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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 $3 x \frac{1}{2} $mean?How do you use a number line to multiply a whole number and a fraction? | *Consider giving students a chance to practice: show* $3 x \frac{1}{2} $ *using a number line.* |
| **Let’s Review** | **Notes** |
| How can we divide 2 into unit fractions? Try showing the unit fraction $\frac{1}{4}$ 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$\frac{1}{2}$ ? 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 $\frac{2}{5}$ ? 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 $\frac{2}{3}$ 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 $\frac{5}{6}$ 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 |