



Linear Programming: SWEDEBUILD

Student Worksheet

Brief

A new Swedish furniture manufacturer called SWEDEBUILD offers a range of functional, affordable home furnishing products. SWEDEBUILD would like to launch a new range of dining furniture.

SWEDEBUILD can only afford a certain amount of the raw materials required to manufacture the tables and chairs, but needs to make as many units as possible from their limited resources. They also need to consider the cost of the raw materials, the selling price of the furniture and the impact that these factors will have on the company's profit.

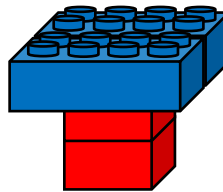
Can you help the production manager find out how many tables and chairs should be made in order to create the greatest profit?

Modelling

You should have 8 square bricks and 6 rectangular bricks. See which combinations of tables and chairs you can build using the designs below.

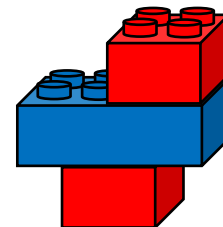
To make a table, use:

- 2 x rectangular Lego bricks
- 2 x square Lego bricks



To make a chair, use:

- 1 x rectangular Lego brick
- 2 x square Lego bricks



Question 1

Fill in the first three columns of the table below (tables, chairs and left over) based on the combinations you have created.



Tables	Chairs	Left over	Cost	Sell	Profit

Question 2

- A square brick costs £3.00
- A rectangular brick costs £5.00

Make a note below of how much it will cost to build one table and one chair. Then calculate how much it will cost to build each of the combinations, and fill in the 'cost' column above.

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Question 3

- A table sells for £32.00
- A chair sells for £21.00

Use the information above to calculate how much each combination of furniture will sell for. Fill in the 'sell' column of the table.

Question 4

Fill in the profit column above using the costs and selling prices. Which combination of tables and chairs will give you the greatest profit?

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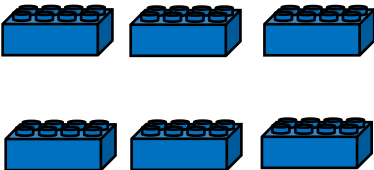
Constraints

Question 5

Write an inequality that links the number of tables and chairs to the number of rectangular bricks.

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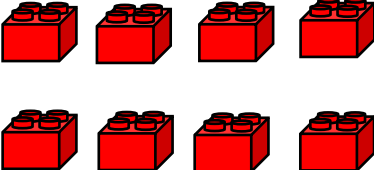
No. rectangular bricks used		Total no. rectangular bricks available
Tables (t)	Chairs (c)	
2	1	6
		

Question 6

What is the inequality that links the number of tables and chairs to the number of square bricks?

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No. square bricks used		Total no. square bricks available
Tables (t)	Chairs (c)	
2	2	8
		



Graph Work

Question 7

Plot the constraint inequalities from Questions 5 and 6 on the same graph here:



Question 8

Plot the points on the graph that represent the different combinations of tables and chairs that you worked out in question 1.

