**Lesson Plan: Grades 6-7 (Session 1, Oct. 2013)**

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| **Unit Title:** Fraction Operations: Multiplication and Division**Lesson:** 1 of 4 | Approx. time: 90 minutes | **CCSS-M Standards:**6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. |
| A. **Focus and Coherence**Students will know the connection between fraction division and whole number division; when division of fractions occur in their daily lives,.Students will be able to divide a whole number by a fraction and explain why the quotient is greater than the dividendStudent prior knowledge: division of whole numbers, vocabulary of dividend, divisor and quotient, the meaning of the denominator as a divisor and the numerator as a multiplier, flexibility with fraction representations and notations (mixed number, improper fractions, etc.)Which math concepts will this lesson lead to? * Division breaks quantities into groups or sets
* How the size of the quotient relates to the size of the dividend – based on the size of the divisor
* Measurement concept (repeated subtraction) and the Partition concept (fair-sharing) of division of fractions
 | B. **Evidence** of Math Practices*What will students produce when they are making sense, persevering, attending to precision and/or modeling, in relation to the focus of the lesson?*  |
| **Essential Question(s)**1. How is the division of fractions related to the division of whole numbers?
2. What determines whether the quotient is larger than the dividend or smaller than the dividend?
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| **Formative Assessments*** Restate the division problem as a question
* Correctly use the fraction model as a representation of the problem
* Draw a picture as a representation of the problem
* Identify why the quotient is greater than the dividend
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| **Anticipated Student Preconceptions/Misconceptions**Students may have been trained to look that the quotient gets smaller than the dividend when dividing.  |
| **Materials/Resources**Fraction bars (3 per pair), paper, pencil, chart paper, marker |
| C. **Rigor**: Conceptual Understanding, Procedural Skills and Fluency, and Application*What are the learning experiences that provide for rigor? What are the learning experiences that provide for evidence of the Math Practices?* **Warm Up –**Translate the following numeric expressions into questions:$6 ÷3 $ $ 10 ÷5$ $6 ÷1\frac{1}{2}$ $\frac{3}{4} ÷ \frac{1}{4} $ Represent one of the numeric expressions with a situation.**Lesson –** *Present the problem:* You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets ¾ of a pint of ice cream, how many guests can be served from 3 pints of ice cream? Student pairs will use the fraction bars to create a representation of both the problem and the quotient. Pairs will raise their hands when their representation matches the problem and its solution. When checked, pairs will create an accurate picture representation of the problem, based on the fraction bars. Then they will create a number sentence that represents the problem, labeling each of the parts of the number sentence with its context in the problem. Finally students will state their solution in the context of the problem. Pairs should be prepared to explain their thinking.*Strategic sharing – showing work under the document camera*During the sharing, record the number sentences on chart paper.*Questions*: How does the size of the quotient compare to the size of the dividend? Why do you think that happens? *Present the problem:* You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets $1\frac{1}{2}$ pints of ice cream, how many guests can be served from 3 pints of ice cream? *Present the problem:* You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets 1 pint of ice cream, how many guests can be served from 3 pints of ice cream? *Present the problem*: You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets $\frac{3}{4}$ pint of ice cream, how many guests can be served from 3 pints of ice cream? *Present the problem:* You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets $\frac{1}{2}$ pint of ice cream, how many guests can be served from 3 pints of ice cream? *Present the problem:* You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets $\frac{1}{4}$ pint of ice cream, how many guests can be served from 3 pints of ice cream? *Present the problem:* You are planning a birthday party where Ben and Jerry’s ice cream will be served. If each person gets $\frac{2}{3}$ pint of ice cream, how many guests can be served from 3 pints of ice cream? Before you begin this problem, make a prediction about the quotient. Be prepared how you determined your prediction.**Closure –** 1. What happens to the size of the quotient when the divisor is less than 1?
2. Why does that happen?

**Suggested Homework/Independent Practice-****Write a problem to represent three of the following number sentences:**$$4 ÷ \frac{1}{2}=8$$$$6 ÷\frac{2}{3}=9$$$$2÷\frac{3}{4}=2\frac{2}{3}$$$$3÷\frac{2}{3}=4\frac{1}{2}$$$$1÷\frac{1}{2}=2$$ |