Systems of Equations (Algebra 2) Janet Sexton

Objective: Students will solve for 4 variables, while exhibiting group goals of listening to each other, asking clarifying questions, helping each to fulfill roles, and explaining a written record of their method.

Lesson setting: This will be done as the first day of solving systems. While students *should* have learned methods of substitution, elimination and graphing in Algebra 1 (two years previously), this is a “try it before the method is taught” type lesson. Subsequent lessons will refer to the methods described today. This lesson will be taught on a 90 minute block day or two 45 minute periods.

Visual-based problem: The projected slide of “What’s it Worth?” from nrich.maths.org will be displayed and students (already grouped and assigned roles of director, understander, includer, clarify-er) will be asked to individually examine the problem with the prompt, “What do you notice?” After a minute, paper copies of the problem will be distributed, as well as paper to record ideas. As groups begin to work, I will circulate and confirm understanding of what the problem is asking, and point out that there are many ways to solve this. I may ask, “How can you prove what shapes are worth?”

Class discussion: Each group will explain their method. Others can ask questions or compare methods. After groups have shared, I’ll ask students to identify methods that seemed to be used more often and give those methods a name.

Story-based problem: The slide of “Candy Shop” from nrich.maths.org will displayed. We will discuss the British monetary system, and groups will have the opportunity to consider how this problem is similar and different from the previous problem. A brief class discussion, as needed, will help students make the jump to written form. Again, students will solve in groups and record their methods in a way that can be shared. Are there multiple methods for this one? The extension question will be included so groups finishing early can work on that or create their own problems based on candy of different prices.

Closure: During the lesson, I will be taking notes regarding participation within each group. As students complete the reflection exit ticket, I’ll check in and review with each group on their successes for the day and ways to improve.

Reflection/Exit ticket: Students will each complete the following:

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| **Please choose 3 questions to answer:**  What did you discover that you could use again? What good ideas did you have?  Are there things about today’s lesson that are confusing?  Why is finding different methods important? When did a mistake help you grow today?  Compare your group to a vehicle and explain why your group is like that. |