Lesson 8: Beyond 100,000

Standards Alignments

Addressing   4.NBT.A.1, 4.NBT.A.2

Teacher-facing Learning Goals

- Represent, read, and write multi-digit whole numbers within 1,000,000, including in expanded form.

Student-facing Learning Goals

- Let's read, write, and represent numbers beyond 100,000.

Lesson Purpose

The purpose of this lesson is to read, write, and represent numbers within 1,000,000 using base-ten blocks, diagrams, and expanded form.

In previous grades, students used base-ten blocks, diagrams, and expanded form, a specific way of writing a number as a sum of hundreds, tens, and ones, to represent numbers within 1,000. In this lesson, they extend their understanding of place value to write and represent numbers within 1,000,000.

Throughout the lesson, students determine the value represented by given sets of blocks and consider how to use blocks to represent given numbers. The reasoning students use helps to develop conceptual understanding of expanded form, allows them to practice reading and writing large numbers, and prompts them to think about the relative value of each place. In the next lesson, students generalize observations in terms of the relationship between any two adjacent digits in a multi-digit number.

The emphasis in this lesson and subsequent ones is not on how to write a number in expanded form. However, this notation may be helpful for students to notice a relationship between the same digits in adjacent places in large numbers. For example, when students expand 23,450 as $20,000 + 3,000 + 400 + 50$ and 2,345 as $2,000 + 300 + 40 + 5$, they see that the digit 2 in 23,450 has ten times the value of the 2 in 2,345.

When students use strategies that are based on place value and our number system, they are looking for and making use of structure (MP7).

Access for:

♿ Students with Disabilities

- Representation (Activity 1)

Instructional Routines

How Many Do You See? (Warm-up), MLR7 Compare and Connect (Activity 1)

Materials to Gather

- Base-ten blocks: Activity 1, Activity 2, Activity 3

Lesson Timeline

Warm-up	10 min
Activity 1	15 min
Activity 2	10 min
Activity 3	10 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

Reflect on your experience with "How Many Do You See?" in the curriculum. What moves or questions have improved the learning for each of your students during this routine? What improvements would you make next time?

Cool-down (to be completed at the end of the lesson) 🕐 5 min

Represent 234,000

Standards Alignments

Addressing   4.NBT.A.2

Student-facing Task Statement

1. Draw a diagram to represent 234,000.
2. Write 234,000 three different ways.

Student Responses

1. Sample responses: 2 units representing hundred-thousands, 3 units representing ten-thousands, 4 units representing thousands
2. Sample responses:
   a. $200,000 + 30,000 + 4,000$
   b. 2 large squares, 3 long rectangles, and 4 small cubes, the small cube is worth 1,000

c. 23 long rectangles and 4 small cubes, the small cube is worth 1,000