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| **Title: Use a number line for multiplication of fractions and whole numbers**  ***Lesson Objective:*** In this lesson you will learn how to multiply a whole number and fraction by using a number line.  **Common Core Standard**  **4.NF.4b** Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.  ***Use the video at:***  http://learnzillion.com/lessons/2938  *Use the questions on the left, pausing the video or stopping the slideshow, to check for understanding and engage students at each section of the lesson.* | |
| **Warm-Up** | **Notes** |
| What does mean?  How do you use a number line to multiply a whole number and a fraction? | *Consider giving students a chance to practice: show using a number line.* |
| **Let’s Review** | **Notes** |
| How can we divide 2 into unit fractions? Try showing the unit fraction on a number line, from 0 to 2.    How many 4ths are equal to 1?  How many 4ths are equal to two?  How many 4ths are equal to 1 ?  Try drawing a number line from 0 to 2 divided into a different unit fraction. | *Ask this question before showing slides 3 and 4:* |
| **Core Lesson** | **Notes** |
| How much is 3 x ? Use pictures to show how you know.  Where does your answer fall on a number line? Is it greater than 1? Less than 1? Greater than 2? Less than 2? Is it closer to 2 or 1? | *Encourage students to apply their knowledge of multiplication (as repeated addition) to solve this problem.* |
| Cory’s bread recipe calls for cup of flour (to make 1 loaf). He wants to triple the recipe and make 3 loaves. How much flour does he need?  What does this word problem tell us?  What is the problem asking us to find?  How can we set up the problem? | *Encourage students to apply their knowledge of multiplication, set up the equation, and use number lines and visual models to find the product. Use the guiding questions at left.* |
| **Post-Core Lesson** | **Notes** |
| Tricia is building a bookshelf that will have yards of wood for each shelf. She has already finished the top, bottom, and sides of the bookshelf but needs enough wood for 3 shelves. How much wood does she need?  What does this word problem tell us?  What is the problem asking us to find?  How can we set up the problem? | *Encourage students to visualize the problem using the guiding questions at left.* |
| **Practice** | |
| Download the practice sheet for this lesson on the lesson plan page. | |
| **Differentiation** | |
| **During the lesson and practice, identify students who are struggling. See below for interventions:**  **Students do not equate fractions with equal numerator and denominator to 1 (3.NF.3c):**  <http://learnzillion.com/lessons/1737>  **Students do not understand whole numbers can be expressed as fractions (3.NF.3c)**  <http://learnzillion.com/lessons/1738>  **Students struggle to multiply using number lines (3.OA.1):**  http://learnzillion.com/lessons/3416 | |