**FRACTIONS**

Subject: *Proper Fractions on a Number Line* Grade: *3*

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| Common Core Standards |
| **3.NF.2b:** Represent a fraction $\frac{a}{b}$on a number line diagram by marking off *a* lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$and that its endpoints locates the number $\frac{a}{b}$ on the number line.  |
| Objectives |
| Extend understanding of fractions by identifying and writing fractions bigger than their unit-size counterparts. Students will learn to represent these *proper fractions* on a number line between the intervals 0 and 1, exclusively.  |
| Launch Questions |
| **Q.** Given the fraction $\frac{a}{b}$, in which *a* is less than *b*, between what two intervals would $\frac{a}{b}$ be located?**Q.** Under what conditions would $\frac{a}{b}$be outside the intervals of 0 and 1? |
| Definition/Properties To Know |
| **Proper Fractions:** A fraction is *proper* if it represents a number *a* that is $0<x<1$. From a geometric point of view, a fraction is proper if it represents a point on a number line between 0 and 1, exclusively. (Alternate Definition): A fraction is *proper* if the numerator (positive integer) is smaller than the denominator.  |

*Warm-Up Activity:* See “WU 3”

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| Lesson (Introduction to Problem) |
| (Chocolate Bars Part 2): For tomorrow’s lunch, you have decided to buy 4 big chocolate bars of equal size. Because you were not able to eat a lot of chocolate yesterday, you decide that for tomorrow’s lunch, you will eat two pieces instead of one. **Q.** If the same amount of people from yesterday approached you for each chocolate bar, what fraction of each chocolate bar will you eat and what fraction will your friends eat (in total)? Represent fractions using the adjective-noun theme, and plot your intake (fraction) on a number line. * Using a pencil, draw a number line using the edges of the chocolate bar. Label the endpoint 0 and 1 in order to show a “whole”.
* For each problem, mark the number of pieces that will be distributed to all friends and yourself. Remember that you will be eating an additional piece.
* Represent your portion/fraction on the number line. Have students realize that the size of their piece is from [0 to fraction] and the size of their friend’s total piece is from the fraction to 1. \*This helps students visualize that two fractions of different sizes form a whole.
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| Materials (If Needed) |
| * Paper and Pencil
* Ruler (if needed)
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*Main Project:* See “MP 3”

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| Closure/Expectations  |
| Students should learn how to represent a non-unit fraction on a number line. They should understand that these fractions exist between 0 and 1 because their numerators are smaller than their denominators, meaning that the fraction is not *whole.*  |