Lesson 18: Compare Without Multiplying

Standards Alignments

Addressing   5.NF.B.5.a

Teacher-facing Learning Goals

- Recognize that the product of a fraction and a whole number is less than, equal to, or greater than the whole number when the fraction is correspondingly less than, equal to, or greater than 1.

Student-facing Learning Goals

- Let's compare expressions, without evaluating them.

Lesson Purpose

The purpose of this lesson is for students to compare the size of a product to the size of one factor on the basis of the size of the other factor.

In this lesson, students continue to compare the size of a product to the size of one of the factors based on the size of the other factor. They also continue to represent these comparisons on the number line. In this lesson there is no longer a context and students interpret the number line diagram in situations where both factors are fractions. Just as they observed in previous lessons, the size of a number becomes greater when multiplied by a fraction greater than 1 and smaller when multiplied by a fraction less than 1. In the next lesson, students will work toward giving a general explanation for these patterns.

Access for:

⬤ Students with Disabilities

- Representation (Activity 1)

🌐 English Learners

- MLR7 (Activity 2)

Instructional Routines

Notice and Wonder (Warm-up)

Lesson Timeline

Warm-up	10 min
Activity 1	15 min

Teacher Reflection Question

It is important that students convince themselves that mathematics makes sense. Today, students were noticing patterns and

Activity 2	20 min
Lesson Synthesis	10 min
Cool-down	5 min

determining whether or not the patterns were generalizable. In what ways did each of your students convince themselves that mathematics makes sense?

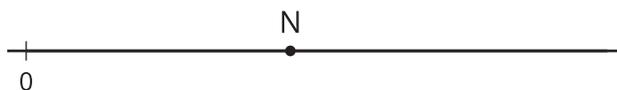# Cool-down (to be completed at the end of the lesson)   🕐 5 min

Comparison Statements

Standards Alignments

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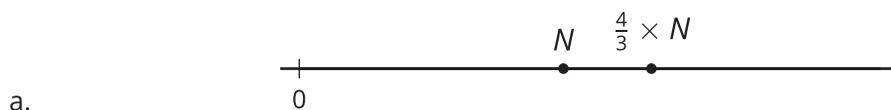
Student-facing Task Statement

1. The number N is shown on the number line.

   a. Locate and label $\frac{4}{3} \times N$ on the number line.

   b. Is $\frac{4}{3} \times N$ less than, equal to, or greater than N? Explain how you know.

Student Responses

Sample responses:

   a.

1.   b. $\frac{4}{3} \times N > N$ because it is to the right on the number line. It is N and then an extra $\frac{1}{3}$ of N.