

COVER SHEET

(“Using Manipulatives and/or Technology to Solve Math Problems” used in cooking lunch for the student body and parents)

I covered this topic by having the students cook a dinner. Actually, the 5th -9th grade classes cooked and provided lunch as a fundraiser for anyone in K-3 to parents who wanted to purchase the meal instead of their regular sack lunch. The classes are trying to raise money for a field trip to OKC at the end of the year. So, we decided to cook this meal with student involvement. I noticed all of the math capabilities that could be involved and I seized the moment!

Everyone who chose to purchase a lunch had to fill out a form. I had the students take these forms and create and decorate a poster that involved a tally table. Frequency was not included in their books, at least not for a while. So I had them insert a frequency column and taught them this vocabulary word. They turned out really creative. We also, to fit this topic of using manipulatives, had them measure the necessary ingredients with measuring utensils for the different parts of the meal. They also had to convert the recipes from feeding whatever the recipes called for to recipes that would feed 120 people.

Lisa Kindsvater

5th – 6th Grade Math

“Using Manipulatives and/or Technology to Solve Math Problems” by Cooking a Dinner

Objectives:

5th

Standard 2.1 – The student will compare, convert, and order common fractions and decimals to the 100ths place to solve problems.

Standard 4.5 – The student will convert basic measurements of volume, weight and distance within the same system for metric and customary units.

My Goal – The students would be able to multiply fractions in order to create the necessary conversions from recipe to recipe.

6th

Standard 2.1 – The student will multiply and divide fractions and mixed numbers to solve problems using a variety of methods.

Standard 4.2 – The student will compare and convert units within the same measurement system and use appropriate labels.

Standard 5.1 – The student will collect, organize, and interpret data to solve problems.

Instruction:

1. Introduction: We did different parts of the meal on about three different days. The **first day** we did the tally-frequency tables. I shared with them how a table would organize our information and show the distribution of the people going to eat.

The **second day** was fixing the dessert, chocolate chip cookies. I passed out a copy of the recipe to each student. We looked at it and decided we needed more servings than this particular recipe called for.

Our **third day** involved making the main part of the menu. This part included making mini pizzas, green beans, corn, peaches, and lemonade. We also had to take each part of the menu and decide if we had enough. We had to read labels and see how much each one served.

2. Instructional Process: One the **first day**, making the table, I divided the classes into groups of 3 or 4. I showed them an example of a tally table. I told them they would need to come up with their very own titles. I passed out the markers. They needed rulers to space their rows and columns an equal distance apart. We talked about the headings to the columns also. I handed them the slips of paper where people had signed up for the dinner. They proceeded to make their tallies on the poster. After this was complete, we filled in the frequency column with the number of tallies we had.

On the **second day**, the day for making the chocolate chip cookies, we proceeded to convert our recipe from 30 servings to 150 servings. After completing this exercise, I asked them why we converted to 150 servings instead of to the 120 servings which is the amount of people we were expecting. They gave, and I helped them, come up with the following reasons.

1. The cookie recipes never make as many as they say because of size differential.
2. We needed to allow for breakage of the cookies.
3. We needed to allow for last minute sign-ups for the dinner.
4. We needed to have enough ingredients in case one group messed up on their batch or burned it.

That afternoon we proceeded to bake the cookies. We had 20 students. So I divided them into 5 groups of 4 because we needed to make 5 batches. Each group had a leader that was to assign specific jobs to each member of their group. The requirement was that each person in each group had to measure at least 2 ingredients and put them into the bowl. The leader had to make sure the measurement was accurate before pouring into the bowl.

On the **third day**, we gave each person a job to do. Jobs included rolling out the dough, putting so many tablespoons (or teaspoons if a tablespoon wasn't available) of sauce on the rolled-out dough, sprinkling cheese on top of the sauce, helping with the green beans, corn, peaches, lemonade, and finally serving our customers.

3. Closure: Each day had a closure time. On the **first day** we took a look at our posters and came up with a few conclusions. We talked about titles and whether each one ended up being relevant. We talked about the distributions and why some categories had a higher frequency than others. I asked such questions about whether or not our information was accurate, what could we have done to produce more accurate findings, and would we next time ask the same people to attend or would we change it.

On the **second day**, we walked through all the difficulties there were. I know on one measurement, we needed a half cup of something. However, we didn't have a half cup measuring cup. So I reviewed with them what we did to cover that. We did have a one-fourth measuring cup and used it twice. Hence, we added fractions. I will use this example when we begin adding fractions. We also reviewed conversions and why we needed to change our cookie recipe.

For the **third day**, we talked through any difficulties we had in preparing or serving the dinner. We also talked profit and how we figure it. (Of course, this is our money intake minus our expenses.)

Assessment:

There was a continual assessment as I had to make sure correct ingredients were going into the bowl at all times. There was continual communication going on between teachers and students. Another way that I will assess will be with follow-up assessment down the road. I am hanging on to the posters and are going to use them when we run into ratios, probability, percents, other graphs, and anywhere else I can use them. We will at these times review what we did.

Modifications/Accommodations:

I would not make too many modifications or accommodations. We are already working in groups, so a student with special needs would have help readily available. I might make a specific job for them that would match their abilities. I think this is a cool activity for someone with needs because it is real life situation stuff.

Reflection:

This activity worked well. However, I'm not ready to do it again anytime soon. It took lots of planning and ideas. Working with 20 students and trying to find jobs to keep them busy was a challenge. They, however, did well and owned the project dinner for themselves. We actually had a tally table in the 6th grade textbook that was supposed to be worked out on homework the day we were making the tally-frequency tables. We didn't do the one in the book. We did the one in real life and added a frequency column to it. That was cool!

The things they learned are immeasurable. One thing learned, as mentioned above, was what do I do when I don't have the specific measuring cup I need. Another thing gleaned from the project is this word profit. It's kind of tough at this age because they haven't experienced it. Well, doing a fundraiser that "profits" all of them helped them to learn profit.

This isn't exactly a project that everyone can do or that I would do every year. However, it is important to seize the opportunities you have to put math into real life situations. This is one of those opportunities and we seized it! What a learning experience for our students!!!!

By the way, our menu was mini pizzas, corn, green beans, peaches, chocolate chip cookies, and lemonade.