Lesson 4: Numerical Patterns

Standards Alignments

Building On	3.OA.D.9
Addressing	4.OA.C.5
Building Towards	4.NBT.B.5

Teacher-facing Learning Goals

- Analyze and describe patterns in numbers that follow a rule.
- Use understanding of place value and operations to explain and extend patterns of numbers.

Student-facing Learning Goals

- Let's explore numerical patterns.

Lesson Purpose

The purpose of this lesson is for students to analyze numerical patterns and use their understanding of place value and operations to find a rule and explain features of the pattern.

Previously, students examined numerical patterns alongside visual patterns (diagrams of pattern blocks, arrangements of shapes, attributes of rectangles, and so on). In this lesson, they focus solely on numerical patterns, without a visual representation. Students use their understanding of operations and place value to make sense of and explain patterns in multiples of numbers. Along the way, students have multiple opportunities to look for and make use of structure and regularity (MP7, MP8) to solve problems.

The reasoning in this lesson helps to transition students to the work in the next section, in which students explore strategies for multiplying single-digit numbers and multi-digit numbers up to four digits, and for multiplying 2 two-digit numbers. The third activity is optional as it provides an opportunity for extra practice.

This lesson has a Student Section Summary.

Access for:

♿ Students with Disabilities

- Representation (Activity 1)

🌐 English Learners

- MLR8 (Activity 1)

Instructional Routines

MLR5 Co-craft Questions (Activity 3), Which One Doesn't Belong? (Warm-up)

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Activity 3	20 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

What connections did students make between the different strategies shared? What questions did you ask to help make the connections more visible?

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

Count by 8

Standards Alignments

Addressing   4.OA.C.5

Student-facing Task Statement

Kiran counted by 8 and recorded the numbers he counted:

| 8 | 16 | 24 | 32 | 40 | 48 |

Could 105 be a number that Kiran writes if he continued to count by 8? Explain or show your reasoning.

Student Responses

No. Sample response: 105 doesn't have an even digit in the ones place.