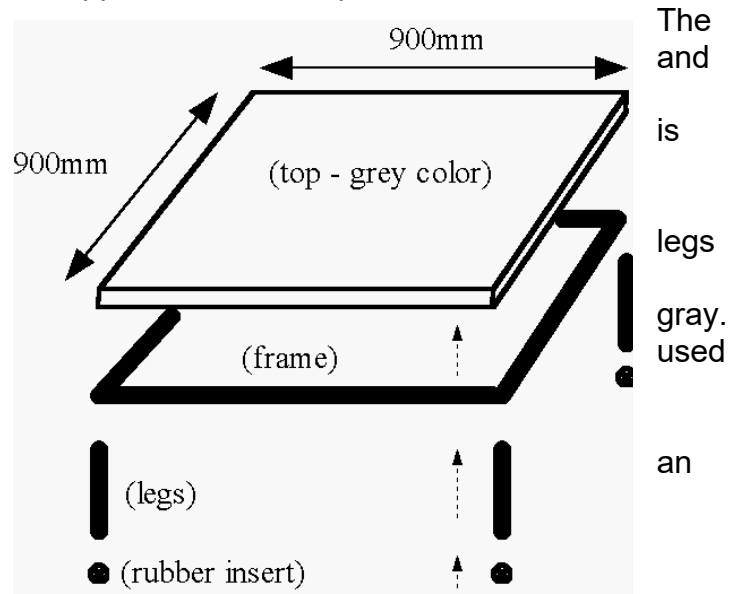


# Hi Tech Furniture Company, LLC

Hi Tech Furniture manufactures and markets a range of chairs, metal tables and other office furniture for the education, government and general business sectors. It is located in Sharjah, an Emirate in the United Arab Emirates.

The best-selling product line is a table with a top which measures 900mm by 900mm (35.4" x 35.4"). It is constructed from chipboard and covered in a scratch resistant laminated surface. The legs and a metal frame which supports the table top are constructed from a metal box section 20mm (0.8") square. The legs are screwed to the metal support and the table top is secured to the completed frame. Each of the four legs is fitted with a rubber insert at the bottom, which cushions the table, makes it more stable, and keeps it from scratching the floor. The table is supplied in only one color, which is gray. A variety of multipurpose equipment is used to manufacture the table.



At present the company is producing order of 5000 of these tables for the government. The order is to be completed within one year. The factory operates on a 50 week per year calendar and production demand is scheduled evenly throughout the year. The normal working day for the factory is 8 working hours but overtime can be scheduled to meet peaks in demand or unscheduled emergency orders. The factory is open for production 5 days each week but additional days can be scheduled if required .

The marketing department has identified demand for similar tables but in a range of bright modern colors. Already tentative orders have been received for 1000 blue tables from a retailer. The retailer has requested delivery in 10 equal orders of 100 tables. The customer requires that all the orders are completed within 20 weeks.

Ibrahim Mohammed, the Production Manager, understands that the manufacture of blue tables cannot be undertaken without extending the working week or dramatically improving working methods for the table production area. The owners are anxious to exploit this market opportunity but reluctant to move the operation to a different location to allow for expansion as they worry that this move would disrupt current operations.

The following week two Hi Tech managers were visiting an equipment trade exhibition when they discovered that the quality of their table products could be improved while the manufacturing time could be reduced. These measures would, however, mean a substantial

capital investment in electronic welding equipment. The welding machines were said to last for 5 years by their sales representative.

At the same time this trade show was happening, the factory had a visit from a furniture manufacturer in India who offered to supply tables in either gray or blue colors at a price of 350 Dirhams (Dhs) each (350 Dhs = USD 95). Ibrahim Mohammed, who hosted this factory visit, thought the offer was attractive in financial terms. However, having examined samples of the gray and blue tables, he was a little concerned with the quality. The tables did not look as strong as Hi Tech's own product. The legs of the table were thinner, the table top not as thick, and the overall assembly looked less carefully done.

## Production Details

### Current Manufacturing System:

The times shown are the minutes of labor required for the construction of one table unless stated otherwise using the current manufacturing system.

| Action  | Minutes of Labor Required |
|---|---------------------------|
| Raw materials delivered from stores (inventory)                           | 7.5                       |
| Manufacture one table leg   | 7.5                       |
| Manufacture the support frame for the table legs                          | 15.0                      |
| Manufacture table top   | 11.0                      |
| Screw and glue four legs to table frame                                   | 30.0                      |
| Fix a rubber insert into one table leg                                    | 1.0                       |
| Screw and glue the frame to the table top                                 | 30.0                      |
| Quality check / pass or reject  | 15.0                      |
| Transport completed table to the finished goods store or to the scrap bin | 7.5                       |

### New Electronic Welding Equipment Manufacturing System:

The times shown below are in minutes of labor required for the construction of one table using the new electronic welding equipment.

| Action  | Minutes of Labor Required |
|---|---------------------------|
| Raw materials delivered from stores (inventory) | 7.5                       |
| Manufacture one table leg                       | 7.5                       |

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|   |      |
|---|------|
| Manufacture the support frame for the table legs                          | 15.0 |
| Manufacture table top   | 11.0 |
| Weld four table legs to support frame                                     | 20.0 |
| Weld table top to support frame   | 15.0 |
| Fix a rubber insert into one table leg                                    | 1.0  |
| Quality check (includes packaging) - pass or reject                       | 10.0 |
| Transport completed table to the finished goods store or to the scrap bin | 7.5  |

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## Questions

1. Draw and label a process flow chart of the new production method using the welding equipment. Show the production times for **each stage** of the process.
2. Given the information provided in the case, what type of process pattern best suits the manufacture of **both gray and blue tables**? Why?
3. Calculate the **number of laborers** required to produce **one week's production of gray tables**, using both the original method of production and the new method, which uses the new welding machine.
4. Using the welding equipment, and assuming there are 7 employees each working a 40 hour week, calculate the **weekly production capacity** of the factory.

5. Based on the capacity **calculation in question 4**, what can Ibrahim Mohammed do to his production schedule to produce the **blue table**, while still producing **the gray table** orders on schedule?
6. Calculate the break-even point for the production of **gray tables**, for **one week's** production using **both manufacturing methods**. What are the implications of this calculation?
7. Given the fact that **the blue tables** can be bought from the manufacturer in India, would you recommend to Ibrahim Mohammed that the **blue tables** be made by Hi Tech Furniture, or bought from the Indian manufacturer? Why?