

3.4: Linear Programming

Linear Programming –

Constraint –

Objective Function –

Vertices -

Example 1: Consumer Knowledge

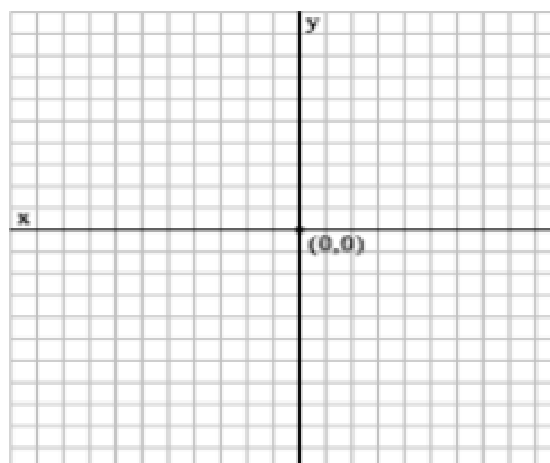
Suppose you want to buy CDs and tapes. You can afford as many as 10 tapes or 7 CDs. You want at least 4 CDs and at least 10 hours of recorded music. Each tape holds 45 minutes and each CD holds 1 hour of recorded music.

1. Define Variables
2. Write Constraints

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1. Graph Constraints



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1. Test Vertices to find maximum and minimum values

Example 2: Manufacturing

A small company makes two similar products, which all follow the same two-step process, consisting of cutting and gluing. Time requirements *in minutes* for each product at each operation are given below.

operation	product	
	x	y
cutting	1.5	0.8
gluing	0.6	2.2

The firm has 30 hours available in the next period for cutting and 55 hours for gluing. Product x contributes \$4.40 per unit to profit and y contributes \$4.50 per unit. Find the product mix that maximizes profit.

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1. Write Objective Function
2. Graph Constraints
 - a. Use a graphing calculator (see handout)

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1. Test Vertices

Example 3: Running a Bakery

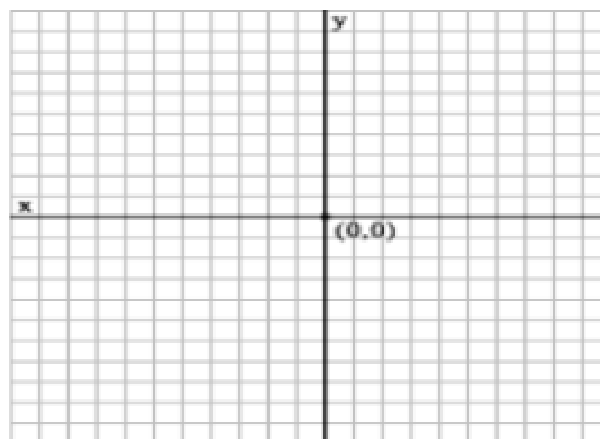
A baking tray of corn muffins takes 4c milk and 3c flour. A tray of bran muffins takes 2c milk and 3c flour. A baker has 16c milk and 15c flour. He makes \$3 profit per tray of corn and \$2 profit per tray of bran muffins. How many trays of each type of muffin should he bake to get maximum profit?

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2. Write Constraints

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1. Write Objective Function
1. Graph (both by hand and on calculator)



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1. Check Vertices