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## MODULE 9.2-LINEAR PROGRAMMING

## LEARNING OBJECTIVES

In this section, you will:

- Define an objective function.
- Define constraint equations.
- Define feasible regions and determine corner points.
- Solve linear programming problems using a graph.


## LINEAR PROGRAMMING

- State the definition of an objective function.
- State the definition of a feasible region.
- State the Fundamental Theorem of Linear Programming.


## SOLVING A LINEAR PROGRAMMING PROBLEM GRAPHICALLY

How To... Solving a Linear Programming Problem Graphically.

## MODULE 9.2-CLASS NOTES

1. Using the 6 steps outlined, maximize the function $P=14 x+9 y$ subject to the constraints:

$$
\begin{aligned}
& x+y \leq 9 \\
& 3 x+y \leq 15 \\
& x \geq 0 \\
& y \geq 0
\end{aligned}
$$


2. A company makes two products. Product A requires 3 hours of manufacturing and 1 hour of assembly. Product B requires 4 hours of manufacturing and 2 hours of assembly. There are a total of 84 hours of manufacturing and 32 hours of assembly available. Using the 6 steps outlined to determine the production to maximize profit if the profit on product A is $\$ 50$ and the profit on product B is $\$ 60$.

3. A diet is to contain at least 2400 units of vitamins, 1800 units of minerals, and 1200 calories. Two foods, Food A and Food B are to be purchased. Each unit of Food A provides 50 units of vitamins, 30 units of minerals, and 10 calories. Each unit of Food B provides 20 units of vitamins, 20 units of minerals, and 40 calories. If Food A costs $\$ 2$ per unit and Food B cost $\$ 1$ per unit, how many units of food should be purchased to keep costs at a minimum?


