SCAFFOLDING TASK: Number Destinations

Approximately 2 days

STANDARDS FOR MATHEMATICAL CONTENT

MCC1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
  d. 10 can be thought of as a bundle of ten ones — called a "ten."
  e. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
  f. 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).

MCC1.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.

MCC1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

STANDARDS FOR MATHEMATICAL PRACTICE

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

BACKGROUND KNOWLEDGE

Students will apply skills and concepts they have learned throughout the year involving number sense and place value. Students should demonstrate an understanding that the digits 0-9 are used to express or represent an amount or number and the placement of these digits determines the value or size of the number. They should be able to build numbers with an understanding of place value in tens and ones and locate the numbers on a 99 chart. Multiple and varied experiences with the 99 chart will help students with flexible thinking throughout this activity.

ESSENTIAL QUESTIONS

- How can different combinations of numbers and operations be used to represent the same quantity?
- How can we use skip counting to help us solve problems?
- How does using ten as a benchmark number help us add or subtract?

MATERIALS

- 99 chart per student
- paper
- 3 different color crayons

GROUPING

Large Group, Individual

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I

Gather the students in a common area. Use a large 99 chart so that all the students can see the numbers. Choose 3 numbers as a class and model how you would create a path for each number. Shade each path a different color on the 99 chart. Create one path using addition, one path using subtraction and one path using both. As a group, decide on the number sentences needed to give the directions to take these paths. Model this with all three numbers. Example below:

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

Number chosen: 54   Path is shaded to the right. This path included addition and subtraction.

Start with the number 1.
1+10=11
11+10=21
21+10=31
31+7=38
38+10=48
48+10=58
58+10=68
68-4=64
64-10=54

Part II
Students work individually to design 3 different number paths. Each student will need a 99 chart and 3 different color crayons. Students will choose 3 paths and color each path a different color. For example a student may choose the numbers 29, 48 and 71. One path must include addition strategies and one path must include subtraction strategies and the last path should be a combination of both addition and subtraction strategies. These should include the use of 10 as a benchmark number. Each number will only be represented by one path. On the recording sheet students will use addition and subtraction sentences to identify all three patterns. The teacher should observe as they students are working and ask the following questions: *Do your directions lead to your designated number? How did you write directions for your numbers? Did you use the skip counting strategy for this activity? If so, how?* After students have created their 3 paths on one 99 chart, the teacher should assemble them into a class book to be used as a center.

FORMATIVE ASSESSMENT QUESTIONS

- How do benchmark numbers help you use the 99 chart?
- What addition/subtraction strategies did you use to give directions?
- How can skip counting help you create directions to your designated number?
- What benchmark numbers allow you to be more efficient when you add or subtract?
- What is the addition/subtraction sentence that is related to 10 more/less?
- What is the addition/subtraction sentence that is related to 1 more/less?

DIFFERENTIATION

Extension
- Create Number Destinations directions that require addition and subtraction for 1 number destination. For example, if the number destination is 74, the student could say, "Begin at 80 and subtract 10 (70) and then add 4 (74).

Intervention
- Teacher selects starting and ending destination. Then allow student to create directions.

Addition and Subtraction Path	
Subtraction Path	
Addition Path	