**Solved Problem: Cycle Time / Minimum Number of Workstations**

Dr. Bateh, who once worked as a Director of Operations for a publishing company, was primarily responsible for overseeing all production and fulfillment activities within the company’s supply chain. This including managing the assembly lines in the manufacturing warehouse where materials were set to print, then bind, and then packaged for delivery.

Dr. Bateh had a goal of using assembly line balancing techniques ***to create an efficient balance between tasks and workstations to minimize idle time.*** The question to answer is what is the minimum number of workstations needed, so that we can have a smoothly flow through the line and minimize waste and idle time. First, we need to find the cycle time. The cycle time is ***the amount of time before a product leaves a workstation and moves to the next station. In other words, it’s the maximum time that a product is allowed at each workstation.***

We know an 8 hour workday with a 30 minute lunch and two 15 minute breaks allows for the facility to have 7 hours of production time, however, we will run the production line for 8 hours as breaks and lunch will be staggered. So, we have a total of 480 minutes of production time per day. We would like for 40 units to be produced per day.

**Cycle Time =** Production time per day   
Required output per day

480 minutes  
40 units  
=**12 minutes per unit**

**Minimum # of Workstations**

Task 1 - 4  
Task 2 - 6  
Task 3 - 7  
Task 4 - 2  
Task 5 - 6  
Task 6 - 3  
Task 7 - 5  
Task 8 - 8  
Task 9 - 4  
Task 10 - 11  
Task 11 – 13

Total Task Time = 69 minutes to produce a single unit

Minimum # of workstations needed = Total Task Time  
 Cycle Time

=69  
 12 = 5.75 or 6 workstations. This means in order to reach our goal we should split these tasks up until a minimum of 6 workstations.