**Learning Experience:**

**Fourth Grade 27.NF.4a-Multiplying a Fraction by a Whole Number**

**When planning, include the following:**

**Models (Concrete—Semi-Concrete—Semi-Abstract—Abstract)**

**Problems/Situations**

**Questions**

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| **AKS**: **MCC4.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.  a. Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* |
| **Vertical Alignment:**  **3rd Grade**  **\*** model and explain that the fraction a/b represents a equal sized parts of 1/b when a whole is divided into b equal sized parts (CCGPS) (3MA\_C2012-15/MCC3.NF.1)  **\*** recognize a fraction as a number on the number line; represent fractions on a number line diagram (CCGPS) (3MA\_C2012-17/MCC3.NF.2)  **\*** model and explain that a fraction 1/b is the quantity formed by 1 part when a whole is partitioned into b equal parts (CCGPS) (3MA\_C2012-16/MCC3.NF.1)  **5th Grade**  **\*** apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction (CCGPS) (5MA\_C2012-18/MCC5.NF.4)  \*interpret the product (a/b) x q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a x q/b (e.g., use a visual fraction model to show (2/3) x 4 = 8/3 and create a story context for this equation; do the same with (2/3) x (4/5) = 8/15) (CCGPS) (5MA\_C2012-19/MCC5.NF.4\_a) |
| **Standards for Mathematical Practice**:  1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  3. Construct viable arguments and critique the reasoning of others.  4. Model with mathematics.  5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning. |
| **Materials:**  PowerPoint (Introduction: Multiply a Fraction by a Whole Number)  PowerPoint (Instructional Activity: Introducing Multiplication of Fractions)  Fraction Number Line  Fraction Bars  Variety of Manipulatives (used to make fractions: color tokens, beans, stickers, etc.)  Fraction Boxes to Shade  Pencils (colored), Markers, Crayons (for shading)  Math Journals |
| **Vocabulary:**  Multiply, Multiple, Multiplication  Fraction  Improper Fraction  Mixed Number  Fraction Model  Whole Number  Equation  Repeated Addition  Number Line |
| **Essential Question**:  How can I model the multiplication of a whole number by a fraction? |
| **Activating Strategy:**  **\*\*** Students extend previous understandings about how fractions are built from unit fractions, using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.  The teacher will present a word problem involving multiplication of a fraction by a whole number. Have students solve the problems using visual models and write equations to represent the problems.  **MULTIPLICATION 4.NF.4**  **Multiplying Whole Numbers Times Unit Fractions**  **Purpose:** To illustrate and compute products of whole numbers times unit fractions  **Materials:** Fraction Bars, master "Blank Bars Race Tracks" (attached), pencils and paper  \*Use the following link for more detailed information for this activating strategy.  [Activating-Introductory Activity.pdf](file:///E:\Math%20Common%20Core%20SD%20(Summer%202012)\Activating-Introductory%20Activity.pdf)  Additional Practice: [WholeTimesUnit Activity Sheet.pdf](file:///E:\Math%20Common%20Core%20SD%20(Summer%202012)\WholeTimesUnit%20Activity%20Sheet.pdf) |
| **Instructional Activity: (1-3 days)**  Teacher will use the PowerPoint: **What is Multiplication?** to interactively guide the students through the lesson. Students will use manipulatives to solve the problems presented in the PowerPoint.  [What is Multiplication-Marilyn Burns.pptx](file:///E:\Math%20Common%20Core%20SD%20(Summer%202012)\What%20is%20Multiplication-Marilyn%20Burns.pptx)  \*Use the following attachment for more detailed information for this instructional activity.  [Introducing Multiplication of Fractions-Marilyn Burns.pdf](file:///E:\Math%20Common%20Core%20SD%20(Summer%202012)\Introducing%20Multiplication%20of%20Fractions-Marilyn%20Burns.pdf)  **Additional Instructional Activity:**  [**Multiply a Fraction by a Whole Number.pptx**](file:///E:\Math%20Common%20Core%20SD%20(Summer%202012)\Multiply%20a%20Fraction%20by%20a%20Whole%20Number.pptx)   1. Expanding the experience   **Science:** Students will use fractions when completing science experiments to measure materials used.  **Writing:** Students will use their knowledge of fractions to write a persuasive piece. They will include a recipe for their favorite dish.  **Math:** Students will complete an Exemplar. (Birthday Cookout)  **Social Studies:** (Map Skills) Students will use their knowledge of fractions to compute miles traveled for different trips made during Westward Expansion.   1. Extending the experience   <http://fractionbars.com/CommonCore/Grade4.html>  [math\_4\_unit4frameworkse[1].pdf](file:///E:\Math%20Common%20Core%20SD%20(Summer%202012)\math_4_unit4frameworkse%5b1%5d.pdf) (CCGPS Frameworks Student Edition)  <http://www.k-5mathteachingresources.com/4th-grade-number-activities.html> (Games) |
| **Summarizing**:  Students will write a journal entry each day as a reflection of what they learned including visual representations of their mathematical thinking. |

**Did your plans include the following?**

**Models (Concrete—Semi-Concrete—Semi-Abstract—Abstract)**

**Problems/Situations**

**Questions**