

Name _____

Date _____ Hour _____

Sec 7.5 Extra Problems: Linear Programming

1. Stephanie's lunch cart sells burritos and chili. To stay in business, she must sell at least 20 orders of chili and 30 orders of burritos each day. Because of limited space, no more than 40 orders of chili or 70 burritos can be made. The total number of orders cannot exceed 90. If profit is \$1.65 per chili order and \$1.05 per burrito, how many of each item should she sell in order to maximize profit?
2. The Hockeypuck Biscuit Factory makes two types of biscuits, Biscuit Jumbos and Mitimites Biscuits. The oven can cook at most 200 biscuits per hour. Jumbos each require 2 oz of flour, Mitimites require 1 oz of flour, and there is at most 300 oz of flour available. The income from Jumbos is \$1.00 and from Mitimites is \$0.80. How many of each type of biscuit should be made in order to maximize income? What is the maximum income?
3. Eddy is about to take a test that contains short-answer questions worth 4 points each and word problems worth 7 points each. Eddy must do at least 5 short answer questions, but time restricts doing more than 10. He must do at least 3 word problems but time restricts doing more than 10. Eddy can do no more than 18 questions in total. How many of each type of question must Eddy do in order to maximize his score? What is the maximum score?
4. Simply Hardware Computer Company has two manufacturing plants. The West plant cannot produce more than 60 computers a month, while the East plant cannot produce more than 120 computers a month. The Computer Outpost sells at least 160 computers a month. It costs \$40 to ship a computer from the West plant and \$25 to ship from the East plant. How many computers should be shipped from each plant in order to minimize the cost?
5. A small business makes oak and walnut chairs. The business can make at most 20 chairs a week. Materials cost \$100 per oak chair and \$150 per walnut chair. The business has a budget of \$2400 per week for materials. Each oak chair sells for \$400 and each walnut chair sells for \$500. How many of each type of chair should the business make each week to maximize income? What is the maximum income possible per week?
6. A paper mill can convert wood pulp into either notebook paper or copier paper. The mill can produce at most 20 reams of paper per day. At least 1 ream of notebook paper and 8 reams of copier paper are required by regular customers. The profit on notebook paper is \$50 while the profit on copier paper is \$35. How many reams of each type of paper should the mill produce to maximize profit?
7. Your club plans to raise money by selling two sizes of fruit baskets. The plan is to buy small baskets for \$10 and sell them for \$16 and to buy large baskets for \$15 and sell them for \$25. The club president estimates that you will not sell more than 100 baskets. Your club can afford to spend up to \$1200 to buy baskets. Find the number of small and large fruit baskets you should buy in order to maximize profit.
8. A beauty salon schedules appointments for haircuts for 30 minutes and for facials for 1 hour. Each haircut costs \$20 and facials cost \$45. The beauty salon wants to schedule no more than 4 facials each day per beautician. Find the number of each type of appointment that produces the maximum income per beautician in a workday of 8 hours at most.