

Example 2: Zenon's Xylophones

Introduction

This assessment requires you to use linear programming to model the constraints Zenon has and recommend how many xylophones and yunloes Zenon should make to maximise his revenue in the current year and in future years.

You must present a written report in this document including all the relevant information. Take care to clearly communicate your findings using appropriate mathematical statements. Include all graphs, equations and calculations. The quality of your reasoning and its links to the context will determine the overall grade. You have 1 hour to independently complete this task.

Part A

Zenon's factory makes xylophones and yunluos. Each xylophone requires up to 9 m³ and each yunloos take up to 10m³ to make. He only has 380m³ space in his workshop.

He has already committed to make 2 yunluos.

Xylophones require 22 manhours of work and sells for \$23. Yunloes require 18 manhours of work and sell for \$22. The total number of manhours is 740h.

The transportation cost is \$3 for each xylophone and \$1 for each yunluos, and the total transportation budget is \$80.

How many xylophones and yunloes should Zenon make to maximize sales?

Part B

The price of xylophones and yunloes change to 3:1. What is the new optimal production of xylophones and yunluos?

Part C:

Zenon is unsure how future prices might play out. Explain (with reasoning) how future prices might affect the optimal combinations of Xylophones and Yunluos Zenon would have to sell to maximise sales.

