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Math 1010

Optimization Reflection

As a part of my Math 1010 class, we were given a project where we evaluated an advertising campaign to see whether T.V. or radio media outlets would be more effective. As well as how many of each should be purchased in order to reach the largest audience possible within a budget constraint. In this reflection, I will explain some of the techniques that were used in our optimization project, why linear programming can be an important asset to our lives, and how mathematics in general can help us in our daily lives.

In our optimization project, we used many tools and techniques in solving the situation presented to us with linear programming being the main method. Other tools that were used include; graphing, and setting up linear inequalities. Graphing is a great way to visually see the data in a simplified way instead of looking at a huge spreadsheet of numbers and equations. The points on our graph made what is called a “feasible region”, in which any point with in that region represents a possible number of T.V. and radio ads that would meet the required criteria for the problem. At one of the vertices on the graph is where the maximum number of people will be exposed to the ads. In order to create the graph, we used linear inequalities which represent constraint requirements for the situation. These constraints all together along with an objective function build a linear programming model. This is used to optimizing real-world situations and aid in educated decision making.

I believe that this project is a great example of how mathematics can be applied to the real world. In business, it is crucial to have all the information available before a decision is made. The findings and results of problems are important because it can reveal an optimal point

where profit is at its peak, or where it may be best to minimize the cost of production of a product. There are many ways that linear programming can be applied in order to attain all the possible outcomes of a situation.

Linear programming can be used for obtaining the best possible solution to a given problem within constraint limitations. We most likely use linear programming every day without even realizing it. For example; you have a bunch of errands to run on day that requires you to drive to several different places. Before you even leave you probably think through where you need to go, mapping out in your head the shortest routes or the fastest way to get to those places. You just used linear programming to optimize your task at hand. You figured out the most efficient routes to drive. This method can be applied to many situations that can help us be more efficient.

For our project we were given a problem in which a local business plans on advertising a new product by purchasing advertisements on the radio and T.V. They plan on purchasing at least 60 ads total and they want to have at least twice as many T.V. ads as radio ads. Let's say I was the business owner in this problem, and a manager presented their findings and solution to this situation. I would want them to go through all of the numbers they used in creating the linear program making sure that they understood what was truly being asked. Even if I knew what everything means, they would need to prove and justify their conclusions. It is important to calculate and show all possible solutions to a problem in order to get the best possible outcome.

As a business owner, I use some form of linear programming almost daily in order to best serve my employees and customers. Mathematics is a huge part of what I do. I use it when making the employee schedule, ordering products, doing the payroll, and many other aspects that are required in my position. I wouldn't say that our optimization project made me believe that

math is is useful in our lives. I already know that it is. What I think this assignment did do was gave further evidence that there are more efficient and informative ways to optimize a situation. I now have the tools and knowledge on using linear programming techniques that can aid in better decision making at home and in my business.