

## Lesson Plan Template

<b>Grade: 7<sup>th</sup> Grade</b>		<b>Subject: Algebra</b>	
<b>Materials: Entrance Slip, Exit Slip</b>		<b>Technology Needed: ActivBoard</b>	
<b>Instructional Strategies:</b> <input type="checkbox"/> Direct instruction <input type="checkbox"/> Peer teaching/collaboration/ <input type="checkbox"/> Guided practice              cooperative learning <input type="checkbox"/> Socratic Seminar <input type="checkbox"/> Visuals/Graphic organizers <input type="checkbox"/> Learning Centers <input type="checkbox"/> PBL <input type="checkbox"/> Lecture <input type="checkbox"/> Discussion/Debate <input type="checkbox"/> Technology integration <input type="checkbox"/> Modeling <input type="checkbox"/> Other (list)		<b>Guided Practices and Concrete Application:</b> <input type="checkbox"/> Large group activity <input type="checkbox"/> Hands-on <input type="checkbox"/> Independent activity <input type="checkbox"/> Technology integration <input type="checkbox"/> Pairing/collaboration <input type="checkbox"/> Imitation/Repeat/Mimic <input type="checkbox"/> Simulations/Scenarios <input type="checkbox"/> Other (list) Explain: Students will independently fill out the entrance slip. Then we will cover the lesson as a large group. Finally, students will have the chance to independently practice the problems that they are working on.	
<b>Standard(s)</b> 7.NS.2: Apply and extend previous understandings of multiplication, division, and fractions to multiply and divide rational numbers.		<b>Differentiation</b> <p><b>Below Proficiency:</b> These students may struggle to understand any of these methods. I will first have them return to working with whole numbers. Then, once they have tried one or two examples with whole numbers, they will be asked to try the diagram method again. If they are able to understand this method, I may challenge them to try one of the other methods as well, but if necessary, they can just stick with the diagram method.</p> <p><b>Above Proficiency:</b> Students who are above proficiency will have the opportunity to guide their table discussion during the lesson when I ask for students to participate. These students will also be challenged to think about why the diagram method of multiplying fractions works.</p> <p><b>Approaching/Emerging Proficiency:</b> Students who are approaching proficiency will likely be more comfortable with some methods than others. To help them remember to multiply fractions correctly, I will encourage them to use the diagram to justify their work. I will also encourage them to work with a simply example by choosing whole numbers to approximate the product.</p> <p><b>Modalities/Learning Preferences:</b></p>	
<b>Objective(s)</b> Students will learn how to multiply rational numbers in both fraction and decimal form.			
<b>Bloom's Taxonomy Cognitive Level:</b> Understanding, Applying, Analyzing			
<b>Classroom Management- (grouping(s), movement/transitions, etc.)</b> <ul style="list-style-type: none"> <li>• Students are expected to remain quiet during instruction, but be prepared to engage during questions.</li> <li>• Students are expected to collaborate with those in their pod when working on examples.</li> <li>• When working on the entrance/exit slip, students should work alone without the help of other students.</li> </ul>		<b>Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)</b> <ul style="list-style-type: none"> <li>• Students are expected to respect other students and the teacher and listen attentively.</li> </ul>	
<b>Minutes</b>	<b>Procedures</b>		
<b>2 min</b>	<b>Set-up/Prep:</b> The only set-up required for this lesson will be passing out entrance slips and opening the PowerPoint on the ActivBoard.		
<b>5-7 min</b>	<b>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)</b> The opening activity will be when students are working on the entrance slip. The entrance slip will include one problem that they have seen before and two new problems.		

## Lesson Plan Template

	<p>Once students have had a few minutes to work on the problems, we will briefly go over the worksheet. This will be a way of showing students what they will be able to do by the end of the lesson. It will also be a way to check for understanding on previous concepts.</p>	
<p><b>15-20 min</b></p>	<p><b>Explain: (concepts, procedures, vocabulary, etc.)</b>            In showing students how to multiply fractions and rational numbers, I will use three different examples.            First, I will show them how to multiply fractions by telling them to multiply the numerators and the denominators together.            In the example <math>\frac{2}{5} * \frac{3}{4}</math> students will multiply <math>2*3</math> and <math>5*4</math> which will result in the fraction <math>\frac{6}{20}</math>. Then, they will be expected to simplify this fraction to yield <math>\frac{3}{10}</math>.            In the second example, we will try to compute the same product, but we will use a diagram to do so. First, we will draw a square. Then, we will create 5 vertical sections that correspond to the denominator of the first fraction. We will shade 2 of them, corresponding to the numerator.            After this, we will create 4 horizontal sections to represent the denominator of the second fraction. We will shade 3 of them in correspondence with the numerator of this fraction.            Finally, we will count the number of squares that have been shaded twice. This will become the numerator of our new fraction. We will also count the total number of squares, and this will become the denominator of our new fraction. This will yield the same fraction above, and the students must complete the problem by simplifying this fraction.</p> <p>If we have enough time, I will ask the students to consider why this process has produced the same result. We will take a few minutes to discuss this before moving on to the final example.</p> <p>In the final example, we will multiply the decimals 0.4 and 0.75. The students may recognize that these are the decimal representations of the fraction above. To multiply these decimals, we will align them vertically with 0.4 on the bottom as we would align integers that we are multiplying. Then, we must count the number of values to the right of the decimal in each number, the sum of which will be 3 in this case. Now, we will multiply in the same way as we would multiply integers. We multiply 4 by 5, record a zero below, and carry a 2. Then, we multiply 4 by 7 and add 2 to this number before recording it below. Finally, we must take into account our 3 decimal places by placing a decimal 3 places to the left of our first number. Again, students will notice that this method has produced the same result as our previous multiplications.</p> <p>The final thing that I will point out to students is that it is possible to interchange our multiplication between fractions and decimals by converting our factors from either fractions to decimals or decimals to fractions.</p> <p>Note: diagrams for both the first and second method are listed below.</p>	
<p><b>5-10 min</b></p>	<p><b>Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)</b>            After I have completed the instruction, I will hand out another worksheet for students to try. This worksheet will contain the same problems as the first worksheet, but the students will now be able to complete the two problems which they may not have been able to do the first time.</p>	
<p><b>3-5 min</b></p>	<p><b>Review (wrap up and transition to next activity):</b>            To review, I will ask students how the worksheet went the second time around, and I will allow them to ask any remaining questions they may have.</p>	
<p><b>Formative Assessment: (linked to objectives)</b>  <b>Progress monitoring throughout lesson- clarifying questions, check- in strategies, etc.</b>            Progress monitoring will mostly consist of calling on students to help work through the problems on the board. I will also use the entrance slip to gauge where students are when we begin the lesson.</p> <p><b>Consideration for Back-up Plan:</b>            If the ActivBoard does not work, I will use the whiteboard.</p>		<p><b>Summative Assessment (linked back to objectives)</b>  <b>End of lesson:</b>            At the end of the lesson, I will use the exit slip to gain information about how much the students have learned about multiplying rational numbers.</p> <p><b>If applicable- overall unit, chapter, concept, etc.:</b>            N/A</p>
<p><b>Reflection (What went well? What did the students learn? How do you know? What changes would you make?):</b></p>		

### Lesson Plan Template

After teaching the lesson, it became clear that students needed a clearer explanation of the diagram method. To fix this, I would consider working backwards by starting with the larger grid and asking students to consider what this grid might represent. Then, we would work backwards to gain a better understanding of what is going on.

The other thing that I noticed is that once students learned the first method of multiplying fractions, their attention became more distracted once I began teaching the second method. To help this, I would consider two options. I would either begin the lesson with the diagram method, and I would use it as a way to introduce the second method. The other option I would consider is teaching these lessons on separate days. In this case, I would try to use the diagram method as a way to reinforce the students' understanding of how to multiply fractions.

$$\begin{array}{r} \cancel{\times} 1 \\ \cancel{\times} \\ 1.25 \\ \times 3.33 \\ \hline 1 \quad 1 \quad 1 \\ 375 \\ 3750 \\ 37500 \\ \hline 4.1625 \end{array}$$

