How Many Ways?

Adapted from Navigating Through Number and Operations in Prekindergarten - Grade 2

Objective: place value In this activity, students trade Base-ten blocks as they construct different representations of the same number.

Materials:
Base-ten blocks (ones-blocks, tens-blocks, hundreds-blocks)
How Many Ways? Recording sheet per student

Activity:
1. Give each student about forty ones-blocks. Record the numeral 32 in view of students.
2. Point to the 3 in the numeral and direct each student to take that many blocks. Call on students to show their blocks and explain how they are thinking about the number of blocks to take.
3. Ask students if there is another way to show 32 with blocks? (If needed show students the tens-blocks)?
4. Is there another way to show 32 with only tens-blocks and ones-blocks?
5. Record on recording sheet.
6. Have students find all possible ways. Record.
7. Students should explain how they know they have all the ways to show 32, using ten-blocks and ones-blocks.
8. Continue with different numbers. Select a number such as 45. Ask students to predict the number of different ways.
9. Elicit predictions.
10. Students find all the possible ways to show 45 with base tens-blocks and ones-blocks.
11. Ask students if they notice a pattern? (As the number of tens decreases, the number of ones increases by 10.)
12. Students work with several numbers in the same way. Students record their work.

Extensions:
Ask students to predict the number of different ways of showing numbers with tens-blocks and one-blocks (The number of arrangements will always be one more than the number of tens in the original number).

Challenge students to make and record different arrangements between 100 and 120. Students may have difficulty in organizing their ideas as they record different ways.

- Find a number that can be represented exactly seven ways using only tens-blocks and ones blocks (any number in the 60's).
- Show 45 with exactly 18 blocks. (15 ones and 3 tens)
- How many different numbers can you list with exactly five blocks? (50, 41, 32, 23, 14, 5)

How Many Ways?

Name(s) _____

Date _____

Number	Ones	Tens