

Linear Programming Worksheet
Honors Algebra 2

All work is to be done on separate paper.

The work needs to include the constraints, the function to maximize or minimize, the graph, and the vertices. Make sure you answer the question appropriately as well.

Please define or identify your variables and label each axis on your graph.

1. The area of a parking lot is 600 square meters. A car requires 6 square meters. A bus requires 30 square meters. The attendant can handle only 60 vehicles. If a car is charged \$2.50 and a bus \$7.50, how many of each should be accepted to maximize income?

2. The B & W Leather Company wants to add handmade belts and wallets to its product line. Each belt nets the company \$18 in profit, and each wallet nets \$12. Both belts and wallets require cutting and sewing. Belts require 2 hours of cutting time and 6 hours of sewing time. Wallets require 3 hours of cutting time and 3 hours of sewing time. If the cutting machine is available 12 hours a week and the sewing machine is available 18 hours per week, what ratio of belts and wallets will produce the most profit within the constraints?

3. Toys-A-Go makes toys at Plant A and Plant B. Plant A needs to make a minimum of 1000 toy dump trucks and fire engines. Plant B needs to make a minimum of 800 toy dump trucks and fire engines. Plant A can make 10 toy dump trucks and 5 toy fire engines per hour. Plant B can produce 5 toy dump trucks and 15 toy fire engines per hour. It costs \$30 per hour to produce toy dump trucks and \$35 per hour to operate produce toy fire engines. How many hours should be spent on each toy in order to minimize cost? What is the minimum cost?

4. A diet is to include at least 140 milligrams of Vitamin A and at least 145 milligrams of Vitamin B. These requirements can be obtained from two types of food. Type X contains 10 milligrams of Vitamin A and 20 milligrams of Vitamin B per pound. Type Y contains 30 milligrams of Vitamin A and 15 milligrams of Vitamin B per pound. If type X food costs \$12 per pound and type Y food costs \$8 per pound how many pounds of each type of food should be purchased to satisfy the requirements at the minimum cost?

5. The Cruiser Bicycle Company makes two styles of bicycles: the Traveler, which sells for \$300, and the Tourister, which sells \$600. Each bicycle has the same frame and tires, but the assembly and painting time required for the Traveler is only 1 hour, while it is 3 hours for the Tourister. There are 300 frames and 360 hours of labor available for production. How many bicycles of each model should be produced to maximize revenue?