

NAME: _____

1. A small fish market sells only tuna and salmon. A tuna costs the fish market \$1.25 per pound to buy and \$1.75 per pound to clean and package. A salmon costs the fish market \$2.25 per pound to buy and \$3.00 per pound to clean and package. The fish market makes \$1.20 per pound profit for each tuna it sells and \$1.80 per pound profit for each salmon it sells. The fish market owner can spend only \$159.50 per day to buy fish and \$217.00 per day to clean and package the fish. What is the maximum profit the fish owner can make per day and how much of each type of fish can he buy?
[A] 52 pounds of tuna; 42 pounds of salmon; \$144.00 maximum profit per day
[B] 42 pounds of tuna; 52 pounds of salmon; \$144.00 maximum profit per day
[C] 42 pounds of tuna; 52 pounds of salmon; \$138.00 maximum profit per day
[D] 52 pounds of tuna; 42 pounds of salmon; \$138.00 maximum profit per day
2. A company makes two chemicals: Type I and Type II. Due to storage problems, a maximum of 100 pounds of Type I and 150 pounds of Type II can be mixed and packaged each year. One pound of Type I takes 62 hours to mix and 78 hours to package; one pound of Type II takes 44 hours to mix and 46 hours to package. The mixing department has at most 7220 hours available each year, and packaging has at most 8260 hours available. If the profit for one pound of Type I is \$70 and for one pound of Type II is \$46, what is the maximum profit possible each year?
3. A company makes two chemicals: Type I and Type II. Due to storage problems, a maximum of 100 pounds of Type I and 150 pounds of Type II can be mixed and packaged each year. One pound of Type I takes 60 hours to mix and 70 hours to package; one pound of Type II takes 40 hours to mix and 40 hours to package. The mixing department has at most 7200 hours available each year, and packaging has at most 7800 hours available. If the profit for one pound of Type I is \$62 and for one pound of Type II is \$40, what is the maximum profit possible each year?
[A] \$7338.00 [B] \$7178.00
[C] \$7484.00 [D] \$7320.00
4. Your computer supply store sells two types of laser printers. The first type, A, has a cost of \$180 and you make a \$60 profit on each one. The second type, B, has a cost of \$120 and makes a \$40 profit on each one. You expect to sell at least 100 laser printers this month and you need to make at least \$4800 profit on them. Model the objective function and the constraints of this situation.
5. An ice cream shop makes \$1.25 on each small cone and \$2.25 on each large cone. On a typical Saturday, it sells between 60 and 80 small cones and 120 and 150 large cones. The total sales have never exceeded 200 cones. How many of each size cone must be sold to maximize profit?

NAME: _____

6. Becki plans to start a craft business. She also wants to take classes to learn how to do new crafts. She has no more than 40 hours a week for her business and classes. She plans to work at least 30 hours a week at her business and to spend between 2 and 6 hours attending classes. She decides that working at her business is three times as valuable as taking classes. Find the best way for Becki to split her time between her business and classes.
7. Write a set of restrictions based on the information in this table and an objective function for profit. A grocer wants to buy 100 lb of dried fruit. Let x represent the number of pounds of dried apricots and y represent the number of pounds of dried pineapple.

	Dried Apricots	Dried Pineapple
Cost	\$1.50 / lb	\$1.75 / lb
Selling Price	\$3.00 / lb	\$4.00 / lb

The cost must be no more than \$500.

[1] D

[2] \$7828.00

[3] D

$$x + y \geq 100$$

$$60x + 40y \geq 4800$$

[4] $z = 180x + 120y$

[5] 60 small cones, 140 large cones

38 hours on her business and 2 hours

[6] attending classes

$$x \geq 0; \quad y \geq 0; \quad x + y \leq 100;$$

[7] $1.5x + 1.75y \leq 500; \quad P = 1.5x + 2.25y$