Subtraction
Strategy Notebook
3rd Grade
MCC3.NBT.2

This strategy notebook is designed to be a reference for teachers when they are teaching the strategy standards in whole group. STUDENTS DO NOT HAVE TO MASTER ALL THESE STRATEGIES. THESE ARE JUST EXAMPLES OF WAYS FOR STUDENTS TO BUILD NUMBER SENSE. THE STRATEGIES THAT SAY "IMPORTANT" ARE THE ONES THAT STUDENTS NEED TO UNDERSTAND.

Students can also use the standard algorithm (the way you and I learned it)

Sketching Strategy (Important)

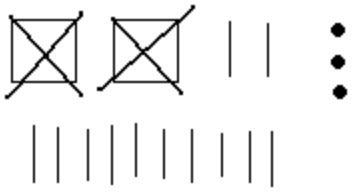
This is a great strategy to begin with. It allows students to see with manipulatives/sketching what it means to "regroup".

The problem is 223 – 186.

1. The student sketches 223.

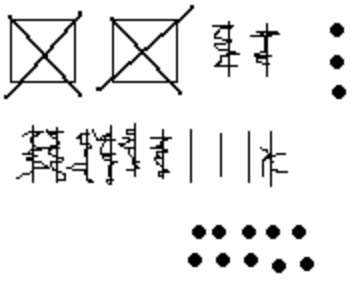
2. The student needs to take 186 away. Its easy to start with the 100's. There is one hundred in the number 186. The student crosses off one hundred.

3. Then the student can take away the tens. There are 8 tens in 186. But we only have 2 tens in our picture. Where can we get more tens? We can regroup the 100 into 10 tens.

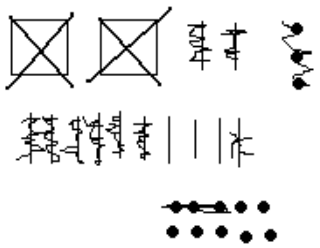


4. Now we can take 8 tens away.

5. Then the student can take away the ones. There are 6 ones in the number 186. But we only have 3 ones in our picture. Where can we get more ones? We can regroup a 10 into 10 ones.



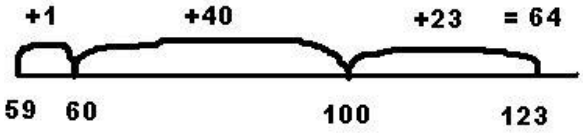
6. Now we can take away 6 ones.



7. We have 3 tens and 7 ones left. Our answer is 37.

Adding Up Strategy (Important)

This strategy helps build on students' strength of addition. Students will "add up" from the number being subtracted to the whole. Even with large numbers "adding up" is effective and efficient. Some students jump to every number. Help them think about jumps to get to the nearest 10 or friendly number. If a student can make large jumps then the strategy will be more efficient. An open number line, a number line with no prewritten numbers, helps students show their thinking.

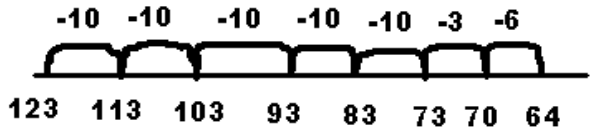
123 – 59  123 – 59 59 + 1 = 60 60 + 40 = 100 100 + 23 = 123 1 + 40 + 23 = 64	An open number line helps students show that they are tracking the distance between the number being subtracted and the whole. Notice how this student first moves to the nearest 10 and then continues from this point. After a while, students will not need to record their thinking and will be able to do it mentally.

Here are some problems you can use that support "Adding Up Strategy."

50 - 24	70 - 39	100 - 44	300 - 149	250 - 119
125 - 83	146 - 80	76 - 39	525 - 249	223 - 186

Removal or Counting Back Strategy

Students normally gravitate towards this strategy. They are used to thinking of subtraction as taking away. Starting with the whole, the number to be subtracted is taken away in easy to chunk parts.

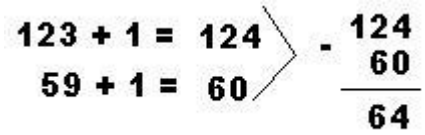
A. 123 – 59 123 – (10+10+10+10+10+3+6)  	**In example A, the student has chosen to think about 59 as a combination of five 10's, three 1's, and six 1's. An open number line is used to show how each part of 59 was removed.**
B. 123 – 59 123 – (20 + 30 + 3 + 6) 123 – 20 = 103 103 – 30 = 73 73 – 3 = 70 70 – 6 = 64	**In example B, the student has broken 59 into larger chunks of 10s and 1s. She has used a numerical representation to show her thinking.**
C. 123 – 59 123 – (50 + 9) 123 – 50 = 73 73 – 9 = 64	**In example C, this student demonstrates how the number being subtracted can be decomposed into its place value parts and then taken away.**

Here are some problems you can use that support "Removal or Counting Back Strategy."

55 - 20	83 - 74	64 - 28	100 - 60	155 - 20
270 - 65	126 - 50	270 - 65	543 – 120	276 - 65

Keeping a Constant Difference Strategy

Students need to investigate what happens when both numbers are changed by the same amount. Letting students explore with smaller numbers will help them understand this better. For example, 5 – 3. If 5 and 3 are both changed by +2, the problem 7 – 5 will result. There is still a difference of 2. What if we removed 2 from each number? We would then create the problem 3 – 1, which still gives us a difference of 2. Manipulating numbers this way will help students change the problem into an easier one to work with.

123 – 59  123 + 1 = 124 59 + 1 = 60 - 124 60 64	Both numbers have been adjusted by +1, which makes a problem with an easy 10. Deciding what amount to subtract or add, to adjust the problem, is a big decision. Would it have been helpful to adjust each number by – 1? This would of created the problem 122 – 58, which is not an easier problem to solve.

Here are some problems you can use that support "Keeping a Constant Difference Strategy."

101 - 50	151 - 126	300 - 151	134 - 119	259 - 127
123 - 105	359 - 127	287 - 118	698 - 115	236 - 119

Landmark and Friendly Numbers

Sometimes a subtraction problem can be made easier by changing one of the numbers to a "friendly" or "landmark number".

- Friendly numbers are numbers that end in 0. They are called friendly because once the rule for subtracting 0 is understood, that understanding can be extended to larger numbers that end in 0.
- Landmark numbers are similar to friendly numbers. Some examples are 25, 50, 75, 100.

A. 123 - 59 123 - 59 + 1 = 123 - 60 63 + 1 = 64	Example A changes the 59 to an easy multiple of 10. Talk with students about whether this 1 should be added back to the answer or subtracted. Sometimes it is helpful to put the problem in a story so it is easier for children to see what is happening. *Laura has 123 shells. She promised Caroline 59 of the shells. She accidently gave Caroline 60 instead of 59. What does Laura need to do?*
B. 125 - 49 +1 125 - 50 = 75 +1 76	Example B changes the 49 to a 50 (which is a landmark number). It is then easy to solve this problem if we think about money and quarters. If I have $1.25 and I take away 50 cents, how much is left? Don't forget to bring back that 1 because 125 – 49 results in a bigger difference than 125 – 50.

Here are some problems you can use that support "Adjusting One Number to Create an Easier Problem."

51 - 37	79 - 39	200 - 98	203 - 99	100 - 69
169 - 59	179 - 88	172 - 59	101 - 68	62 - 45