Natasha Oslinger

Patty Xatsanapannah

Math

March 4th, 2014

How Many Of Each Kind

This problem helped me understand the real world use of inequalities and how to start small when working. At first, this problem seemed extremely difficult; but once I took it apart and examined each part as its own segment, it became easier. This problem helped me learn to break things down. Instead of looking at all the constraints and thinking "how am I going to do this,"I looked at each constraint as an individual problem and solved each smaller problem before I put everything together and solved the problem as a whole. Staying organized also was extremely helpful because at alI times I knew where my papers were, which helped me keep all my data in track, and overall helped simplify the problem. Listening was beneficial to solving the problem because when everyone was involved, I could get ideas that I might not have gotten if only I was working on the problem. I deserve a 25 on this project because I worked hard to earn that grade. I spent a long time proactively working and assembling data so we could solve the problem. I helped encourage my teammates to participate and I joined in on every group discussion that was held. I found several different systems of equations we could used to solve the problem and I have earnt a score of 25. Firstly, I used Starting Small, so I could understand what the problem was asking of me and making sure I wasn't overwhelmed by the long questions. Next, I used Taking Apart and Putting Back Together, by doing this, I could look at each part of the problem and solve each small problem, such as finding the inequalities, which helped me be able to solve the problem

as a whole. Finally, I was confident, patient, and persistent, which helped to keep me in a good mindset and focus on accomplish my goal.

The owners of a bakery shop want to know how many cookies they should make so that they can make the most amount of money possible. There are certain constraints, such as the ingredients available, the oven space available, and the time they have that alter the number of cookies they can make. So, when solving them problem, the answer must fit within each of the constraints for the answer to be valid. There are two types of cookies: plain, which requires one pound of cookie dough per dozen, and iced, which requires .7 pounds of cookie dough and .4 pounds of frosting per dozen. They have 110 pounds of cookie dough and 32 pounds of icing to work with. Plain cookies take .1 hours to make one dozen and iced cookies take .15 hours, but they only have 15 hours allotted for preparation. Overall, the problem is asking us to figure out how much money can be made with the material and time we are given. The constraints are an important component to consider when solving this problem because if they are not factored in, the overall answer will vary. Another important component are the inequalities necessary to solve this problem. There are four inequalities that when numbers are plugged in, will confirm their validity, there is also an equation to find the overall profit.

I started this problem by reading over the question several times and highlighting the important parts. Then I organized the data and figured out what the problem was really asking me to do. All my team members and I then worked together to think of ways to solve the problem. We wrote out all the data and made charts so we could organize the information we had and then attempted to solve the problem. We started with the guess and check method, then realized that the amount of cookie dough and the prep time were the main factors in the amount of profit made so

we tried to base the problem around those two variables. We utilized charts during this experiment because using different charts and graphs we were able to keep our information and data organized and at the end, we could easily compile all of our work. We also used an online grapher to create plot of the inequalities once the numbers were plugged in. After many attempts, we realized that making 75 dozen plain and 50 dozen iced cookies would make the most profit. We figured this by using all the cookie dough and time that was available, since those two variable would make the most profit we figured we should base the answer around those figures. We then plugged 75 and 50 into all of the inequalities and realized those figures were the number of cookies that would make the most amount of profit while staying within the restrictions.

Making 75 dozen plain cookies and 50 dozen iced cookies will produce the most profit with the given time and materials. This solution is correct because I have used a formula to find my answer and through that I solved the problem. Upon determining that amount of cookie dough and time would be the two factors that would produce the most profit we decided to use the elimination method to find X and Y. When using the elimination method, we found that Y equaled 50 and X equaled 75, which is the highest number of cookies that can be made with the given constraints.