Algebra 2 – 3.4 Linear Programming Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_ Hour \_\_\_\_\_\_\_\_

Use linear programming to solve each problem. Use the following steps.

1) Define the variables.

2) Write the objective function and the constraints. Simplify the constraints if necessary.

3) Graph the constraints. Use a graphing calculator if necessary.

4) Find the coordinates of each vertex and evaluate the objective function for each one (substitute

each one into the objective function) to find the maximum or the minimum.

1) **Magic Show**

Your school has contracted with Majed the Magician to perform at your school. Student tickets are

being sold for $4 each and non-student tickets are being sold for $6 each. The school has

guaranteed attendance of at least 1000 and total ticket sales of at least $4800. Majed will receive

$2.50 for each student ticket and $4.50 for each non-student ticket. What is the minimum amount

of money Majed could receive?

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2) **Sales** - As manager of an appliance store, Lily needs to order two types of refrigerators, A and B.

Model A has a cost of $300 and a profit of $40. Model B has a cost of $400 and a profit of $60.

Lily expects a profit of at least $4800 and expects to sell at least 100 units. How many of each

model should Lily order to minimize her cost?

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**3) Gold**

A gold processor has 2 sources of gold ore, source A and source B. At least 3 tons of ore must be

processed each day. Ore from source A costs $20 per ton to process, and ore from source B

costs $10 per ton to process. Costs must be kept to less than $80 per day. The amount of ore

from source B cannot exceed twice the amount of ore from source A. Source A yields 2 oz. of

gold per ton, and ore from source B yields 3 oz. of gold per ton. How many tons of ore from both

sources must be processed each day to maximize the amount of gold extracted?

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4) **Farming** – William is planting wheat and rye on his farm. He has a 10 acre farm and has to plant

at least 7 acres. He has only $1200 to spend and each acre of wheat costs $200 to plant and

each acre of rye costs $100 to plant. William has to get the planting done in 12 hours and it takes

an hour to plant an acre of wheat and 2 hours to plant an acre of rye. The profit is $500 per acre

of wheat and $300 per acre of rye. How many acres of each should William plant to maximize his

profit?

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