Honors 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. A calculator company produces a scientific calculator and a graphing calculator. Long-term

 projections indicate an expected demand of at least 100 scientific and 80 graphing

 calculators each day. Because of limitations on production capacity, no more

 than 200 scientific and 170graphing calculators can be made daily. To satisfy a shipping

 contract, a total of at least 200 calculators much be shipped each day.

If each scientific calculator sold results in a $2 loss, but each graphing calculator produces a $5 profit, how many of each type should be made daily to maximize net profits? What is the maximum profit?

x =

y =



2. You need to buy some filing cabinets. You know that Cabinet X costs $10 per unit, requires

 six square feet of floor space, and holds eight cubic feet of files. Cabinet Y costs $20 per

 unit, requires eight square feet of floor space, and holds twelve cubic feet of files. You have

 been given $140 for this purchase, though you don't have to spend that much. The office

 has room for no more than 72 square feet of cabinets. How many of which model should

 you buy, in order to maximize storage volume? What is the maximum volume?

x =

y =



3. Rena has an online jewelry shop where she sells earrings and necklaces. It takes 30 minutes

 to make a pair of earrings and 1 hour to make a necklace. Since Rena is a math tutor, she only

 has 10 hours a week to make jewelry.  In addition, she only has enough materials to make 15

 total jewelry items per week.  She makes a profit of $15 on each pair of earrings and $20 on

 each necklace.  **How many pairs of earrings and necklaces should Rena make each week**

 **in order to maximize her profit, assuming she sells all her jewelry? What is the maximum profit?**

x =

y =

