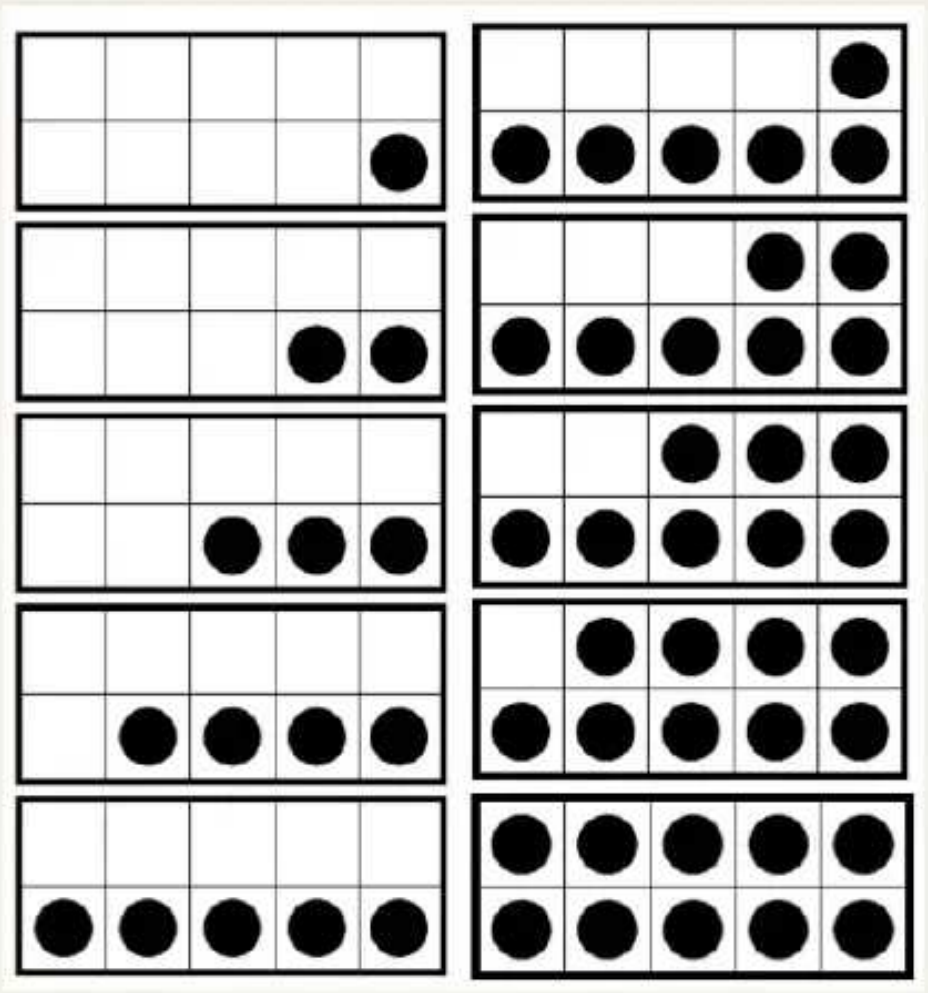
First Grade
Exploring Two-Digit Numbers



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North Carolina Department of Public Instruction

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Overview

The implementation of the Common Core State Standards in Mathematics (CCSSM) is both an exciting and anxious time for teachers around the country. Part of the excitement is the CCSS inclusion of both the Content Standards and the Standards for Mathematical Practice. The Standards for Mathematical Practice provide a foundation for the process skills that all K-12 students should be developing during every lesson.

Overview of the Lessons

The purpose of this document is to provide teachers with a set of lessons that are standards-based and align with the CCSS Content Standards and Standards for Mathematical Practice. By standards-based, we mean that students are learning mathematics by exploring mathematically-rich tasks and sharing strategies, ideas, and approaches with one another. During these lessons, the teacher's role is to truly facilitate learning by posing a task, asking questions that guide students' understanding, and assess students' mathematical understanding.

The phases of each lesson are:

- **Engage-** Students open the lesson by engaging in a brief activity to build upon students' prior knowledge.
- **Explore-** Students explore a mathematically rich task or activity that includes the main mathematical goals. During this phase, the teacher may model how to play a game or do an activity, but should not model or over teach strategies or procedures.
- **Explain-** Students discuss strategies and mathematical ideas from the Explore phase. The teacher may teach content and emphasize concepts or strategies here.
- **Elaborate-** Students complete a follow-up activity or task that extends their work from Explore and the discussion of concepts in Explain.
- **Evaluation of Students**
  - **Formative Assessment-** How can the teacher assess students during the lesson?
  - **Summative Assessment-** How can the teacher assess students' work after the lesson?

Resources on the Common Core

This document is only a starting resource as teachers begin implementing the CCSS and the Standards for Mathematical Practice. The North Carolina Department of Public Instruction has also written Unpacking Documents available at http://www.ncpublicschools.org/acre/standards/ support-tools/ . These unpacking documents provide specific descriptions of each standard as well as examples.

This project was directed by Dr. Drew Polly at UNC Charlotte. Educators who collaborated to create these documents are Gail Cotton, Ryan Dougherty, Tricia Esseck, Marta Garcia, Tery Gunter, and Kayonna Pitchford along with the DPI staff.

Overview:

Mathematical Goals
In this unit, students will:

- Represent a given number (0 – 19) on a ten-frame (double ten-frame) and relate the representation to the written numeral
- Given a number between 0 and 9, tell how many more are needed to make a ten
- Given a number between 11 and 19, tell how many tens and ones (leftovers) there are
- Given a number (0 – 30 the second and third months, 0-50 the first half of the year, 0-100 the second half of the year), tell/show how much one more or one less is with mini-ten frames, unifix cubes/pop cubes and/or any types of groupable manipulatives
- Given a number between 0 and 99, tell how much one more or one less is
- Write the numbers in standard form if shown with mini-ten frames, unifix cubes/pop cubes and/or any types of groupable manipulatives
- Understand and use the place value of tens and ones and the order of numbers
- Given a number, tell/show numbers that are greater than, less than or equal

Lessons
Part One: Building Numbers to 20
1st month of school

Lesson	Title and Description
1.1	**Ten Frames 0-10:** Ten frames are introduced and used to represent numbers 0-10. Students use Ten Frames to find 1 more, 1 less and 2 more than the start number. **Materials:** ten-frame Mats, 2-color counters, number cards (0-9), spinner, paperclip, pencil
1.2	**Ten Frames, 11-19**; Students use a Double Ten Frame to work with numbers within 20. Students use Ten Frames to find 1 more, 1 less and 2 more than the start number. **Materials:** ten-frame mats, double ten-frame mats, 2-color counters, number cards (0-9), spinner, paperclip, pencil, *Splitting Up Teen Numbers* Activity Sheet

Part Two: Exploring Two-Digit Numbers
Second Half of School Year

Lesson	Title and Description
2.1	**Place Value Ten Frame Cards**: Students use ten frame cards to build and represent two-digit numbers. **Materials:** ten frame cards, snap cubes, number cards (0-9)
2.2	**Two-Digit Compare**: Students use Ten Frame Cards to compare two two-digit numbers. **Materials:** number cards (0-9), ten-sided dice
2.3	**Quick Images**: Students continue to use Ten Frame Cards to build and compare two two-digit numbers. **Materials:** ten frame cards, Who has, I have cards
2.4	**Five Numbers Bingo**: Students use Hundreds Boards to play a game that requires them to compare two-digit numbers and find two-digit numbers that are between two other numbers. **Materials:** Bingo game boards, Hundred Boards, Number Cards (0-9)
2.5	**Greater, Less, Equal Cover Up:** Students play a game that requires them to compare two-digit numbers. **Materials:** Greater, Less, Equal Cover Up game board, spinner, Number Cards (0-9), ten frame cards, hundreds board
2.6	**Get 100!**: Students use snapping cubes, Ten Frame Cards, or Hundreds Boards to play a game that requires them to build onto a number within 100. **Materials:** ten frame cards, hundreds boards, snap cubes, Place Value Mysteries sheet
2.7	**Arrow Cards:** Introduce and use Arrow Cards along with snapping cubes. The focus is on finding the numbers that are ten more or ten less than a start number. **Materials:** Arrow Cards, hundreds boards, snap cubes
2.8	**Hundreds Board Activities**: Students use the Hundreds Boards to complete puzzles about two-digit numbers. **Materials:** hundreds boards, materials for centers activities

Common Core State Standards addressed in the unit:

Numbers in Base Ten
Extend the counting sequence.

1.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.

Understand Place Value.

1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones.

a. 10 can be thought of as a bundle of ten ones – call a "ten".
b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, <.

Use place value understanding and properties of operations to add and subtract.

1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

Operations and Algebraic Thinking

Add and subtract within 20.

1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten; decomposing a number leading to a ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums.

Emphasized Standards for Mathematical Practice

In this unit all of the Standards for Mathematical Practice are addressed.

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

Lesson 1.1: Ten Frames 0-10
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Represent a given number (0 – 10) on a ten-frame • Given a number between 0 and 9, tell how many more are needed to make a ten • Given a number between 0 and 9, tell how much one more or one less is
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand place value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten".
Emphasized Standards for Mathematical Practice	2. Reason abstractly and quantitatively 5. Use appropriate tools strategically 6. Attend to precision 7. Look for make use of structure
Prior Knowledge Needed	know number names and the count sequence, count up to ten objects
Vocabulary	ones, tens, less, more
Materials	ten-frame Mats, 2-color counters, number cards (0-9), spinner, paperclip, pencil
Resources	Technology link: http://illuminations.nctm.org/activitydetail.aspx?id=75

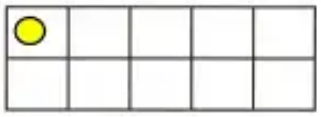
Tasks in the Lesson

Engage 5-10 minutes

Overview of Ten Frames

Model the orientation of the ten-frame mats in front of the students and provide directions for placing red/yellow counters left to right and top to bottom on ten-frames.

The teacher models what the number 1 looks like and the students build on their ten frame:



Continue with the numbers 2, 3 and 4. Ask students, "what would the number six look like?"
Ask the students to represent all the numbers 0 – 10 one at a time.

Extend their thinking by doing a quick image activity. Make a representation of the ten frame without showing it to them. Show it to them for 3-5 seconds using an overhead projector or ten frame cards. After you have shown it to them, have students make the same representation on their own ten frames. Show it to them again for 3-5 seconds. Have them correct their representation. Then show them the image and leave it up.

Ask students questions such as:

How many counters are there?
Where are groups of counters that could help us count quickly?

Explore 20 minutes

Representing Numbers on a Ten Frame

Ask students to use counters to represent various numbers on a ten frame. Suggested numbers: 3, 5, 8, 7.

As students do this, observe:
Do students clear the ten-frames each and every time OR do students add to or take from the counters on the board to make new numbers?

Ask, "How would you represent 1 more than 4 look like on the ten-frame?"
The students should show the number 5 on the ten-frames.

Follow up by asking, "What is 1 more than 4?"
"How do you know that it is 5?"
Several numbers are given for children to represent 1 more than that number.

Next, ask, "What would 1 less than 5 look like on the ten-frame?" The students show the number 4 on the ten-frames.

The teacher should then follow up by asking, "What is 1 less than 5?" "Can you use your picture to explain how you know?"

Next, begin to pose "1 more" and "1 less" tasks.
Examples: Use your ten frame to show me….

1 more than 6, 1 less than 4, 1 more than 8

Make sure to ask students to discuss the number of counters on their ten frame, and explain how they solved the task.

One More/One Less Activity Using a Spinner:

Model the activity by first pulling a number card from a deck that has cards with the numbers 0-9 on them. Students will use counters to first represent the number on the ten frame.

Next, spin the spinner that has the words: *number*, *1 more* and *1 less*. Model how to use it. It is suggested that you use a paper clip to spin, and you use a pencil or an object to keep the paper clip on the spinner. Adjust the number of counters on the ten frame based on what the spinner tells you to do.

Do the above activity numerous times with the students. As students are working, challenge them to see if they can mentally determine what 1 more, 1 less or the number are without before using the counters. This process encourages students to mentally think about the numbers without the support of being able to count the counters.

You are encouraged to use a checklist to collect anecdotal notes on their students. You could collect notes on the following questions:

1) Do students correctly represent the number on the card?
2) Do students use the counters to determine what 1 more, 1 less, or the number is?
3) Can students efficiently (within 3 seconds) determine what 1 more, 1 less, or the number is without using the counters?

Explain — 8-10 minutes

Discussing the Spinner Activity

After the students have had a few minutes to work on the spinner activity, bring students together to discuss their work.

Give students a scenario, such as the number card 5, and "1 more" on the spinner. Ask students, "how many counters should we have?"Depending on students' progress, you can continue with these types of tasks or move on.

How many until we fill the ten frame?

If students are comfortable with finding 1 more, 1 less, and 1 more of numbers, then begin to pose similar tasks with the question, "how many more counters will we need to fill the ten frame?"

The materials (tens frames; red/yellow counters; number cards 1-10, a spinner with number, 1 more and 1 less; pencils; paperclips) from the lesson will be placed in the math center/math tubs for children to practice what has been done in class.

Elaborate — 15-20 minutes

Ten Frame Games

Using an internet-connected computer, pull up the Ten Frame game on the NCTM Illuminations website (**http://illuminations.nctm.org/activitydetail.aspx?id=75**).

The website has a few different activities depending on what you want to focus on.

How Many: Students determine the number of counters or the number of empty spaces.

Build: Students represent numbers on an empty ten frame.

Fill: Students determine how many counters are needed to fill a ten frame.

Add: Students use the ten frame structure to add numbers.

Evaluation of Students

While students are working there are ample opportunities to evaluate students' performance. Questions to drive evaluation include:

- Do students correctly represent a number on the ten frame?
- Do students use counters or mentally determine what 1 more, 1 less, or 2 more is?
- Do students accurately determine how many more are needed to fill a ten frame?
- How do students determine how many more counters are needed to fill a ten frame?

Plans for Individual Differences

Intervention: If a student is struggling in showing numbers 0 - 10 on a ten-frame, continue in a small group. Pairing students to work with each other during center time will help students that are struggling. Students may need to use five-frames to build smaller numbers like 0 – 5.

Extension: Students that have achieved the numbers 0-10 can build bigger numbers with ten-frames. Let these students decide the numbers that they would represent on ten-frames. Additional number cards of "teen numbers" have been included with the number cards 1-10. If students are proficient with numbers 1-10, then students can use 2 ten frames and work to 19.

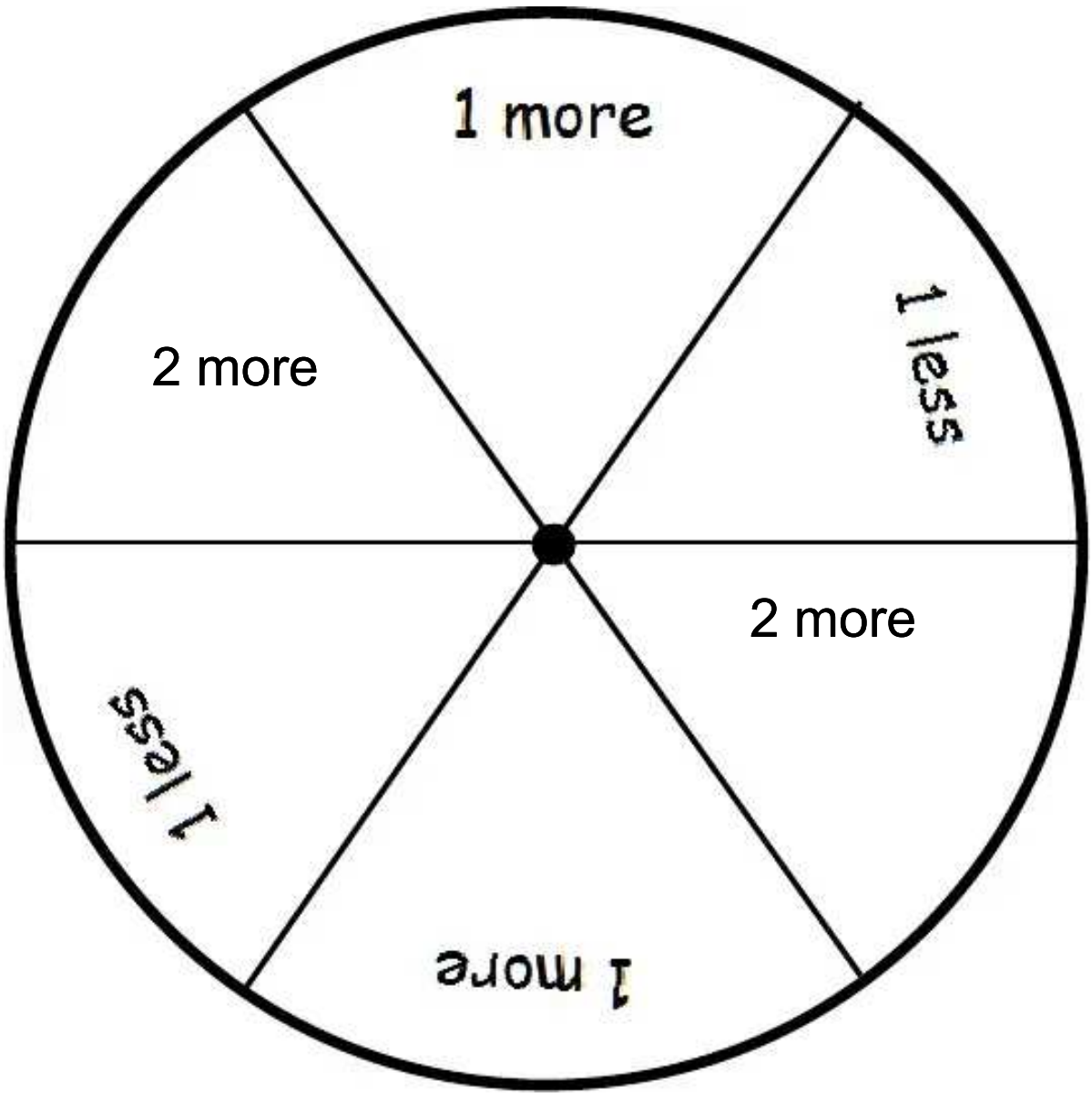
Repeating this Lesson

It is recommended that the Spinner Game and the Illuminations computer activity are revisited as needed to give students a lot of opportunities of determining 1 more, 2 more and 1 less of a number, and how to compose the number ten.

Ten Frame

Ten Frame

Spinner



0	1	2	0	1	2
3	4	5	3	4	5
6	7	8	6	7	8
9	0	1	9	0	1
2	3	4	2	3	4

5	6	7	5	6	7
8	9	0	8	9	0
1	2	3	1	2	3
4	5	6	4	5	6
7	8	9	7	8	9

Lesson 1.2: Ten Frames 11-19
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Represent a given number (0 – 19) on a ten-frame and/or a double ten-frame and relate the representation to the written numeral • Given a number between 0 and 9, tell how many more are needed to make a ten • Given a number between 11 and 19, tell how many leftovers (ones) are in addition to the group of ten • Given a number between 0 and 19, tell how much one more or one less is
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits.
Emphasized Standards for Mathematical Practice	2. Reason abstractly and quantitatively 3. Use appropriate tools strategically 6. Attend to precision 7. Look for make use of structure
Prior Knowledge Needed	know number names and the count sequence, count up to 19 objects
Vocabulary	place value, tens, ones, leftovers, less, more
Materials	ten-frame mats, double ten-frame mats, 2-color counters, number cards (0-9), spinner, paperclip, pencil, *Splitting Up Teen Numbers* Activity Sheet
Resources	Technology Link: http://www.ixl.com/math/grade-1/counting-tens-and-ones-up-to-99

Tasks in the Lesson

Engage 5-10 minutes

Ten Frames 11-19

Give students ten frames and approximately 20 counters each. Ask the students to place ten counters on the ten frame. Observe to make sure that each space has only one counter in it.

Tell students, “Grab another counter and place it next to your ten frame. How many counters do we now have total? How many are on our ten frame? How many leftovers do we have outside of the ten frame?”

Have the students grab another counter and ask them the questions above. Make sure to emphasize that the number on the ten frame does not change and the number of leftovers changes. Now, numbers are only said orally. Do not show the written numeral.

Continue this process until students have 15 counters.

Explore 20-25 minutes

Building Teen Numbers

Write the number 16 on the board for students. Tell students to build it using the ten frame.

As students work observe:
Do they put one counter in each square?
Do they organize their leftovers in a way that is easy to count?
How do they orally count the number of counters that they have?"

Write the number 18 on the board for students and have them build that number using the ten frame. Observe the same things as above. Once students have built 16 and 18 introduce the double ten frame (copy attached). Tell students that double ten frame works just like one ten frame. Emphasize the importance of filling up the entire top ten frame before filling in the bottom ten frame.

More or Less with Teen Numbers

Split students into pairs. Each pair receives a set of teen number cards and a spinner.
Model the activity for students.
Directions:

- Pull a number card from the deck.
- Build the number using your double ten frame.
- Record your number on the Activity Sheet.
- Spin the spinner.
- Adjust the ten frame based on what you have spun.
- Record your new number on the Activity Sheet.

Model this at least two times with students.
Ask them questions to make sure they understand:

- What is the first thing that you will do?
- After drawing a card what do we do?
- What do we do after we spin the spinner?
- As I walk around what will I see on your activity sheet?

As student play observe:
Do they correctly record the correct number?
How do they count the first number of counters?
When they change the number do they count all of the counters or count on from a different number?

Attached is a sheet for you to collect anecdotal notes. Make a note at the top of the chart about the concepts to observe, such as accuracy, how students count, whether they count all or count on.

Explain 10 minutes

Bring students back together to discuss the activity. The purpose of this is to have students discuss the idea of tens and leftovers as well as the ideas of changing numbers by counting on or counting back.

Discussing Counting On and Counting Back

Show students the number card 16. .
Either have a student model how to build and change the double ten frame or do it for the class as students tell you what to do. Spin the spinner, but before changing the ten frame ask:
"How should we change our double ten frame?"

~~Follow up by asking: "How did you count when we had to change the number?"~~

Possible student responses:

- "I started at 1 and counted all of the counters."
- "I knew that I had one full ten frame so I started at 10 and then counted 11, 12…"
- "We started with 16 and the spinner said to add 2, so I counted 2 more, 17 then 18."

Discussing the Idea of Tens and Leftovers

Show students a blank copy of the chart below. The first two rows are filled in to show you an example.

Counters in first ten frame	Leftovers in second ten frame	Total counters	Number sentence
10	6	16	10 + 6 = 16
10	7	17	10 + 7 = 17

Ask students questions as they help you fill out the table. For example, if you had built the number 16 on the ten frame.
"How many counters are in the first ten frame?"
"How many counters are in the second ten frame?"
"If we added the counters from both ten frames, how many would we have?"
"What would our number sentence if we added the counters in each of the ten frames?"
Repeat this with a few of the teen numbers.

This discussion is intended to help students understand that the teen numbers are composed of one ten and some leftovers. For example, 15 is made up of a group of 10 and 5 leftovers which can be shown as 10+5 = 15. This is a Kindergarten Common Core Standard, but needs to be revisited frequently in First Grade.

Elaborate 10 minutes

Give students the Activity Sheet titled "Splitting Up Teen Numbers" for them to work on.
As students are working feel free to provide extra support to struggling students by revisiting the ideas of tens and leftovers.

Evaluation of Student Performance

Formative: While students are working observe students.

Questions to assist student evaluation include:

1) Do students correctly represent a number on the ten frames?
2) How do students count after changing a number on the ten frames?
3) Can students accurately tell you how many tens and ones are in the numbers 0-19?

Summative: The activity sheet can be used for summative evaluation.

Plans for Individual Differences

Intervention: Struggling students will work with the numbers 0-10 on a ten-frame before moving onto numbers 11-19. Small group instruction would be given to these students.

Extension: Students that have achieved the numbers 0 – 19 could begin exploring the numbers 21-29 during the Explore part of the lesson.

Ten Frame

Ten Frame

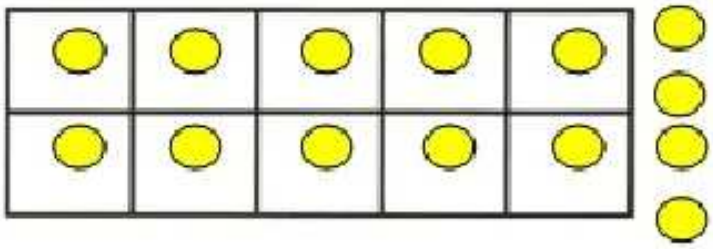
Double Ten Frame Sheet

Teen Number Cards

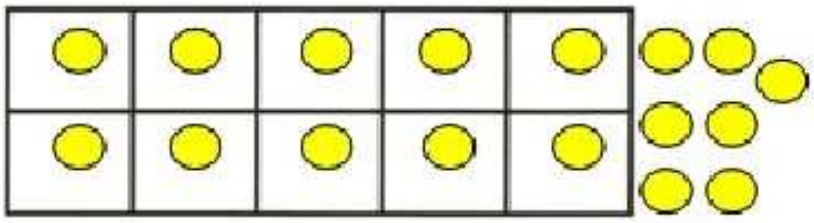
11	11	11	12
12	12	13	13
13	14	14	14
15	15	15	16
16	16	17	17
17	18	18	18
19	19	19	19

Name_____

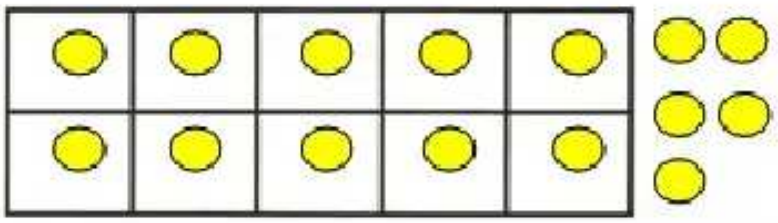
Splitting Up Teen Numbers



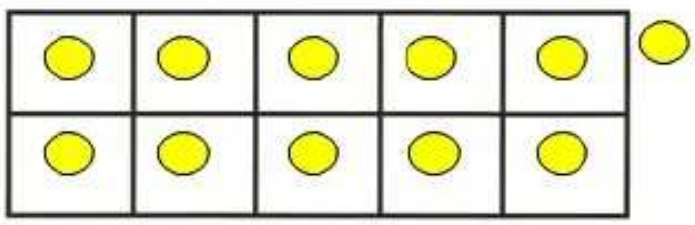
1. How many groups of ten? _____
2. How many leftovers (ones)? _____
3. How many all together? _____



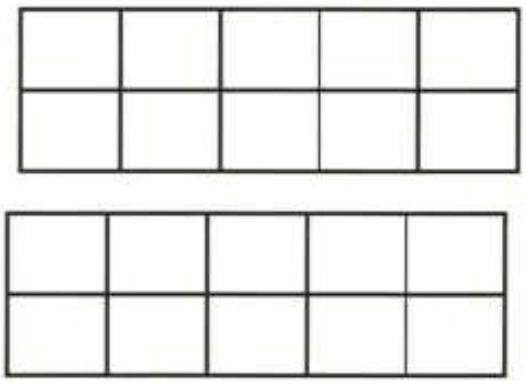
4. How many groups of ten? _____
5. How many leftovers (ones)? _____
6. How many all together? _____



7. If we added one more counter to this set we would have _____ counters.
8. If we took one counter from this set we would have _____ counters.



9. If we added two more counters to this set we would have _____ counters.
10. If we took two counters from this set we would have _____ counters.



11. Show 18.
12. How many tens do we have? _____
13. How many ones do we have? _____
14. Write a number sentence to show the joining of both ten frames.

_____ + _____ = 18

Lesson 2.1: Place Value Ten Frame Cards
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Show given numbers with Ten Frame Cards and groupable manipulatives (snapping cubes) • Given a number, tell/show how much one more or one less is with Ten Frame Cards and groupable manipulatives (snapping cubes) • Write the numbers in standard form if shown with Ten Frame Cards and groupable manipulatives (snapping cubes)
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits.
Emphasized Standards for Mathematical Practice	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 make use of structure.
Prior Knowledge Needed	know number names and the count sequence, counting objectives
Vocabulary	place value, tens, ones, less, more, same as
Materials	ten frame cards, snap cubes, number cards (0-9)
Technology	http://illuminations.nctm.org/activitydetail.aspx?id=75

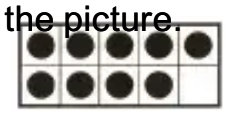
Tasks in the Lesson

Engage 5 minutes

Quick Images

Use the Ten Frame Cards (attached) for this activity.

Tell students that you are going to "flash" a ten frame on the overhead/document camera and you want them to memorize the picture.



Show the picture to them for 3-5 seconds using an overhead projector or ten frame cards. After you have shown it to them, have students make the same representation on their own ten frames. Show it to them again for 3-5 seconds. Have them correct their representation. Then show them the image and leave it up.

Ask students questions such as:

How many counters are there?

Where are groups of counters that could help us count quickly?

Explore 35 minutes

In the first half of the year, work with numbers 0-50. After that point, you may work with numbers 0-100.

There are 3 activities in this phase for students. The teacher could use each activity as a center or do them as a whole class one at a time. After students have been introduced to these activities, these can be repeated for more practice.

Building Numbers with Ten Frames

Give each pair of students a set of Ten Frame Cards.
Write a number for students to see.

The students will work in pairs to represent that number with the Ten Frame Cards.

Example: 38

Ask questions after students have made the number 38.

Suggested questions:

- What is the number?
- How many groups of tens do you have shown?
- How many ones do you have shown?
- How did you know to show that many tens/ones?

Give students a piece of paper that has the following numbers on it.
1st half of the year: 42, 29, 36, 48, 17
2nd half of the year: 82, 68, 71, 56, 92

Have students to work in pairs to make each of those numbers with their Ten Frame Cards and then record their work on the activity sheet or in their math journal. If students finish early, they can come up with their own number and then build it with their Ten Frame Cards.

As students are working observe them to see:
Do students accurately make the numbers with the Ten Frame Cards?
How do students count the total?

More and Less with Two-Digit Numbers

Show a number with the Ten Frame Cards. Ask students to identify the value of the number.

The students will then write the given number in the middle of white boards or on paper.

Ask students, “What two numbers will come before this number? Go ahead and write them down.”

Ask students, “What two numbers will come after this number? Go ahead and write them down.”

Example:

Students would write down

40 41 42 43 44

Again provide students with 5 numbers between 11 and 99. Have students build each number and then identify the two numbers before it and the two numbers after it. Students need to record their work on the activity sheet or in their math journal.

Two-Digit Compare
Model or demonstrate this activity prior to playing.

Each pair of students needs a set of number cards (1-9) and either place value blocks or Ten Frame Cards.
Each student draws two cards- the first card represents the tens place.
The second card represents the ones place.
Each student then builds their number with either base ten blocks or mini; ten-frames.
After building the number, students will then compare each other's numbers determining whose number is greater.
On the activity sheet, students will record both numbers using the >, <, and = signs.

Example of activity sheet

Player 1	Sign	Player 2
58	<	72
81	>	60

As students are working observe:

- Do students correctly represent the numbers?
- How do students count the numbers?
- Do students correctly use the >, < and = signs?
- How do students explain their decision about which sign to use?

Explain 10-12 minutes

Discussion of Activities
The discussion should reflect the different activities that students completed.

Begin discussing by giving students an example and having them talk through it.

Example:
For two-digit compare, play a quick round with a student by drawing cards and building the numbers.
Ask the class, "Who has the larger number? How do you know?"

Comparing 67 to 76
Show the numbers 67 and 76.
Ask students to explain how to build the numbers. After you build them, ask students:
How are these numbers similar?
How are these numbers different?

The goal of this discussion (Comparing 76 to 67) is to allow students to see that while the digits 7 and 6 are used in both numbers, the value of a number is largely influenced by the greatest place- the tens- and then influenced by the ones place if the values of the tens place are equal.

Elaborate 10-15 minutes

For a follow-up activity give students the activity sheet "Building Two-Digit Numbers."
As students are working, you can:

1) Provide more intervention to struggling students
2) Monitor students and ask questions about their mathematical thinking
3) Observe and record notes as students work

Questions to ask and concepts to observe include:

- How do you know that you have built the number correctly?
- What does the value in this place mean (point to the tens place)?
- How do you know which number is larger?

Evaluation of Student Performance

While students are working there are ample opportunities to evaluate students' performance.

Questions to assist student evaluation include:

- Do students correctly build a number?
- Can students accurately explain why they built the number correctly?
- How do you know which number is greater?

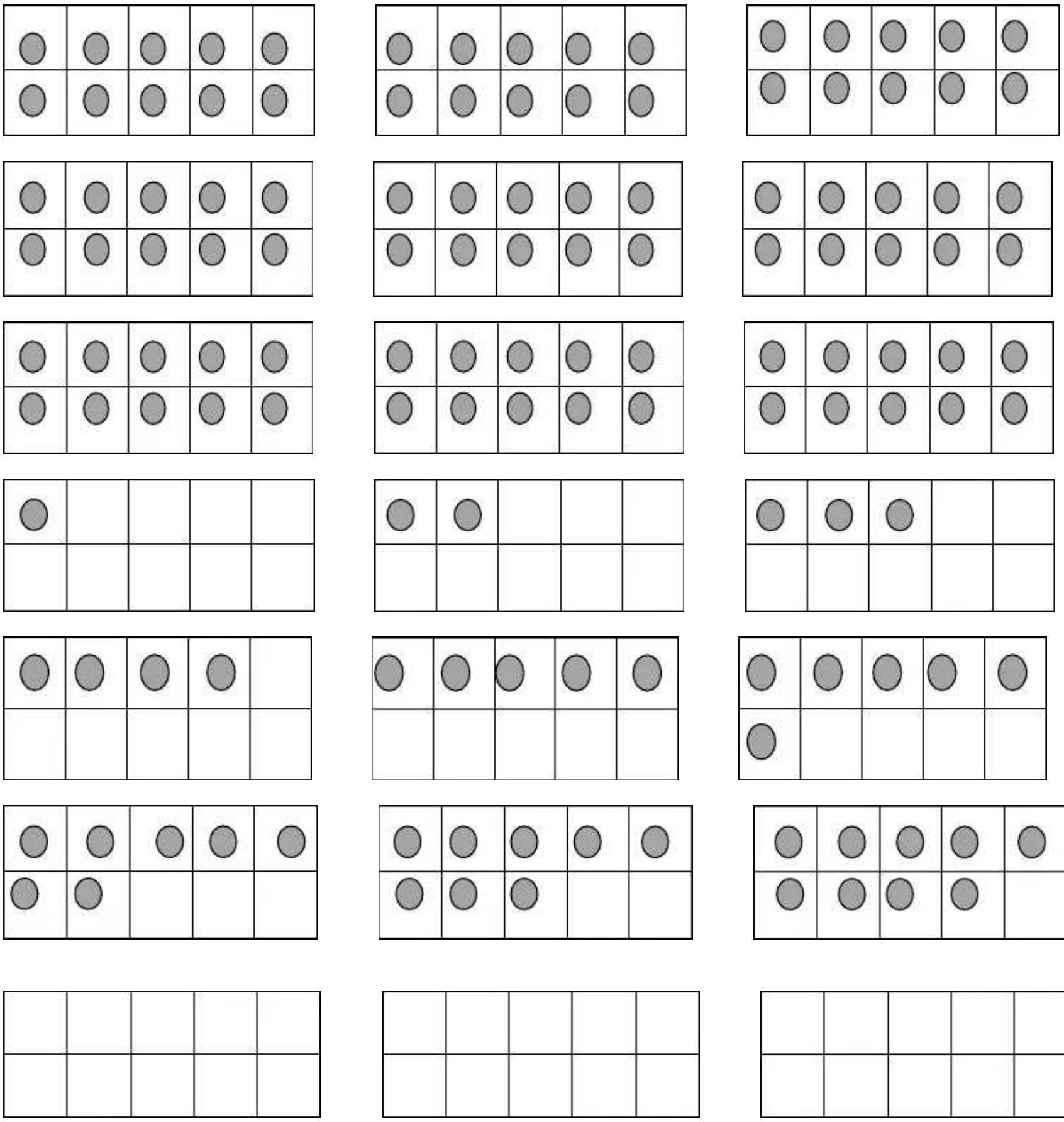
Plans for Individual Differences

Intervention: If a student is struggling in representing numbers with Ten Frame Cards more modeling would occur with that student and/or a small group. Numbers 0-20 would be used along with double ten-frames. Pairing students to work with each other during centers/math tubs will help students that are struggling with showing numbers on mini ten-frames.

Extension: Students that can represent and explain the concept of tens/ones with lower numbers will be asked to represent numbers of higher value. These students may need numbers higher than 100.

Ten Frame Cards

One set includes:
9 full ten frames (10 dots)
1 ten frame for the numbers 1-9
3 empty ten frames

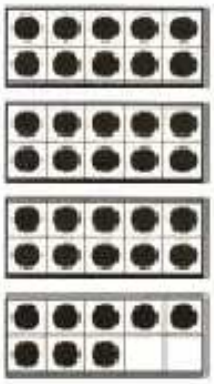


Primary Number Cards

0	1	2	0	1	2
3	4	5	3	4	5
6	7	8	6	7	8
9	0	1	9	0	1
2	3	4	2	3	4

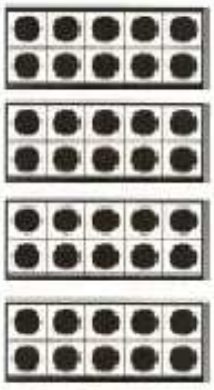
5	6	7	5	6	7
8	9	0	8	9	0
1	2	3	1	2	3
4	5	6	4	5	6
7	8	9	7	8	9

Building Two-Digit Numbers



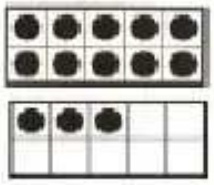
1. How many groups of ten? _____
2. How many ones? _____
3. What is the number? _____
4. How do you know that it is that number? _____

_____



5. How many groups of ten? _____
6. How many ones? _____
7. What is the number? _____
8. How do you know that it is that number? _____

_____



_____

Think about the number **47**.

9. What does the 4 mean in 47? _____

_____

Lesson 2.2: Two-digit Compare
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Represent two-digit numbers • Compare two-digit numbers
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten". b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). **1.NBT.3**. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, <.
Emphasized Standards for Mathematical Practices	Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of others. Model with mathematics. Use appropriate tools strategically. Attend to precision. Look for make use of structure.
Prior Knowledge Needed	Experiences building two-digit numbers
Vocabulary	Tens, ones, more, less
Materials	number cards (0-9), ten-sided dice

Tasks in the Lesson

Engage	15 -20 minutes

Two-Digit Numbers with Ten Frames

Call on a student to roll a ten-sided die or pick a number card from a stack of cards that is marked from 0-9 (attached). The number generated will be the number of ones in your number. The student should fill a ten frame with the number that is generated.

The student should then pick another card which will represent the number of tens. For each ten the student should grab a complete ten frame card (attached). Repeat this a few times with different students.

Explore 15-20 minutes

Two-Digit Compare with Ten Frames

Directions:

- Provide each student with a set of ten frame cards and counters.
- Students will use the ten frame cards to represent tens and counters to represent ones on a blank ten frame.
- Students will write down the number in their math journal.
- Whoever has the highest number wins a point.

As you observe ask students:

- How many tens do we have?
- How many ones do we have?
- How many dots do we have on all of the ten frames?

If students are struggling encourage them to skip count by 10s before adding on the 1s.

Explain 5-10 minutes

Bring the class together to have a discussion about the game.

Suggested questions:

- What happened during the game?
- What strategy did you use to find your number?
- How does the game help you with place value?

If time permits, have two students play a round in front of the class.

As they complete the round ask:

- What strategy did they use to find your number?
- How do we know which number is larger?
- Does the number of tens or the number of ones determine which number is larger?

Elaborate 10 minutes

Generate two digits for the class. Have the students use the ten frame cards to make a two-digit number. Students should write about the number of tens and ones in their math journal. As students are working observe to see if they can correctly make a two-digit number.

Evaluation of Students

Formative: Check through questioning and observing/listening to students while playing the game. Do the students quickly determine the number represented on the red/blue ten-frame cubes? Do they wait and watch the other students before answering? Do they count by tens and then ones? Do they know 3 groups of ten is 30 (or other combinations) without counting (10, 20, 30)?

Summative: Students math journal work can be collected as a summative assessment.

Plans for Individual Differences

Intervention: Working with a partner and/or cooperative learning groups will help struggling students. Repeat Lesson 3 in a small group setting with these students. The game boards can include only the numbers 1-30 and individual sheets with the numbers/tens can be added as students are comfortable with the numbers.

Extension: The game board with 10s listed is a higher level of number sense than the game board with the numbers listed. In the elaborate section, have the student make a two-digit number and then write either the three numbers that come after or come before that number.

Lesson 2.3: Quick Images
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Identify a two-digit number based on the amount of tens and ones • Create a representation of a two-digit number using ten frame cards
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten". b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
Emphasized Standards for Mathematical Practice	2, Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 7. Look for make use of structure.
Prior Knowledge Needed	Know number names and the count sequence Position of numeral within a number changes its value Tens and Ones
Vocabulary	value, tens, ones
Materials	ten frame cards, Who has, I have cards
Resources	Technology Link: http://nlvm.usu.edu/en/nav/frames_asid_152_g_1_t_1.html?from=grade_g_1.html

Tasks in the Lesson

Engage 10-12 minutes

Quick Images

Pass out ten frame cards to the students. These can be found in Lesson 3 of the unit. They will be making the same image that you show the class.

Depending on your students' abilities your picture may be:
Level 1: Only 1 ten frame that is partially filled (1-9 dots)
Level 2: Only completed ten frames: 30, 40, 50 dots
Level 3: Both completed ten frames and 1 partially filled ten frame (up to 99 dots)

Show the image for students to see for 5 seconds.
Give students 20 seconds to begin to make the picture using their own cards.
Show the image again for 5 seconds.
Allow the students to complete their representation.

When discussing students' work, suggested questions include:

- How many tens and/or ones were in my picture?
- How many total dots do we have?
- What strategy did you to make your picture?

Explore 12-15 minutes

Quick Images with Partners

Students will continue the Quick Image activity with their partners. Differentiate your students by telling them which levels they should be playing.

As students are working, observe:

- Can students accurately identify the number of tens and/or ones?
- Can students accurately identify the total number of dots?

Explain 10-12 minutes

Discussing Quick Images

After the game has been played discuss the game with the students.

Suggested Questions:

- What strategy did you use when you played the game?
- What was a difficult part of the game?

If time permits, give them another picture to copy.

Ask:

- What strategy did you use?
- Do you feel faster at copying my picture compared to the beginning of today?

Elaborate 10-15 minutes

I Have Who Has

Distribute the I Have Who Has Cards (attached) to the students. Depending on the number of students that you have, you may need to give 2 cards to some students.

Students should also have their math journal out to record numbers.

Pick a student to start. They will read their "who has…" question

Students will record the number in their math journal.

The student in the class that number responds by saying, "I have __. Who has __?"

This continues until all cards have been used.

To increase student engagement you can play this game in smaller groups. In order to do this, every group would have their own set of cards, and children would have multiple cards.

Evaluation of Students

Formative: Formative assessment is happening continually during the lesson by observing how quickly the children recognize the numbers with tens and ones.

Summative: There is no summative assessment for this lesson.

Plans for Individual Differences

Intervention: Pair students with the "Who has, I have" game cards. Drawing small illustrations of the tens and ones on the "I have" side of the cards may help children recognize the number. Repeating lesson 3 with a small group would help struggling students.

Extension: Children may write an "I have, Who has" game with larger numbers during math center/math tubs time and/or during Writing Workshop.

I have 94.

I have 17.

I have 61.

I have 40.

I have 38.

I have 81.

I have 16.

I have 82.

I have 39.

I have 21.

I have 86.

I have 55.

I have 59.

I have 72.

I have 11.

I have 41.

I have 74.

I have 62.

I have 0.

I have 16.

I have 73.

I have 26.

I have 21.

I have 28.

I have 59.

I have 50.

I have 10.

I have 1.

I have 30.

I have 87.

Who has 6 tens and 1 one?	Who has 1 ten and 7 ones?
Who has 3 tens and 8 ones?	Who has 4 tens and 0 ones?

Who has 1 ten and 6 ones?	Who has 8 ten and 1 one?
Who has 3 tens and 9 ones?	Who has 8 tens and 2 ones?
Who has 8 tens and 6 ones?	Who has 2 tens and 1 one?

Who has 5 tens and 9 ones?	Who has 5 tens and 5 ones?
Who has 1 ten and 1 one?	Who has 7 tens and 2 ones?
Who has 7 tens and 4 ones?	Who has 4 tens and 1 one?
Who has 0 tens and 0 ones?	Who has 6 tens and 2 ones?
Who has 7 tens and 3 ones?	Who has 1 ten and 6 ones?

Lesson 2.4 Five Numbers Bingo
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Identify the number of tens and ones in a two-digit number
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten". b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). **1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, <.
Emphasized Standards for Mathematical Practice	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 make use of structure.
Prior Knowledge Needed	Know number names and the count sequence Position of numeral within a number changes its value Tens and Ones
Vocabulary	Value, tens, ones, more, less
Materials	Bingo game boards, Hundred Boards, Number Cards (0-9)

Tasks in the Lesson

Engage 5-10 minutes

Numbers on the Hundreds Board

Distribute Hundreds Boards to students.

Have the students find the numbers 56 and 65 on Hundreds Boards.

Ask:

- What do you notice about these numbers?
- How many tens does each number have?
- Which number is greater?
- How do you know?

Continue with 2 other pairs of numbers such as 68 and 86, then 28 and 82.

Help students focus on the idea that changing position of the numbers in the tens and ones place changes the value of the number.

Explore 20-25 minutes

Five Numbers- Bingo

Students can play with partners or with a partner in a group of 4 students. Roll two dice or pull two number cards at the same time to generate two digits. Students will write down on their whiteboard the two two-digit numbers that can be formed.

For example, a 2 and an 8 could make 28 or 82.

Students mark both of those numbers on their hundreds board. On their Bingo Board students can write one of those numbers in the appropriate row.
Note: each row covers 20 numbers (0-19, 20-39, 40-59, 60-79, 80-99).
The goal is to get 5 numbers in a row on their Bingo Board in the fewest turns as possible.

Modifications:
This game can also be modified so students can only win if they have:

- 5 in a row vertically
- 5 in a row horizontally
- 5 in a row diagonally
- 2 5s in a row

Explain 8-10 minutes

Bring the class back together for a discussion.

Give students a game board that has 4 numbers filled in a row.
Example: 25, 32, 28, 36, blank square.
Show the digits 3 and 5.
Suggested Questions:

- What two numbers could we make?
- For our game which is the best number to make? Why?

Give them another situation or two if time permits.

Elaborate 5-10 minutes

Students should show their work in their math journal.

Give students the following set of digits:

Tell them to select two at a time to make different two-digit numbers.
3, 3, 5, 5, 5, 8
Challenge them to make three different two-digit numbers. Digits can only be used once.

Extensions:
Can you create numbers that all have the same number of tens?
Can you create numbers that all have the same number of ones?

Evaluation of Students

Formative: Observe the students during the game. Do they quickly determine the number that they want to use on the game board and can they explain their strategy? Do they wait and watch the other students before writing a number?

Summative: Student work from Elaborate can be used as a summative assessment.
See if students correctly make two-digit numbers that fit the conditions that you use.

Plans for Individual Differences

Intervention: Working with a partner or in a small group will help struggling students. Roll the dice and have children to write the 2 number that can be made with the 2 numerals. Discuss how the 2 numbers are different. Build the numbers with some type of groupable manipulatives so children can compare the 2 numbers. Children then locate the 2 numbers on the hundreds boards.

Extension: The numbers in red were placed on the game board to help children with the order of the numbers. The red numbers may be removed for children that do not need the assistance. Children may write the numbers in order from least to greatest in each row which adds difficulty to the game.

Hundreds Board

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

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

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

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

Five Numbers-Bingo

0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19
20	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39
40	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	59
60	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	79
80	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	99

Lesson 2.5: Greater, Less, Equal Cover Up
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Compare two two-digit numbers • Communicate strategies used to compare numbers
Common Core State Standards	**Extend the counting sequence.** 1.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. **Understand Place Value.** 1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits.
Emphasized Standards for Mathematical Practice	2. Reason abstractly and quantitatively 6. Attend to precision 7. Look for make use of structure
Prior Knowledge Needed	Experiences counting objects Experiences building numbers tens and ones
Vocabulary	less, more, equal, greater
Materials	Greater, Less, Equal Cover Up game board, spinner, Number Cards (0-9), ten frame cards, hundreds board

Tasks in the Lesson

Engage 15 minutes

What is Greater than and Less than?

Show a number represented by mini ten-frames that has both tens and ones

Have students count the number of dots and write the number down.
Ask students to share both the number of dots and their counting strategy.

Then ask students, “Can you think of a number that is greater than this number?” Take responses. Ask them how they know their number is greater than the class’ number.

Then ask students, “Can you think of a number that is less than this number?” Take responses. Ask them how they know their number is greater than the class’ number. Repeat a few times.

Explore 25-30 minutes

Greater, Less, Equal Cover Up

The game, *Greater, Less, Equal Cover Up*, can be played with small groups, pairs or all students of a class with each having a game board.

Model the game, Greater, Less, Equal Cover Up.

Directions:
Pull a number card and spin the spinner.
Cover up any number that you want to based on the spinner and the number card.
For example if you pull the number card 8 and you spin “less than” you can mark any number less than 8.
If a number has already been covered, the students must make another choice if possible or skip that turn.

The game will continue until a student covers up a row or a column.

As the students are playing the game, make observations and ask questions about:
Do students accurately mark an appropriate number?
Can students clearly explain how they know whether a number is greater than or less than the number they pulled?

Explain 8-10 minutes

After the game has been played, discuss the game with the class.
Ask:

- What happened during the game?
- What strategies did you use as you played the game?

If time permits play a round of the game with the students and ask them to discuss their strategy when playing.

Elaborate 10-12 minutes

When students are ready have them complete the activity sheet (attached).
As students are working feel free to work with students who are struggling by asking them guided questions without directly providing information or answers.

Evaluation of Students

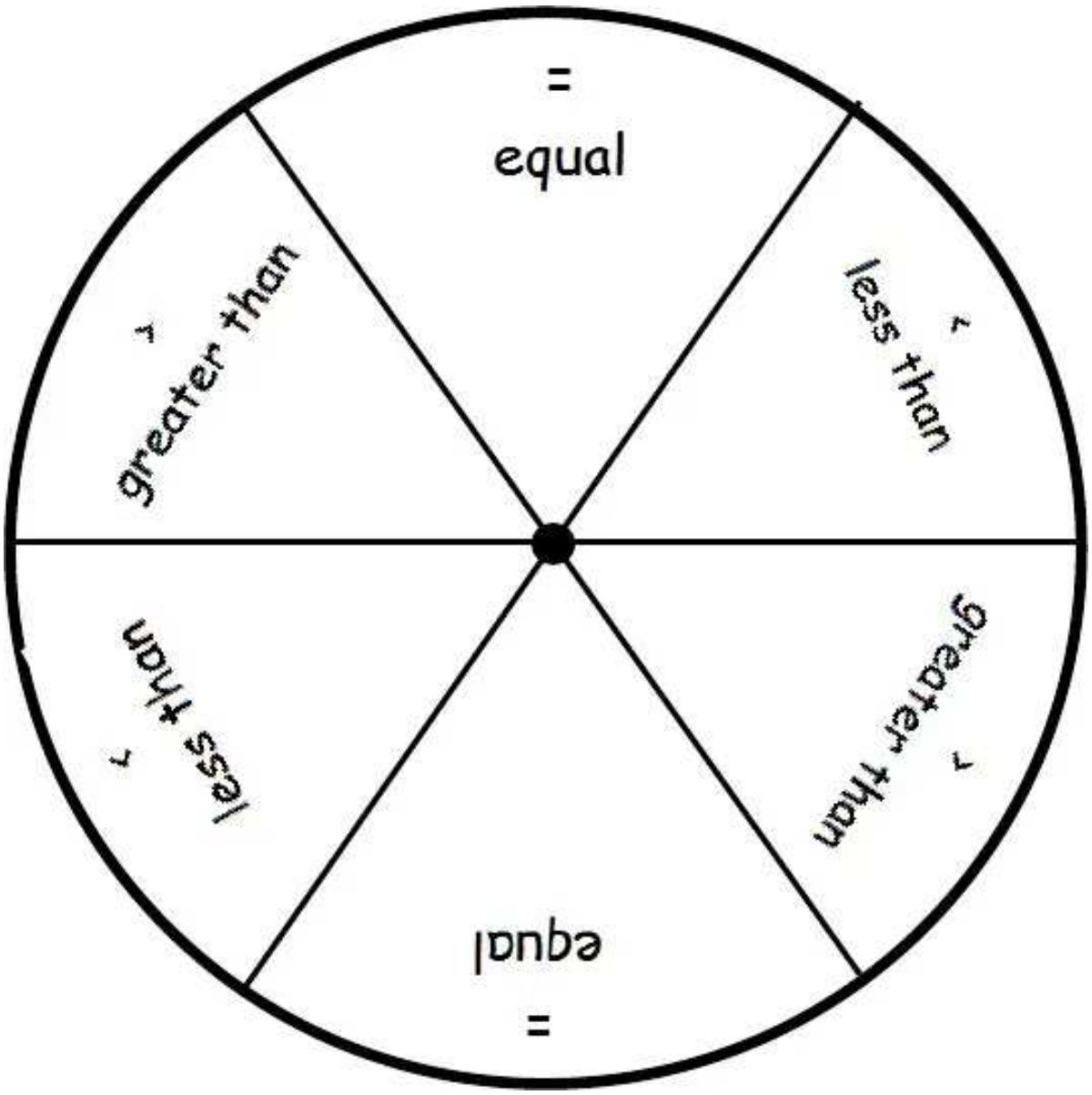
Formative:
During the lesson listen and observe while students are playing the game.
Take notes about whether students can accurate compare numbers and their explanations about their comparisons.

Summative: The activity sheet can be used as summative assessment.

Plans for Individual Differences

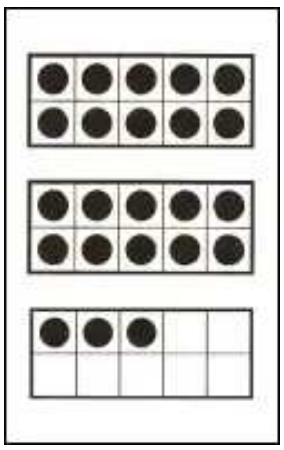
Intervention: If a student is struggling with knowing numbers that are greater than, less than or equal to a given number more work with groupable manipulatives and adding more manipulatives for greater than and taking some manipulatives away for less than may help the student. Plus have the student use a hundreds board to find the given number and showing numbers that are greater than, less than and equal to the given number. The game board can be cut to only have numbers 1- 10, 1-15 or 1-20.
Extension: A game board with numbers 25-50, 50-75, 75-100 or higher numbers. A winner can be declared if it is a diagonal line.

Spinner for Greater Than, Less Than, or Equal To



Name _____

Greater, Lesser, and Equal



1) How many dots are there in the picture on the left?

2) Name two numbers that are greater than the number of dots?

3) Name two numbers that are less than the number of dots?

4) How many more dots would you need to have 25?

17

5) Draw a picture to show 17.

6) Name two numbers that are greater than 17 but less than 20.

7) Name two numbers that are less than 17 but greater than 12.

8) How many more would you need to have 21?

9) Explain how you found your answer to that question.

10) You have 12 pencils. Your friend has 10 pencils and then gets 3 more. Who has more? How do you know? Draw a picture and write an equation to explain your answer.

11) You have 21 students in your class. You bring in 23 erasers for your classmates. Do you have enough to give each student one eraser? How do you know? Write a sentence to explain your answer.

Lesson 2.6: Get to 100!
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Gain an understanding of the place values for ones and tens • Recognize the patterns on a hundreds board • Encourage mental computation.
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten". b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). **1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, <.
Emphasized Standards for Mathematical Practice	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 make use of structure.
Prior Knowledge Needed	Experiences reading and building two-digit numbers.
Vocabulary	tens, ones, less, more, place
Materials	ten frame cards, hundreds boards, snap cubes, Place Value Mysteries sheet

Tasks in the Lesson

Engage 15-20 minutes

Tens and Ones

The Power Point Tens & Ones file can be used as a quick review. If you use it, ask questions and make it as active as possible. After the quick review, say a number and have the students represent the number with Ten Frame Cards or another groupable manipulatives (snapping cubes). Also have the students mark the number on the hundred boards.

Ask students:

- What is the number represented?
- How many tens are in this number?
- How many ones are in this number?

Continue by asking the students what one more would be and how they would represent it. Have the students represent the number and mark the number on the hundred boards.

Suggested questions:

- How do you know you have marked the correct number?
- What would ten more be?
- How did you find out what ten more would be?
- On your hundreds board what pattern do you see as you move your finger from one number to the right?
- On your hundreds board what pattern do you see as you move down the board?

Explore 20-25 minutes

Get 100!

Have children draw the game boards on paper or white wipe off boards. The game board is a two-column chart. Label the left column "10s" and the right column "1s."

Model how to play with your students.
The goal is to get as close to the number 100 without going over.
The game can be played individually, in pairs or teams.

Roll the dice six times.
The students write the number that is rolled in either the 10s or 1s column
They do the same for the second number and onto their total.
This continues for 6 rounds.

Provide students with a hundreds board or popping cubes to help them with this game.
The winner is the player that is closest to 100 without going over! Model playing a round.
After playing one round ask students:
What should we think about before determining whether to put numbers in the tens or ones column?

Allow students to play this game for a few rounds. Make sure that they record their numbers. Students should have access to a hundreds chart and game pieces or snapping cubes the entire time.

As students are playing observe:
Are students able to accurately count on to a number? How do students use the hundreds board or cubes to support their work?
What explanations do students give about why they placed a number in a specific column?

Explain 10 minutes

After the game has been played, discuss the game and various strategies with the class.
Suggested questions:

- What happened during the game?
- What strategies did you use in the placement of the numbers in the 10s or 1s columns?

If time permits, play a round or two of the game with students and have them tell you where to place the numbers. As you play, ask students to explain their reasoning about where they want to place numbers.

Elaborate 10-12 minutes

Mystery Numbers

Students would mark numbers on a hundred boards to help them find the mystery number.

Students will explain orally or in writing how they would found the mystery numbers.
Here is an example:
I am between 20 and 40. I have 3 tens. The sum of my digits is 7. Who am I?

See the attached sheet with more examples.

Evaluation of Students

Formative: Observe the students during the game. Do they quickly determine if the number needs to be placed in the 10s or 1s columns? Do they wait and watch the other students before writing a number?

Summative: Students' work in Elaborate can be used as a summative assessment.

Plans for Individual Differences

Intervention: During the time that groupable manipulatives are used, the teacher or student peer may help students who need help with finding the total and/or representing the numbers. At the bottom of the game boards are 10's, students that need to mark the 10s while playing to help them understand the amount they are calculating can be done. The number 100 may be change to a lower number.

Extension: The groupable manipulatives may not be used for students that are working at a higher level and can do the mental computation. These students could read and find the higher mystery numbers in the book, Place Value Mysteries. Students may write place value mysteries of their own following the examples in the book.

Place Value Mysteries

I am between 20 and 50.

I have 4 tens.

The sum of my digits is 7.

Who am I?

Place Value Mysteries

I am between 30 and 50.

I have 3 tens.

The sum of my digits is 9.

Who am I?

Place Value Mysteries

I am between 60 and 90.

I have 7 tens.

I am larger than 75.

I have a 9.

Who am I?

Place Value Mysteries

I am between 60 and 90.

I have 8 tens.

I am larger than 81.

I have a 6.

Who am I?

Place Value Mysteries

I am between 0 and 40.
I am larger than 25.

I am smaller than 35.

I have a 0.

Who am I?

Place Value Mysteries

I am between 30 and 70.
I am larger than 52.

I am smaller than 59.

I am larger than 57.

Who am I?

Lesson 2.7: Arrow Cards
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Build a two-digit number using Arrow Cards • Describe the value of a two-digit number based on the digits in the tens and ones places.
Common Core State Standards	**Extend the counting sequence.** 1.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. **Understand Place Value.** 1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten". b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). 1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits. **Use place value understanding and properties of operations to add and subtract** 1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
Emphasized Standards for Mathematical Practice	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 make use of structure.
Prior Knowledge Needed	Experiences reading and building two-digit numbers
Vocabulary	tens, ones, less, more, value
Materials	arrow cards, hundreds boards, snap cubes

Tasks in the Lesson

About Arrow Cards

Arrow Cards are a set of place value cards with an "arrow" on the right side. Students can organize the cards horizontally or vertically to represent numbers in expanded form (35 = 30 + 5). They can overlap cards and line up the arrows to form multi-digit numbers.

Engage 10 minutes

Arrow Cards

Use a large set of arrow cards to demonstrate how to sort the arrow cards in groups of ones and tens.

Pair the students and then they will sort a set of the arrow cards in groups of ones and tens. After the arrow cards are sorted begin by asking the students to show the following numbers.

Ask students to show you the numbers 1, 2, and 5.
The students work with their partners to show the numbers.

Ask students to show you these numbers one at a time: 10, 20, and 50.
For each one, ask:

- How many tens are there in this number?
- How many ones are there?

Continue this activity with a few different numbers.

Make sure to revisit the question:
How are the two numbers similar and different? (4 and 40, 6 and 60, 7 and 70).

Explore 25-30 minutes

Building Two-Digit Numbers
Show students five cubes and have them show you the number card to match the set.
Add a group of ten cubes that are connected and ask students, “How many cubes do we now have?”
Have them use the arrow cards (10 and 5) to show you the number.

Show students 3 cubes and then add 2 sticks of 10.
Ask them to use their Arrow Cards to make that number (20 and 3).

Do this with a few more numbers.
If students seem to be doing well, give them the 2-digit number at once without starting with the ones and then adding the tens.

After you have done a few numbers as a class have the students work in pairs. One student will say a two-digit number and the other student needs to make it with both snapping cubes and the arrow cards.

What is ten more?
Bring the class back together and transition into this activity. Give the students a two-digit number to make with Arrow Cards. Also have students find the number on their Hundreds Boards. Ask the students to use their Hundreds Board to find out 10 more than the number that you gave them.

Have students share their responses and then make their new number with the Arrow Cards. Follow up by asking students:

- How many ones and tens there are in the new number?
- How is the new number different from the first number?

Have students work with their partner on this activity.
One partner can say a two-digit number or draw number cards to generate a two-digit number. The other partner should then use the Hundreds Board and Arrow Cards to identify a make the number that is ten more than the original number.

Students in first grade are required to find ten more and ten less mentally, so when students are ready, have them find the number using just the Arrow Cards without the support of the Hundreds Board.

Extension: To challenge students have them find the number that is ten less than the original number. Once again, use the Hundreds Board at first until students are ready to find the number mentally.

Explain 10 minutes

After the above activity, the teacher brings the class back together.

Discuss occurs about the patterns on the hundred boards.

The math talk that the teacher needs to hear is about the patterning that is occurring on the hundred boards and what is happening to the tens place as the tens place is increasing by one group of tens.

Suggested questions to ask:
In the number 43, what does the 4 represent? What about the 3?
What would 10 more than that number be?

If time permits, continue to pose similar tasks for students. As students become more comfortable finding ten more (or ten less), then remove the support of the Hundreds Board to have them work mentally.

Elaborate 20 minutes

For the time remaining in the lesson give the students one of the following activities:

1) Place Value Puzzles (from Lesson 2.6)
2) Get to 100! (from lesson 2.6)
3) Ordering Numbers
   Have students pull number cards to generate two two-digit numbers. Students find both numbers on the Hundreds Board and determine which is larger.
   Students should record their work in a math journal.

At the end of this phase give students a two-digit number and ask them to give you the number that is ten more. This can be used as the summative assessment.

Evaluation of Students

Formative:
As students are working, observe their work and ask them questions.
Suggested questions:
Do the students quickly change the arrow cards to show 10 more than a given number?
Do they wait and watch the other students before answering?
Do they count by tens and then ones?
Do they know 3 groups of ten is 30 (or other combinations) without counting (10, 20, 30)?

Summative:
A closing task from Elaborate can be used as a summative assessment.

Plans for Individual Differences

Intervention: Working with a partner and/or cooperative learning groups will help struggling students. Repeat Lessons 2 and 3 in a small group setting with these students. Use a variety of groupable manipulatives with these students.

Extension: In addition to 10 more ask students to show 20 more than a given number, 30 more than a given number. . Finally, get your students' creative juices flowing with this one!
"Can you create a new arrow card activity and share it with the class?"

Lesson 2.8: Hundreds Board Activities
Overview and Background Information

Mathematical Goals	By the end of the lesson students will: • Gain an understanding of the place values for ones and tens • Given a number between 0 – 100, tell how much one more, one less, 10 more and 10 less is
Common Core State Standards	**Extend the counting sequence.** **1.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. **Understand Place Value.** **1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones – call a "ten". b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). **1.NBT.3** Compare two two-digit numbers based on meanings of the tens and ones digits. **Use place value understanding and properties of operations to add and subtract.** **1.NBT.5** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
Emphasized Standards for Mathematical Practice	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 make use of structure.
Prior Knowledge Needed	Experiences reading and building two-digit numbers.
Vocabulary	tens, ones, less, more
Materials	hundreds boards, materials for centers activities
Resource	Technology Link: http://nlvm.usu.edu/en/nav/frames_asid_337_g_1_t_1.html?from=grade_g_1.html

Tasks in the Lesson

Engage 10 minutes

Ten More and Ten Less

Give each student a hundreds board.

Give students a two-digit number and ask them:

- What is ten more than that number?
- What is ten less than that number?
- What did you do to change the numbers?

Give students a few numbers to work with. If students are having success then have them find the numbers mentally without the hundreds boards. By the end of first grade, students need to be able to complete this task mentally.

Explore 35-45 minutes

Hundreds Board Pictures

In small groups, students will decorate a blank hundreds board by solving number puzzles.
As students are working in small groups, one group will be with the teacher and two or three groups will be working independently.

The independent groups can be playing a variety of math games- Get to 100! (Lesson 8), Ten More and Ten Less (Lesson 9), or other math games from earlier lessons or units.

Teacher-facilitated group:
Give students paper copies of Hundreds Boards.
Give them a variety of clues to work through- examples are provided for you (attached).

Example: The letter H
Mark the following numbers:
One more than 25 (26). Two less than 48 (46). Ten less than the last number you marked (36).
Five more than 32 (37). One less than 29 (28). Ten more than 38 (48). Ten less than 48 (38)

Rotate groups after 10-15 minutes. As students are working, observe them and ask questions such as:
Do students find the number mentally or do they use their Hundreds Board?

Explain 5 minutes

After students have finished coloring/marking in the hundreds board, discuss the activity with the class.
Suggested questions:

- What skills did you work on when you were making your Hundreds Board picture?
- What was difficult about making your picture?

Elaborate

During this activity there is no Elaborate or follow-up after the discussion.
If time permits, the teacher can give students a few two-digit numbers and have them determine what ten more and/or ten less than that number is.

Evaluation of Students

Formative: Check through questioning and observing/listening to students while they are marking numbers on the hundreds boards. Do the students quickly mark numbers? Do they wait and watch the other students marking numbers on the hundreds boards?

Summative: If you pose a task during the Elaborate phase, that can be used as a summative assessment.

Plans for Individual Differences

Intervention: Working with a partner to record the numbers on the hundreds boards will help struggling students. In a small group setting, use an interactive white board (Promethean Board) to use the Flipchart 100 to help mark numbers and understand the patterns on a hundreds board.
Extension: Hundreds Boards could include higher numbers and/or the numbers 101 – 200 could be used on the hundreds boards. Have these students to create a hundreds board activity with clues and share it with the class.