SCAFFOLDING TASK: Where am I on the Number Line?

Approximately 3 days (Adapted from: http://www.Mathwire.com**)**

STANDARDS FOR MATHEMATICAL CONTENT

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

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

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

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

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 INFORMATION

(Information quoted from Van de Walle and Lovin, Teaching Student-Centered Mathematics: Grades K-3, pages 142-143)

"Relative magnitude refers to the size relationship one number has with another- is it much larger, much smaller, close or about the same? There are several quick activities that can be done with a number line sketched on the board. The number line can help children see how one number is related to another.
We should not permit children to study place-value concepts without encouraging them to see number in the world around them. You do not need a prescribed activity to bring real numbers in the classroom."

ESSENTIAL QUESTION

- How can place value help us locate a number on the number line?

MATERIALS

- Spinners, one per pair of students
- 0 -100 student number lines
- 0 -100 class number line made from adding machine tape
- Paper clips
- Empty number line set – One per student

GROUPING

Partners, Individual

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

In this game students will be reviewing counting up and counting back to get an answer. As the students play the game they will also see where a number lives on a number line and their relative position to each other (who its neighbors are). Being able to locate a number on the number line (the relative position of numerals) is essential to developing solid number sense. It will also help the student understand its value in relation to other numbers.

Part I
Introduce the game with the whole class before assigning partners to play. Using adding machine tape, create a 0 -100 number line. Use this number line to introduce "Where Am I on the Number Line?"

Students will begin with their clothespin on "50" and then spin the spinner. Each time the spinner is spun, a student will move a paper clip or clothespin forward or back the appropriate number of spaces either up or down the number line. Have students give a number sentence that matches their move. The students will take turns adding to or subtracting from their number until one player reaches or passes 100. This student is the winner. If they spin a number that is more than they can subtract they lose that turn. **When this happens make sure to discuss the fact that there ARE numbers on the other side of zero, negative numbers, but for now we are only working with/talking about the whole numbers.**

Example: The player's clothespin is on 23 and he spins a -6. He will move the clothespin back and tell the class, "23 – 6 = 17."

Student Directions

- Each player puts a paper clip or clothespin on **50**.

- Place a transparent spinner on the game spinner. (Use A and then B)
- Player A spins the spinner, adds or subtracts that number to **50** and places the paper clip on that answer.
- Player B spins the spinner and moves as above.
- Player A spins the spinner, adds or subtracts the number to where his/her paper clip is, then moves the paper clip to the new answer.
- Player B does the same.
- The game continues until one of the players **reaches or passes 100** on the number line.
- The first player to reach or pass 100 wins the game.

Part 2
Display a large number line and cover up most of the numbers. Select a mystery number and have a student place a marker where they think that number would lie on the number line. Check the location by uncovering the corresponding numbers.

Distribute **folded** empty number lines and paper clips to each student. Have students place their empty number line facing up with the corresponding number line on the back. The paper clip can be placed on the fold and used as a slider/marker. Call out a mystery number and encourage students to locate the number on their empty number lines with the paper clip. Students can then flip the number line over to check their answers. Discuss the correct location with the class.

****Corresponding Van de Walle activities can be found on pages 142 and 143 in *Teaching Student Centered Mathematics K-3*. These number line activities should be incorporated into daily classroom routines to help students learn the relative magnitude of numbers.**

- Activity 5.17 – "Who Am I?"
- Activity 5.18 – "Who Could They Be?"
- Activity 5.19 – "Close, Far, and in Between"

Part 3
Vary the games above by implementing skip counting by, 2's, 5's, and 10's into the number line activities. For example, after stating a number have students place a marker on the number that is 10 more. Continue counting by 10's until you reach the end of the number line. How do the numbers change? Do the students recognize a pattern?

Variation: *As the unit progresses, change the number lines to* ***show counts by 5's, 10's or 100's.*** *Using dice, each roll of the dice has to be changed into the corresponding multiple of that number. Example: If a student rolls a 3 on a 10's number line that roll will represent 30.*

FORMATIVE ASSESSMENT QUESTIONS

- If you are on the number _____, what number would you land on next if your spinner landed on _____?
- What number is 10 less than (10 more than, 5 less than, …)_____?

- What numbers are the next door neighbors of _____?

DIFFERENTIATION

Extension

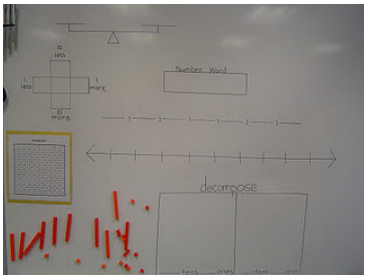
- Make a number line with only even or odd numbers so that students create a mental image of what the numeral's "neighbor" is on the number line.

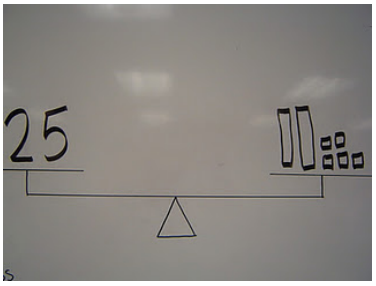
Intervention

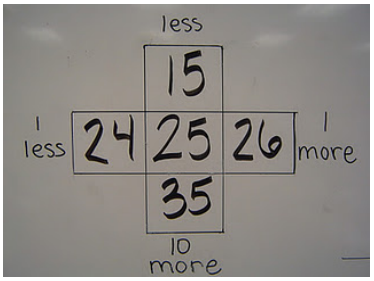
- Reduce the number line to numerals less than 20 and use dice, either one or two depending on the level of the student. As the student becomes more proficient, the number line may be lengthened to include larger numbers.
- Use a spinner and/or number line with fewer numbers.

Additional Comments:

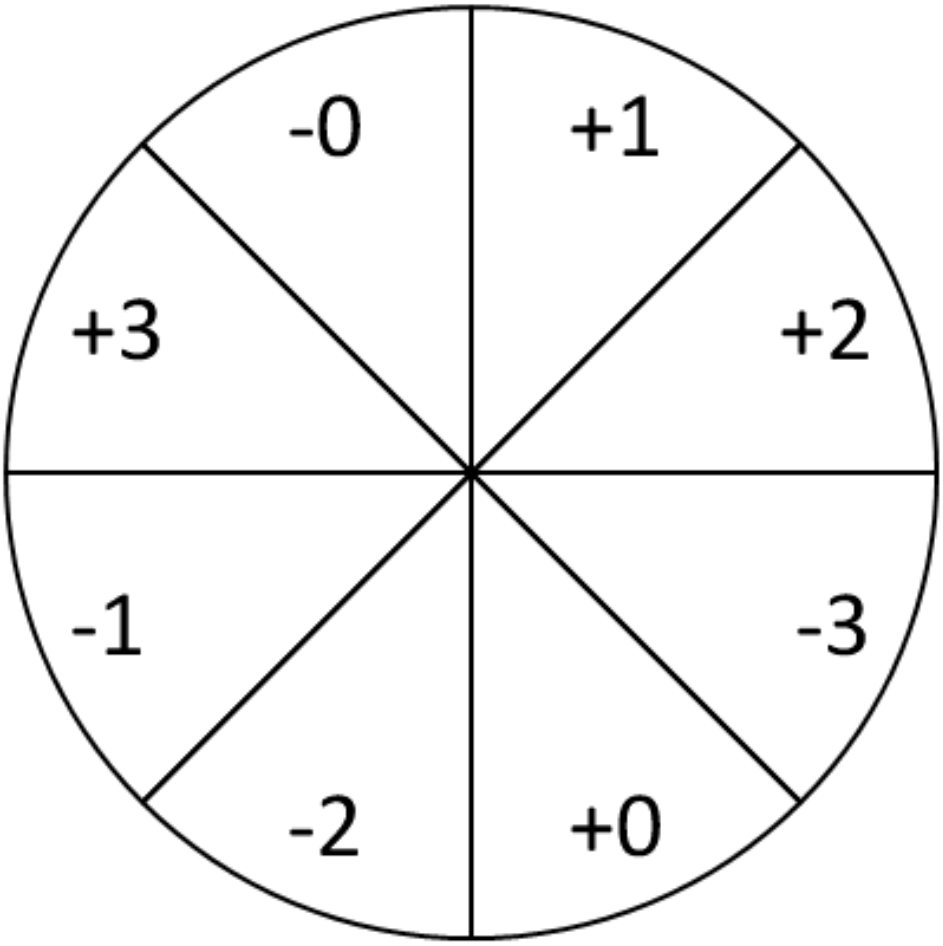
Number of the day activities should be incorporated throughout the year and become a regular classroom routine.





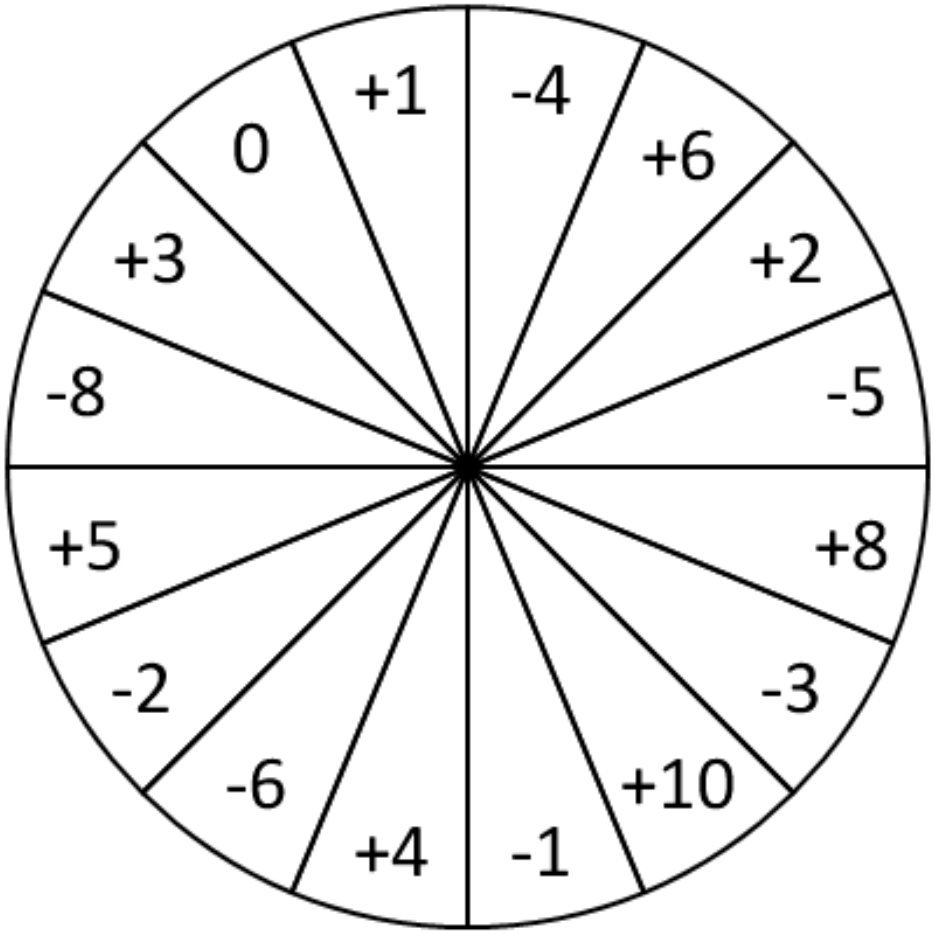


Spinner A – Where Am I on the Number Line?
Use this spinner if your number line is 25 or less.



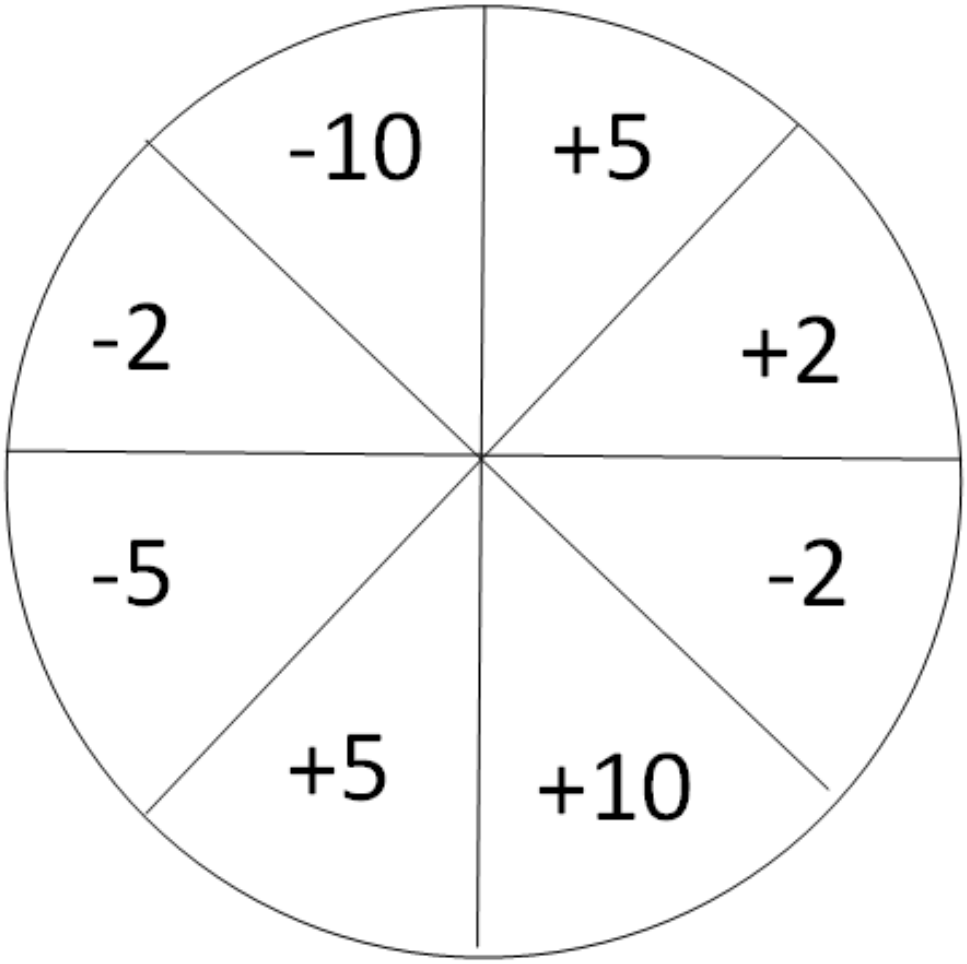
Spinner B – Where Am I on the Number Line?

Use this spinner if your number line is 0 – 100



Spinner C – Where Am I on the Number Line?

Use for skip counting



Student Number Line -Where Am I on the Number Line?

Students will cut these apart and glue together to make a 0 -100 number line.

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

Empty Number Line - Where Am I on the Number Line?

Cut out the number lines on the outer dotted line. Cut again down the center line and fold to make a front and back section for each student. Place a paperclip on the folded side to use as a slider/marker.