Project
MATH 105-20   Summer 2013 (Term II)

This project is worth 100 points. You may complete it individually, or in groups of two or three students. You will need to solve the problem, and turn in a solution with all of the required parts. Each part is worth 10 points, for a total of up to **80 points** for the quality of your project. You will receive up to **20 points** for neatness (either neatly handwritten or typed) and complete sentences. Note that the required Simplex Method software can be found at `http://www.math.louisville.edu/~williams/Simplex.html`. **This project is due on July 5, 2013. You may turn it in as early as you wish, but under absolutely NO circumstances will ANY late submissions be accepted!**

Problem:
Cookie Barn is known for its delicious decorated cookies. The shop bakes two types of cookies: chocolate chip and peanut butter. Each dozen of chocolate chip cookies requires 1 minute of mixing time, 4 square feet of baking space, and 7 minutes of icing time to prepare while fetching a profit of $1.40. Each dozen of peanut butter cookies requires 6 minutes of mixing time, 3 square feet of baking space, and 2 minutes of icing time to prepare while yielding a profit of $1.10. The shop has only 72 minutes of mixing time, 57 square feet of baking space, and 77 minutes of icing time. Complete the following.

1. Identify the products and resources used and define the production variables.

2. Create a product-resource chart.

3. Create the profit function and list the constraints with labels (explain what each constraint represents).

4. Graph the constraints and locate the feasible region. Clearly indicate your feasible region.

5. Find the corner points. How many of each type of cookies should Cookie Barn produce in order to maximize their profit? What will be that maximum profit?

6. Identify the amount of each resource that is unused.

7. Create the Initial Simplex Matrix.

8. Use the computer software for the Simplex Method to verify your solution to parts (5) and (6).