

You must do this assignment on a separate piece of paper.

1. A factory produces short sleeved and long sleeved shirts. A short-sleeved shirt requires 30 minutes of labor, a long-sleeved shirt requires 45 minutes of labor, and 240 hours of labor are available per day. The maximum number of shirts that can be packaged in a day is 400, so no more than 400 shirts should be produced. If the profits on a short-sleeved shirt and a long-sleeved shirt are \$11 and \$16, respectively, find the maximum possible daily profit.
2. Kay grows and sells tomatoes and green beans. It costs \$1 to grow a bushel of tomatoes and it takes 1 yd<sup>2</sup> of land. It costs \$3 to grow a bushel of beans and it takes 6 yd<sup>2</sup> of land. Kay's budget is \$15 and she has 24 yd<sup>2</sup> of land available. If she makes \$1 profit on each bushel of tomatoes and \$4 profit on each bushel of beans, how many bushels of each should she grow in order to maximize his profits?
3. Cars and trucks are made in a factory that is divided into 2 shops. Shop 1 performs the basic assembly operation, working 6 person-days on each truck and only 3 person-days on each car. Shop 2 performs finishing operations, working 4 person-days on each car or truck that it produces. Shop 1 has 150 person-days per week, while Shop 2 has 120 person-days per week. The manufacturer makes a profit of \$500 on each truck and \$350 on each car. How many of each should be produced each week to maximize the profit?
4. A ski manufacturer makes two types of skis and has a fabricating department and a finishing department. A pair of downhill skis requires 6 hours to fabricate and 1 hour to finish. A pair of cross country skis requires 4 hours to fabricate and 1 hour to finish. The fabricating department has 108 hours of labor available per day. The finishing department has 24 hours of labor available per day. The company makes a profit of \$ 40 on each pair of downhill skis and a profit of \$30 on each pair of cross country skis. How many of each should they produce to maximize the profit?.
5. Lois makes banana bread and nut bread to sell at a bazaar. A loaf of banana bread requires 2c flour and 2 eggs. A loaf of nut bread takes 3 c flour and 1 egg. Lois has 12 c flour and 8 eggs on hand. She makes \$2 profit per loaf of banana bread and \$2 profit per loaf of nut bread. To maximize profits, how many loaves of each type should she bake?

Answers:

1. 240 short-sleeved and 160 long-sleeved shirts. Maximum profit \$5200.
2. 6 bushels of tomatoes and 3 bushels of green beans. Profit \$18
3. 10 cars and 20 trucks. Profit \$13, 500.
4. 6 downhill and 18 cross country skis. Profit \$720
5. 3 loaves of banana bread and 2 loaves of nut bread. Profit \$10.