Practice Set - Linear Programming Applications

Breakfast Bars **In Exercises 10–13, use the following information.**
Your factory makes fruit filled breakfast bars and granola bars. For each case of breakfast bars, you make $40 profit. For each case of granola bars, you make $55 profit. The table below shows the number of machine hours and labor hours needed to produce one case of each type of snack bar. It also shows the maximum number of hours available.

Production Hours	Breakfast bars	Granola bars	Maximum hours
Machine hours	2	6	150
Labor Hours	5	4	155

10. Write an equation that represents the profit (objective function).

11. Write a system of inequalities that represents the constraints.

12. Sketch the graph of the constraints found in Exercise 11 and label the vertices.

13. How many cases of each product should you make to maximize profit?

Bakery A bakery is making whole-wheat bread and apple bran muffins. For each batch of bread they make $35 profit. For each batch of muffins they make $10 profit. The bread takes 4 hours to prepare and 1 hour to bake. The muffins take 0.5 hour to prepare and 0.5 hour to bake. The maximum preparation time available is 16 hours. The maximum baking time available is 10 hours. How many batches of bread and muffins should be made to maximize profits?

Phone Bill On a typical long distance call you talk for 30 minutes. On a typical local call you talk for 10 minutes. Your phone company offers a special low rate of $.08 per minute for long distance calls and $.03 per minute for local calls for customers who spend at least 240 minutes on the phone per month. Your parents have set a limit of no more than 15 long distance calls per month and 30 local calls per month. How many minutes of long distance and local calls should you make to qualify for the special rate plan and minimize your phone bill?