**FRACTIONS**

Subject: *Fractions and Decimals* Grade: *4*

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| Common Core State Standards |
| **4.NF.6**: Use decimal notation for fraction with denominators 10 or 100. *For example, rewrite 0.62 as* $\frac{62}{100}$*; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* |
| Objectives |
| Extend knowledge of conversion between decimals and decimal fractions. |
| Launch Questions |
| **Q.** If you were given a fraction whose denominator was not a multiple of 10, how can you express its value as a decimal?**Q.** For which kind(s) of decimals would it be hard to convert into fractions? |
| Definition/Properties To Know |
| **Decimal Number:** A number that contains a decimal point followed by a series of digits whose value is less than 1. (*Ex. 2.35 is a decimal number and 0.35 < 1.*)**Decimal Fraction:** Fractions whose denominators are multiples of 10. (*Ex. 0.32 =* $\frac{32}{100})$ |

*Warm-Up Activity:* See “WU 10”

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| Lesson (Introduction to Problem) |
| (Pet-Food Drive Part 2)After a successful pet-food drive last year, you and your 3 friends decide to participate again. You all collected canned food and stored them in a 100 unit squared box; each can has a size of 1 unit squared. The organizer of the event has recorded how full each box is according to what your friends said on the table below. Note: Some of you have given decimals, fractions and nouns to represent how full their boxes are.

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| NAMES | You | Juan  | Priscilla | Otis |
| FULLNESS | $$\frac{3}{4}$$ | 0.40 | Two fifths | Nine fifteenths |

**Q.** What fraction of a box do your friends have? Model each fraction using the Base 10 Blocks. **Q.** How many boxes do you all have in total? Note: An unfilled box is still considered one box.* Using the information about the area of a box, students can construct the fraction corresponding to the “fullness” of the listed boxes. Students should be advised to not simplify their fractions because, for the next question, they would have to find the sum.
* To model the problem, students should think about the value of the base 10 blocks. The giant square represents has an area of 100 units squared, like our box. The row piece contains 10 units and the small individual pieces represent 1 unit each. Students would have to express the amount of cans they have using the blocks.
* To find out how many boxes there are in total, students would have to start out with the bigger pieces and work work their way towards forming a square of area 100 unit squared. The small individual pieces will accumulate to a unfinished box.
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| Materials (If Needed) |
| * Paper and Pencil
* Ruler (if necessary)
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*Main Project:* See “MP 10”

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| Closure/Expectations |
| Students should continue to express decimals as (decimal) fractions, and vice versa. They should also be comfortable expressing the fractions in simplified form, meaning, the denominator is not a multiple of 10.  |