

USE EXCEL SOLVER TO SOLVE EACH OF THE FOLLOWING PROBLEMS.

1. A local farmer determines that it takes 1 hour to sort and pack a crate of peaches and 2 hours to sort and pack a crate of tomatoes. There are also 10 labor hours per day. The crate of peaches weighs 60 pounds and the crate of tomatoes weighs 30 pounds. He can ship a total of 420 pounds per day. He earns a profit of \$2 and \$3 per crate of peaches and tomatoes, respectively. How many crates of each should be sorted and shipped to maximize profit? [Solve the problem using Excel Solver.]

	Peaches	Tomatoes	Total
	x	y	
Labor (hours)	1	2	10
Shipping (pounds)	60	30	420
Profit (dollars)	2	3	

DECISION VARIABLES: x = The number of crates of peaches
 y = The number of crates of tomatoes

OBJECTIVE: Maximize $2x + 3y$

CONSTRAINTS: Subject to $x + 2y \leq 10$
 $60x + 30y \leq 420$
 $x, y \geq 0$

2. A company owns two factories which produce 3 different kitchen appliances: mixers, toasters, and food processors. Factory 1 produces 800 toasters, 100 mixers, and 200 food processors per day. Factory 2 produces 200 toasters, 100 mixers, and 700 food processors per day. The daily operating costs for these production lines are \$8000 for factory 1 and \$15000 for factory 2. The company has received an order for 1600 toasters, 500 mixers, and 2000 food processors. Determine the number of days each factory should operate to fill the orders at a minimum cost.

Minimize $8000x + 15000y$ Subject to $800x + 200y \geq 1600$
 $100x + 100y \geq 500$
 $200x + 700y \geq 2000$
 $x, y \geq 0$

Solve the following Linear Programming problems algebraically.

3. A zoo has an open area that contains both zebras and gazelles. The animals are fed two types of food mixes, type A and B. Each day the area is supplied with 80 lbs of Food A and 160 lbs of Food B. Zebras require 2 lbs of Food A and 8 lbs of Food B each day . Gazelles need 5 lbs of Food A and 4 lbs of Food B each day. Determine the maximum number of zebras and gazelles that the zoo can support.

4. Same problem #3 above, except that the area also contains kangaroos who need $\frac{1}{4}$ lbs of Food A and 5 lbs of Food B.

5. Same problem #4 above, except that the area is required to have at least 3 zebras.

Homework:

- Finish this worksheet
- Use Excel Solver to re-solve problems #1, 3, 5, 7, 11 from Section 7.2.