Name _____ Date _____ Hour _____

9.3 Assignment

1. Boise Lumber has decided to enter the lucrative prefabricated housing business. Initially, it plans to offer two models: standard and deluxe. Each house is prefabricated and partially assembled in the factory, and the final assembly is completed on site. To build a standard house, material will cost $6000 and require 240 factory labor hours and 180 on-site labor hours. For a deluxe home, material will cost $8000 and require 220 factory labor hours and 210 on-site labor hours. The profit from a standard home is $3400 and the deluxe model yields a profit of $4000. The budget for material is $8.2 million, the number of labor hours for the factory cannot exceed 218,000 hours and number of on-site labor hours cannot exceed 237,000 hours. Determine how many houses of each type Boise should produce to maximize its profits.

Fill in the table, determine if this is a maximization or minimization problem, and write the equation for the linear objective function and the constraints.

	Standard	Deluxe	Requirements
Material			
Factory Labor (hr)			
On-site Labor (hr)			
Profit			

Name _____ Date _____ Hour _____

2. A company manufactures products A and B through three departments: I, II, and III. The labor hours in Department I are 2 hours for product A and 1 hour for product B and cannot exceed 900 hours. The labor hours in Department II are 3 hours for product A and 1 hour for product B and cannot exceed 1080 hours. The labor hours in Department III are 2 hours for product A and 2 hours for product B and cannot exceed 840 hours. How many units of each product should the company produce in order to maximize its profits?

Fill in the table, determine if this is a maximization or minimization problem, and write the equation for the linear objective function and the constraints.

	Product A	Product B	Time Required
Dept. I			
Dept. II			
Dept. III			
Profit			

Name _____ Date _____ Hour _____

3. Deluxe River Cruises operates a fleet of river vessels. The fleet has two types of vessels: a type-A vessel has 60 deluxe cabins and 160 standard cabins, whereas a type-B vessel has 80 deluxe cabins and 120 standard cabins. Under a charter agreement with Odyssey Travel Agency, Deluxe River Cruises is to provide Odyssey with a minimum of 360 deluxe and 680 standard cabins for their 15-day cruise in May. It costs $44,000 to operate a type-A vessel and $54,000 to operate a type-B vessel for that period. How many of each type vessel should be used in order to keep the operating costs to a minimum?

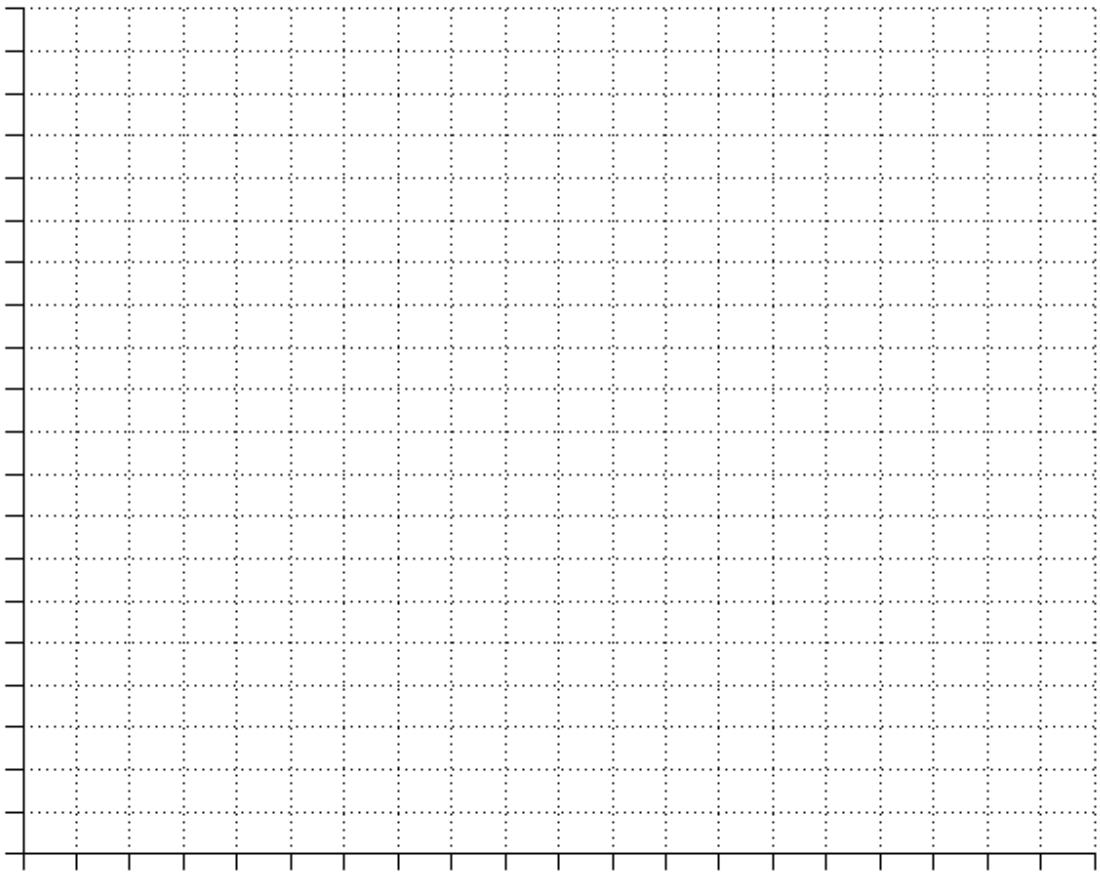
Fill in the table, determine if this is a maximization or minimization problem, and write the equation for the linear objective function and the constraints.

	Type-A	Type-B	Min. Cabins Needed
Deluxe Cabins			
Standard Cabins			
Price/Vessel			

Name _____ Date _____ Hour _____

In 4 and 5, graph the following constraints.

4. $2x + 3y \leq 1500,\ \ 2x + y \leq 1000,\ \ x \geq 0,\ \ y \geq 0$



Name _____ Date _____ Hour _____

5. $x + y \leq 10,\ x + y \geq 7,\ 200x + 100y \leq 1200,\ x \geq 0,\ y \geq 0$