

2.NBT Making 124

Task

Lamar and Siri had some base-ten blocks.

Lamar said, "I can make 124 using 1 hundred, 2 tens, and 4 ones."

Siri said, "I can make 124 using 124 ones."

- a. Can you find a way to make 124 using only tens and ones? Can you find a different way?
- b. Find as many ways as you can to make 124 using hundreds, tens, and ones. If you think you have found all the ways, explain how you know your list is complete.

IM Commentary

Not all students have seen base-ten blocks. This task should only be used with students who know what they are or have some on-hand to use themselves. Because this task asks students to explain how they know the list is complete, it aligns with Standard for Mathematical Practice 3 Construct viable arguments and critique the reasoning of others. A systematic approach to listing the solutions is not required to meet the standard, but it's a nice way for students to explain how they found all the possible ways to make 124 using base-ten blocks

Solution

The list of all ways using 1 hundred is:

- 1 hundred, 2 tens, 4 ones.
- 1 hundred, 1 ten, 14 ones
- 1 hundred, 0 tens, 24 ones.

The list of all ways not using any hundreds is:

- 12 tens, 4 ones.
- 11 tens, 14 ones
- 10 tens, 24 ones
- 9 tens, 34 ones
- 8 tens, 44 ones
- 7 tens, 54 ones
- 6 tens, 64 ones
- 5 tens, 74 ones
- 4 tens, 84 ones
- 3 tens, 94 ones
- 2 tens, 104 ones
- 1 ten, 114 ones
- 0 tens, 124 ones.

To know the list is complete as we make it, we can start with the standard way, namely 1 hundred, 2 tens, and 4 ones, and exchange tens for ones, one at a time, to get the first list. Then we exchange the hundred for 10 tens, to get a total of 12 tens along with 4 ones. Once again, we can exchange tens for 10 ones step by step in order to get the second list.

