**FRACTIONS**

Subject: *Dividing a Whole Number by a Fraction* Grade: *5*

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| Common Core State Standards |
| **5.NF.7b:** Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4÷*$\frac{1}{5}$*, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4÷*$\frac{1}{5}$*=20 because 20 x* $\frac{1}{5}$*=4.* |
| Objectives |
| Students will extend their knowledge of division with fractions by solving problems in which a whole number is divided by a fraction. Student will again learn about reciprocality and its purpose in division. Finally, students will learn to reason about its value and model the process. |
| Launch Questions |
| **Q.** Given a non-zero whole number *a* and a proper fraction *b,* will the value of $a÷b$be greater than the value of *a*?**Q.** Given a non-zero whole number *a* and a proper fraction *b*, what makes $a÷b$ different from $b÷a$? |
| Definition/Properties To Know |
| **Reciprocal:** given a number *x,* the reciprocal of *x* is the number attained by dividing *x* by 1;$ \frac{1}{x}$.  |

*Warm-Up Activity:* See “WU 8”

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| Lesson (Introduction to Problem) |
| You are helping out at a soup kitchen and you are assigned to cut the meat into portions so that every person can get a piece of the meat. Your boss tells you to give $\frac{3}{4}$of meat to each person who comes. Assume all the meats are shaped as flatten into a rectangular shape. **Q.** How many people can you serve with 4 whole packs of meat? Justify answer with a drawing.**Q.** How many people can you serve with 8 packs of meat? Justify answer with a drawing.**Q.** How many people can you serve with 25 packs of meat? * For all three questions, students can determine the number of people served by dividing the amount of meat (whole number) they currently have by the fraction of meat given to each person. Since the fraction is proper, the resulting value will be greater than the whole number. Students need to understand this because if the fraction were improper, the resulting value will be less than the whole number.
* For the first two questions, students will need to draw *x* rectangles to represent the number of packs. They will then need to find the reciprocal of the proper fraction$\frac{a}{b}.$ Since the reciprocal of $\frac{a}{b}$will result in a value greater than 1, students should think about expressing $\frac{a}{b}$in a different format. *(Ex.* $\frac{5}{4}=\frac{4}{4}+\frac{1}{4}$*)* This will help students with their drawings.
* Drawing and shading the rectangles, the result should be equal to the number of shaded regions divided by the original value of *a*.
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| Materials (If Needed) |
| * Paper and Pencil
* Ruler (if necessary)
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*Main Project:* See “MP 8”

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| Closure/Expectations |
| Since this is the final lesson on fractions, students should be able to solve any (word) problems with fractions. Division of fractions covers the fundamentals of fraction, therefore the lesson serves as final review of everything. Students should have also be proficient at modeling equations and fractions. While there is no formal review of fraction in later grades, the theme reappears as subsections of other topics like “Rates”. Therefore it is essential that students carefully review this lesson.  |