

# UNIVERSITY OF MASSACHUSETTS

## Isenberg School of Management

Department of Finance and Operations Management

FOMGT 353-Introduction to Management Science

### Homework #1 - The Nutty Wood Co.

**Show your work completely and in an organized manner to receive maximum credit. Correct answers without supporting calculations or diagrams will not receive credit. Incorrect answers using the correct method and a good presentation will receive substantial credit.**

My name is:

The Nutty Wood Co. makes chairs and tables from Walnut and Oak.

A table, which sells for \$400, needs 5 cubic feet of Walnut and 2.5 cubic feet of Oak.

A chair, which takes 2 cubic feet of Oak and 1 cubic foot of Walnut, sells for \$125.

Only 400 cubic feet of Walnut is available and only 250 cubic feet of Oak is available.

Oak costs \$10 a cubic foot and Walnut \$20 a cubic foot.

1. How many cubic feet of Walnut would be needed to produce 6 chairs and a table?

A chair needs 1 cubic foot of Walnut and a table needs 5 cubic feet of Walnut.

6 chairs needs 6 cubic feet.

So 6 chairs and one table need 11 cubic feet of Walnut

2. How many cubic feet of Oak would be needed to produce 6 chairs and a table?

A chair needs 2 cubic feet of Oak and a table needs 2.5 cubic feet of Oak.

6 chairs needs 12 cubic feet.

So 6 chairs and one table need 14.5 cubic feet of Oak

3. How much would it cost, in materials, to produce 6 chairs and a table?

We need 11 cu feet of Walnut and 14.5 cubic feet of Oak.

So, the cost will be 11 \* price of a cubic foot of Walnut plus 14.5 \* price of a cubic foot of Oak.

$$\begin{aligned}\text{Cost} &= (11 * \$20) + (14.5 * \$10) \\ &= \$220 + \$145 \\ &= \$365\end{aligned}$$

4. If one table and 6 chairs were sold what would the revenue be?

A table sells for \$400 and a chair for \$125, so...

$$\begin{aligned}\text{Revenue} &= (1 * \$400) + (6 * \$125) \\ &= \$400 + \$750 \\ &= \$1,150\end{aligned}$$