

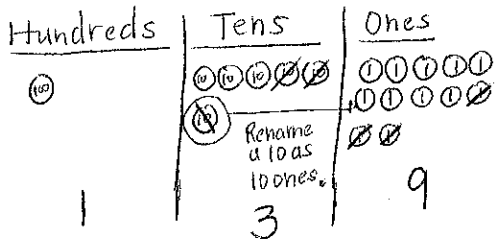
Singapore Math Models for Subtraction Computation:

1. Place Value Boards with Disks
2. Branch Method of Subtraction (used with 1 and 2 digit numbers only)
3. Left to Right (to ensure place value understanding)
4. Traditional Algorithm

Place Value Boards with Disks:

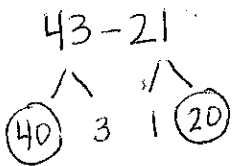
$$162 - 23 = \underline{139}$$

- Take the amount subtracted off the board.
- Begin with the ones.



Branching Method:

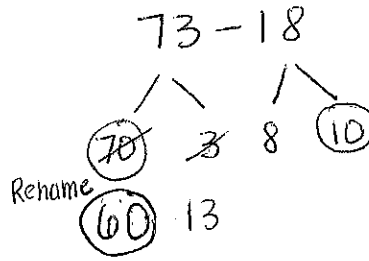
- Multiples of 10.
- on outside
- circle



$$40 - 20 = 20$$

$$3 - 1 = 2$$

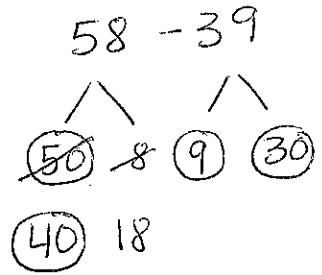
$$20 \text{ and } 2 = 22$$



$$60 - 10 = 50$$

$$13 - 8 = 5$$

$$50 \text{ and } 5 = 55$$



$$40 - 30 = 10$$

$$18 - 9 = 9$$

$$10 \text{ and } 9 = 19$$

Left to Right Method (Place Value understanding):

$$\begin{array}{r} \downarrow \\ 38 \\ - 15 \\ \hline 20 \\ + 3 \\ \hline 23 \end{array}$$

$$\begin{array}{r} 738 \\ - 315 \\ \hline 400 \\ + 20 \\ \hline 420 \\ + 3 \\ \hline 423 \end{array}$$

$$\begin{array}{r} 765 \\ - 387 \\ \hline 400 \\ - 20 \\ \hline 380 \\ - 2 \\ \hline 378 \end{array}$$

Count back by multiples of 10.

Count back 2.

$$\begin{array}{r} 514 \\ - 162 \\ \hline 400 \\ - 50 \\ \hline 350 \\ + 2 \\ \hline 352 \end{array}$$

Count back by multiples of 10.

Traditional Algorithm:

$$\begin{array}{r}
 738 \\
 -315 \\
 \hline
 423
 \end{array}$$

- Begin in the ones.
- 8 ones - 5 ones is 3 ones
- 3 tens - 1 ten is 2 tens
- 7 hundreds - 3 hundreds is 4 hundreds

$$\begin{array}{r}
 6 \text{ } 15 \text{ } 15 \\
 \cancel{7} \cancel{0} \cancel{5} \\
 -387 \\
 \hline
 378
 \end{array}$$

- Cannot take 7 ones from 5 ones.
Rename a ten as 10 ones.
That leaves 5 tens. The ones now have the 10 ones that were renamed ⊕ the 5 ones in the ones place. That is 15 ones. Subtract the ones.
- Cannot take 8 tens from 5 tens.
Rename a hundred as 10 tens. That leaves 6 hundreds.
The tens now have 15 (10 tens that were renamed ⊕ the 5 tens in the tens place.). Subtract the tens.
- 6 hundreds - 3 hundreds = 3 hundreds

$$\begin{array}{r}
 4 \text{ } 11 \\
 \cancel{5} \cancel{4} \\
 -162 \\
 \hline
 352
 \end{array}$$