

**MANCHESTER COLLEGE**  
**Education Department**

**Lesson Plan By:** Emily Quandt

**Lesson:** Problem Solving

**Length:** 2 math periods

**Age or Grade Intended:** 6<sup>th</sup>

**Academic Standards:**

- 6.7.11 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.
- 6.7.10 Decide whether a solution is reasonable in the context of the original situation.
- 6.7.8 Use graphing to estimate solutions and check the estimates with analytic approaches.

**Performance Objectives:**

1. The students, when given a problem, will draw a graph to represent the information 100% of the time.
2. The students, after solving a problem, will show the method of finding the solution by solving a similar problem 100% of the time.
3. The student, after solving a problem, will decide if a solution is reasonable by giving a step by step description of how they solved the problem 100% of the time.

**Advance Preparation by Teacher:** I will have stations where the students will be working. At one station they will be drawing graphs and I will have graph paper and rulers ready for them. Fake money will also be provided if the students want to use manipulatives to solve the problems that involve money. I will also have a table set up with a checkerboard and dominos that the students can use to solve a different problem. Any other manipulatives that students might use for these problems will be provided and set up ahead of time.

**Procedures**

**Introduction/Motivation:** We would have already learned about problem solving and the students will have practiced solving problems. Now I would explain to them that there are some problems that have no answer for various reasons. There are also problems that have various answers and can be solved in different ways. Since algebra is mainly learning rules to solve expressions, my motivation will be to tell the students they are going to be able to use any means to solve these problems. They can be creative and come up with answers as long as they can justify those answers. I will also tell them we will be working with groups and my only job will be to facilitate, not to lecture or teach.

**Step-by-Step Plan:** After explaining that the students will be solving problems, I will inform them that they are to get into small groups of 3. There are different stations set up around the room and we will be moving from station to station in groups to solve the problems. Once they are at a station they will have a certain amount of time to

complete the problem. If more time is needed they will have time to finish up problems the next day. Once the students have chosen groups I will have them pick a station. At each station will be a different problem. Their job is to follow the directions and figure out if the problem has no solution, one solution, or many solutions. Some problems will take longer than others so there might be more than one problem at a station. When all the students have finished each station we will discuss them as a class. The groups can volunteer to answer the problems. If the problems have more than one solution then different groups can explain how they got their answers as well. We will also discuss why some of the problems had no solution.

**Closure:** I will then have the students get back into their groups for a short amount of time for the closing activity. I will have them write a problem that has more than one solution. I would like for the problem to involve manipulatives, but it is not a requirement. Then we will pass the problems around for other groups to solve.

**Self-Reflection:** This activity will not involve much teaching on my part. I will simply facilitate as the students use their own knowledge and ideas to come up with solutions. Therefore as long as the students are working together to find solutions to the problem, I will feel as if the lesson was a success. I want the students to be open minded and think of different ways that problems could be solved and use that in this lesson.