I. Content: Describe what it is you will teach. What is the content?

This lesson will be focused primarily on the literary elements of our mathematics work. We will used the medium of words at length to fully explain to a second grader (my niece) how they knew they needed to use multiplication to solve a problem, how they actually used multiplication, and how they know they got the right answer. This will serve as a summative assessment for the unit.

II. Learning Goal(s): Describe what specifically students will know and be able to do after the experience of this class.

- SWBAT demonstrate their ability to explain their reasoning in words.
- SWBAT express their understanding of how and why multiplication works where applicable.

III. Rationale: Explain how the content and learning goal(s) relate to your Curriculum Unit Plan learning goals.

Our sixth and final lesson addresses both standards of the unit, 3.OA.3 and 3.OA.7 (listed below). In this lesson, students will be completing a final assessment that measures their acquisition of the units learning goals. As the standards indicate, these goals include fluently multiplying within 100 and representing problems in multiple methods. In addition to addressing these content standards, the lesson will also address one practice standard, or habit of mind:

1. Make sense out of problems and persevere in solving them. We will work with problems that are not easy to solve, but I hope to make clear to my students that there is a healthy kind of frustration that comes with a great sense of accomplishment. Students will have to explain in detail how they solved a problem, so that a student who could not solve the problem could use their directions to solve the problem. This lesson incorporates literacy development by asking students to distill mathematical information from word problems and to employ words to explain their choice of operation. Additionally, students will also be employing their mathematical academic language in their own explanations. They will be asked to write at length and in great detail as well as with clarity. Practicing their writing skills in math will only help to solidify their mathematical understanding in addition to building their ELA habits. Finally, we will further build our community of learners by working in pairs to double our funds of knowledge. Students will be able to lean on their peers for explanations and demonstrations, both in their pairs and in our whole group debriefing.
IV. Assessment: Describe how you and your students will know they have reached your learning goals.

- Students will be formally assessed by their letters to my niece Cally. I will be looking for several elements:
  - Student used their word problem strategies.
  - Student used their multiplication vocabulary.
  - Student achieved the correct answer.
  - Student adequately explained their reasoning.
  - Student took a beginning pass at the PS question.

V. Personalization and equity: Describe how you will provide for individual student strengths and needs. How will you and your lesson consider the needs of each student and scaffold learning? How specifically will ELL students and students with learning disabilities gain access and be supported?

The strengths of individual students will be brought out and encouraged in several ways:

**High flyers** must meet the challenge of filling the entire two sheets with their writing. If they complete the task at hand more quickly than expected, high flyers will conference with me and pushed to include elements they might have overlooked. Students who have an IEP or 504 will benefit from clear, single-step directions. To further support their success, I have thoughtfully selected preferential seating spots for them, as well as provided repeated directions as necessary. Both students on an IEP or 504 as well as **ELLs** will use a four square that I created to accompany the letter. Instead of writing at length, these students will receive special attention from Patty as they fill in each square with words or a picture that explains how to solve the problem correctly using multiplication. As always, I will emphasize the need to use the correct vocabulary and encourage students to reference our organizer or charts whenever necessary (especially *product* and *quotient*). Furthermore, ELLs who have the opportunity to work with more fluent English speakers will have the chance to encounter this new domain specific academic vocabulary employed by their peers. Finally, ELLs will use the same word problem strategies that we have been employing since our work with addition; as such, they will not need to decode any new words or strange concepts in order to solve their own problems. **Auditory** learners will benefit by the repetition of our new vocabulary and old strategies. They will also benefit from working with peers to share and workshop ideas. **Visual** learners are sure to benefit from the display on the board of the number sentences as well as our anchor charts. Finally, **kineesthetic** will be allowed to work in open spaces as is deemed appropriate.
VI. Activity description and agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Teacher Activity</th>
<th>Student Activity</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00-0:05</td>
<td>I will introduce the lesson to all students and read the letter.</td>
<td>Students will listen for directions.</td>
<td>Letters</td>
</tr>
<tr>
<td>0:05-0:35</td>
<td>I will guide students into their pairs and pass out letters.</td>
<td>Students will begin writing to Cally.</td>
<td>Letters</td>
</tr>
<tr>
<td>0:35-0:45</td>
<td>I will lead a brief discussion highlighting interesting student work.</td>
<td>Students will share their work and reasoning with the class.</td>
<td>Same as above</td>
</tr>
</tbody>
</table>

The only major challenge I foresee is that the students will not buy into the letter scenario. Regardless, they will have to complete the task at hand, even if they don’t buy into the letter format. I will not be grading them on their adherence to the letter format. They need only express their mathematical understanding.

VII. List the Massachusetts Learning Standards this lesson addresses.

- **CCSS.MATH.CONTENT.3.OA.A.3**
  
  Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.¹

- **CCSS.MATH.CONTENT.3.OA.C.7**
  
  Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that \(8 \times 5 = 40\), one knows \(40 \div 5 = 8\)) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

VIII. Reflection

This was honestly one of the most fun lessons that I have ever conducted. Coming off our exciting round task, this final lesson definitely provided a good sense of closure to the unit. Patty had the wonderful idea of using one of the questions from my Thanksgiving Party packet, so I easily came up with the rest of the conceit for the lesson. I was glad that I had chosen a question that they were familiar with. However, I guess I did not foresee that some students would not be familiar with the three person party scenario (as different groups had different multiples), but they caught on quickly after I addressed it at the beginning of class.
I am really heartened by the students’ responses to the questions at hand. In my attempt to make this as much of a summative assessment as possible, I was not as explicit with them as I was above about my expectations for their letters. I guess I didn’t want to influence what they could write on their own. It turns out that instead of simply addressing it at the forefront, I ended up having to address it throughout. This was not a difficult adjustment to make, though; I just put some prompts up on the board as they came up in my conferences with the kids as I circled the room. For instance, I would say “Josephine and I just worked on a great sentence that started like this….” I then implied that they needed to include this sentence starter in their letter and complete the thought with their own reasoning. Perhaps this was a more authentic way of demonstrating my requirements than simply providing a rubric. Regardless, it was definitely also less explicit and more difficult to ensure that the students’ (and Patty) knew exactly what I was looking for.

Whereas I wanted to really allow the kids to fill in the pages with their own understanding, Patty took her group in a totally other direction. I can totally appreciate what she did and do not wish to sound disapproving at all. However, it does seem that she prompted the kids quite often and provided them with a lot of guidance. This was to be expected to a certain degree, as Patty was working with our IEPs and ELLs. That being said, I provided her with a foursquare accommodation so that they could demonstrate what they know. Their responses are really uniform and do not illustrate students’ individual understanding. It’s clear to me now how the intention of a certain assessment can really influence a teacher’s involvement in the students’ construction or conclusion.

As a final comment, I must say that this lesson really demonstrated to me exactly how hard it is for kids to write about their reasoning. Several students had lots of initiative and began strong but petered out. Others struggled to write even a single sentence for the entire period. Both reactions in no way correlated to their performance on either word problems or multiplication facts. It’s just hard to write about how you solved a problem and why you solved it that way; we definitely need more practice. The stronger we get at this skill, though, the more reinforced our understanding will be of the concepts at hand. I know that there is more growth to happen on my side of the table, with lots of tweaking to be done to several aspects of this lesson, but I could not be more proud of my kids’ work!