CONSTRUCTING TASK: Where Am I On the Number Line Revisited

Approximately 1 Day (Adapted from: http://www.Mathwire.com)

STANDARDS FOR MATHEMATICAL CONTENT

MCC2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900**.**

MCC2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

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. *****

In this game, students will be reviewing counting up and counting back by ten to get an answer. As the students play the game they will also be able to see where a number lives on a number line and the number's relative position to each other. Being able to locate a number on the number line (the relative position of numerals) in relation to other numbers is essential to developing solid number sense. It will also help the student understand its value in relation to other numbers. This task is an extension of a task from Unit 1, titled, Where Am I on the Number Line? The work in this task prepares students for addressing standard **MCC2.NBT.8.**

A large portion of the second grade standards emphasize the importance of students developing a solid understanding of the relationship between addition and subtraction. An example of this is when a child uses an addition strategy (counting on) to solve a subtraction problem. The process of adding-on helps students focus on the distance between the two amounts. Using a linear model of an "open number line" (meaning a line that does not have designated numbers already on it) in this game will help students act out adding or subtracting 10 from a given number. Use of a number chart for this activity is not recommended because it will not introduce or provide support for demonstrating how students can utilize the strategy of an open number line to solve addition and subtraction problems.

ESSENTIAL QUESTIONS

- How can place value help us locate a number on the number line?
- How can I use a number line to add or subtract?
- How can I use a number line to figure out 10 more or less than a number?
- What happens to the value of a number when we add or subtract 10 from it? What digits change? What digits stay the same? Why?

MATERIALS

- Spinners, one per pair of students
- 0 -100 student number lines
- 0 -100 class number line made from adding machine tape

GROUPING

Partners

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

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?" Each time the spinner is spun, a student will move a paper clip or clothespin the appropriate number of spaces either up or down the number line. Have students give a number sentence that matches with their move. Example: The player's clothespin is on 25 and he spins a -10. He will move the clothespin back and tell the class, "25 – 10 = 15." Students will begin on "25" and move forward or back accordingly. 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 positive numbers.**

Student Directions

- Each player puts a paper clip or clothespin on 25.
- Place a transparent spinner on the game spinner. (See example provided)
- Player A spins the spinner, adds or subtracts that number spun 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 based on 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.

Variation: *As the year 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

- How does place value help us locate a number on the number line?
- How can I use a number line as a model to help us to add or subtract?
- Does a number line always have to begin with zero or one? Why not?
- How did you figure out what number was 1, 2, 3, or 10) to the left or right of the marked number?
- What happens to the value of a number when we add or subtract 10 from it? What digits change? What digits stay the same? Why?

DIFFERENTIATION

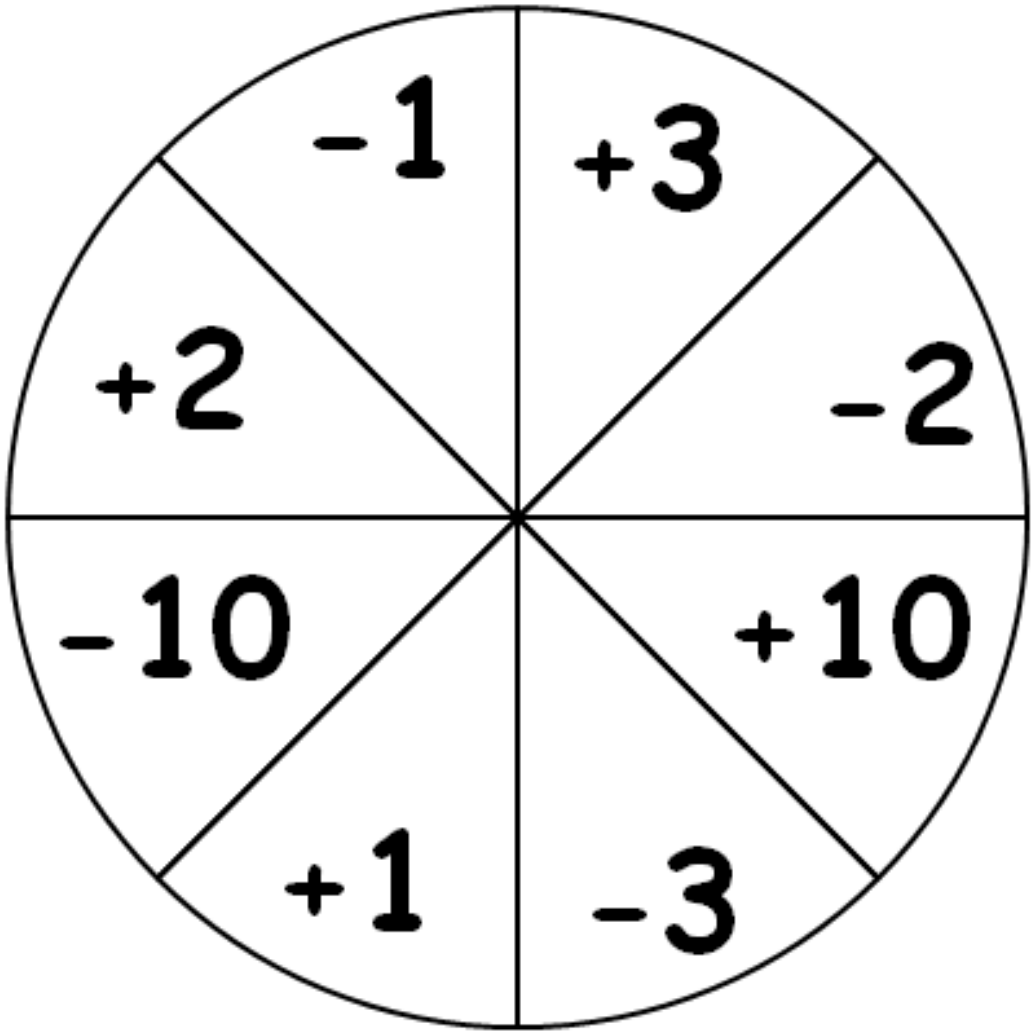
Extension

- 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.
- Have students use a 100 chart or a 0-99 chart to perform their calculations.
- Use a spinner with larger numbers.

Intervention

- Reduce the number line to numerals less than 50 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 with fewer numbers.
- Use a 0-99 chart so that students can circle the numbers that do or do not match the clue.

Spinner – Where Am I on the Number Line?



Where Am I On the Number Line? Revisited

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