



Linear Programming: SWEDEBUILD

Answer Sheet

Question 1

How many tables and chairs can you make?

Tables	Chairs	Left over	Cost	Sell	Profit
0	4	2 rectangles	£44	£84	£40
1	3	1 rectangle	£49	£95	£46
2	2	0	£54	£106	£52
3	0	2 squares	£48	£96	£48

Question 2

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.

- Chairs cost £11
- Tables cost £16

Question 3

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

Question 4

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

- 2 tables and 2 chairs

Question 5

Can you write an equation that links the number of tables and chairs to the number of rectangle bricks?

- $2t + c \leq 6$

Where

- 2 = no. rectangular bricks needed to produce a table
- t = no. tables produced
- (1 = no. rectangular bricks needed to produce a chair)
- c = no. chairs produced
- 6 = no. rectangular bricks available



Question 6

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

- $2t + 2c \leq 8$

Where

- (1st) 2 = no. square bricks needed to produce a table
- t = no. tables produced
- (2nd) 2 = no. square bricks needed to produce a chair
- c = no. chairs produced
- 6 = no. square bricks available

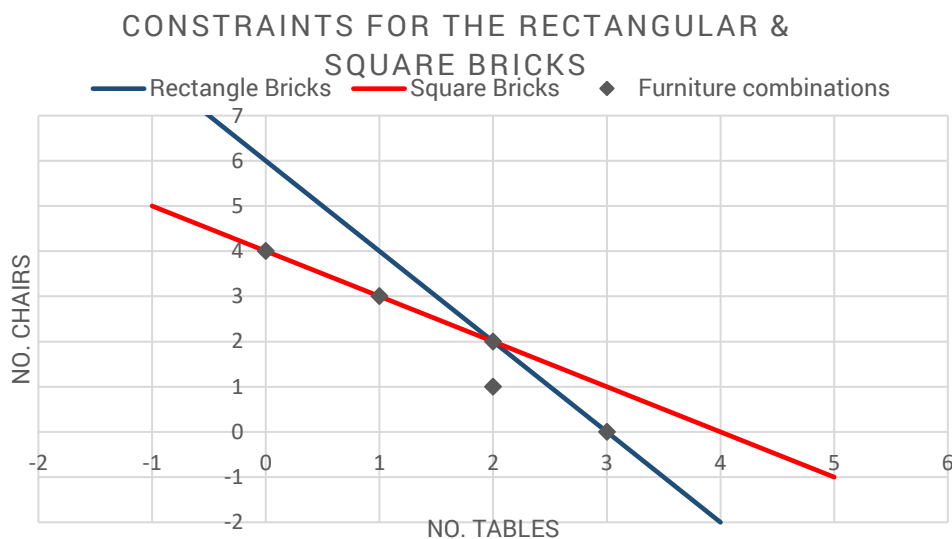
Question 7

Plot the constraint equations from Questions 5 and 6 on the same graph.

- See below

Question 8

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



Question 9

Could negative numbers form part of the solution? Why / why not?

- The plotted combinations of tables and chairs indicates that the feasible region lies below the lines (equal to or less than). A negative number of tables and chairs cannot be produced and so this provides further boundaries for the feasible region.

Question 10

Write a report for the production manager of SWEDEBUILD. This should explain your recommendations to the company and how you came to those conclusions.

- This question is designed to check understanding – the age/ability of the students will influence their answers.