



CONSTRUCTING TASK: Number Hop

Approximately 3 days

STANDARDS FOR MATHEMATICAL CONTENT

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

STANDARDS FOR MATHEMATICAL PRACTICE

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

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

BACKGROUND KNOWLEDGE

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

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

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

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

(Information adapted from North Carolina DPI Instructional Support Tools)

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

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

This standard calls for students to count within 1,000. This means that students are expected to count on from any number and say the next few numbers that come afterwards.

Understand that counting by 2s, 5s and 10s is counting groups of items by that amount.

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

When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198

This standard also introduces skip counting by 5s and 100s. Students are introduced to ten more or ten less in First Grade. When students add or subtract by 5s, the ones digit alternates between 5 and 0. When students add or subtracts by 100s, the hundreds digit is the only digit that changes, and it increases by one number.

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

ESSENTIAL QUESTIONS

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

MATERIALS

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

GROUPING

Large Group, Small Group, Individual

TASK DESCRIPTION, DISCUSSION, AND DEVELOPMENT

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



Part I

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

Part II

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

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

Part III

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

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

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

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

Part IV

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

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

Part V

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

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

FORMATIVE ASSESSMENT QUESTIONS:

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

DIFFERENTIATION

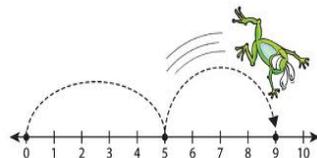
Extension

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

Intervention

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

Name: _____ Date: _____



Number Hop!



Lilly the Frog only hops by 10s. If she is on the number 20, how many hops will it take to land on the number 100?

Use a visual representation to show your answer.



If Lilly the Frog hops by 5s, how many hops will it take to get to 75 if she starts on the number 40?

Use a visual representation to show your answer.
