

Kim Shea
Grade 6
Math Intervention
Lesson Plan: Multiplication and Division of Fractions

- I. Measurable objectives and assessment
 - A. MA Curriculum Frameworks Standards Addressed
 - i. 5.NF 6, Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
 - ii. 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. *For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?.*
 - B. Generative Topic: Multiplying and Dividing Fractions
 - C. Objectives: As a result of this activity, the student will be able to:
 - i. Multiply and divide fractions, and understand the relationship between the two
 - D. Vocabulary Objectives:
 - i. Numerator
 - ii. Denominator
 - iii. Reciprocal
 - iv. Inverse operation
 - E. End of Lesson Assessment
 - i. When students first come in, they'll have a "do now" warm up - they'll write down and try to solve two fraction equations (both posted on the white board); one involving multiplication and the other involving division. At the end of class, they'll try to solve those same two problems and hand it in.
- II. Content of the Lesson

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- A. Students will rely on previously acquired knowledge with either the ladder method or the Venn diagram to find GCF.

- B. Rationale
 - i. Fractions are extremely prevalent in our every day lives. If one is to be able to do simple things such as divide up a meal (i.e. $\frac{3}{4}$ lb. of burger split two ways), calculate distance, etc., then one needs to be able to understand the concepts of both the multiplication and division of fractions.

 - ii. They must have a firm grip on fractions in order to both pass the MCAS, and succeed in future math classes.

- III. Knowledge of students
 - i. IEP/504 accommodations for group 6A include (but are not limited to) the presentation of material both verbally and visually, frequent positive reinforcement, clarification of directions, the giving of “wait time” when questions are being answered in class, small group work, frequent breaks, the use of graph paper for organization, the providing of examples, the breaking down of problems to smallest possible steps and review of previously taught skills.

 - ii. IEP/504 accommodations for group 6B include (but are not limited to) allowing sufficient time to complete tasks, allowing students to work in groups when appropriate, clarification of directions, providing immediate feedback when possible, providing visual examples, and the need to relate the math to real life examples, intermittent checks for understanding, preferential seating, the providing of examples, the breaking down of problems to smallest possible steps, review of previously taught skills and focusing on what needs to be done rather than focusing on a problem.

 - iii. IEP/504 accommodations for group 6B include (but are not limited to) allowing sufficient time to complete tasks, allowing students to work in groups when appropriate, clarification of directions, providing immediate feedback when possible, providing visual examples, and the need to relate the math to real life examples, intermittent checks for understanding, preferential seating, the providing of examples, the breaking down of problems to smallest possible steps, the connection of

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new concepts to previously taught concepts, the use of math charts and teacher check-ins to monitor progress.

- iv. IEP/504 accommodations for group 6D include (but are not limited to) clarification of directions, allowing ample “wait time” when questions are being answered in class, the breaking down of problems to smallest possible steps, the connection of new concepts to previously taught concepts and the providing of alert cues.

IV. Resources, Materials

- i. Whiteboard
- ii. Dry erase markers
- iii. Pencils
- iv. Paper
- v. Math Intervention (MI) folder
- vi. MI notebook
- vii. Index Cards

V. Sequence of Teaching – Procedures

A. Beginning of the lesson

- i. “Do Now” exercise – write the following problems on the board, ask the students to write them down and try to solve them **(5 minutes)**:

$$\frac{1}{3} \times \frac{7}{8}$$

$$\frac{1}{2} \div \frac{1}{12}$$

B. Middle of Lesson

- i. Have the students put their “do now” exercise in their folders and put the following 5 problems on index cards, pick 5 volunteers to come up to the front, give them each an index card and have them write their problem on the board. Explain that when we multiply fractions, we just multiply the numerators and then we multiply the denominators. Have the students solve the problems **(5 minutes)**:

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$$\frac{3}{4} \times \frac{2}{8}$$

$$\frac{3}{5} \times \frac{1}{6}$$

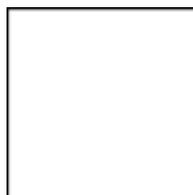
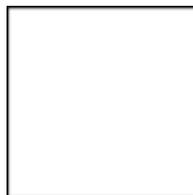
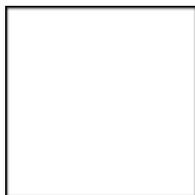
$$\frac{8}{11} \times \frac{2}{5}$$

$$\frac{1}{3} \times \frac{7}{10}$$

$$\frac{5}{9} \times$$

$$\frac{2}{7}$$

- ii. Go over the answers with the class, trying to coach them while they 'correct' the math if need be. Remind them about reducing final answers whenever working with fractions **(2 minutes)**.
- iii. Pose the following situation to the class: *I have three squares that I want to divide by one half. How many pieces would I have?* Ask students to draw a picture to represent the problem **(5 minutes)**. A sample response should be:



- v. Ask the following guiding questions **(2 minutes)**:
1. How many squares did I have? (3)
 2. What size did I want? ($\frac{1}{2}$)
 3. How many pieces of that size do we have? (6)

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- vi. Ask students how this situation would be represented as a mathematical sentence; guide the discussion to obtain the number sentence $3 \div \frac{1}{2} = 6$ **(5 minutes)**.

- vii. Show them the same equation ($3 \div \frac{1}{2} = 6$) being solved by the “keep, change, flip” method. Do the same with the following three equations, soliciting feedback from the class **(10 minutes)**:

$$\frac{1}{3} \div \frac{1}{2}$$

$$\frac{2}{5} \div \frac{3}{4}$$

$$\frac{6}{7} \div \frac{3}{2}$$

C. End of Lesson

- i. Have the students take their “do now” out of their folder, try the problems again, and hand them in **(3 minutes)**