Manufacturing Efficiency: Industrial Engineering



**Materials Needed:**

* Lego Car Parts
* One stopwatch
* Instructions for ***either*** individual cars or car subassemblies

**Instructions:**

* You will receive a large Ziploc bag containing the parts to assemble 10 Lego Cars.
* Assign **one person to be the timer** and make sure they know how to use a stopwatch.
* Your group will be assigned one of two styles of assembly, craft or factory
	+ Craft Style:
		- You will receive a bag with 10 bags, one for each car.
		- You must assemble them one car at a time.
		- Allocate your resources as you want.
		- Your goal is to complete your ten cars as **quickly as possible**.
	+ Factory Style:
		- You will receive a bag with 5 bags inside, each bag contains parts for 10 subassemblies.
		- You must assemble your cars using these subassemblies, which are then combined to make 10 cars.
		- Set up an assembly line in some way, you may move workers as you need to. You have instructions for each subassembly in the bag.
		- Your goal is to complete them as **quickly as possible**.
* All Team Members must participate, so everyone must have a meaningful job in this process.
* Cars must be constructed correctly and will be inspected. They must be reworked if assembled incorrectly. Lego instructions are available if any part is unclear.
* Do not be afraid to shift assemblers, or help each other, teamwork is crucial. More experienced assemblers should train and help those with less expertise.

Note: You are just assembling cars, not the man or the radar gun.

**Assessment**

1. Which style have you been assigned?

**Craft Factory**

1. Who will do the timekeeping for your group?:
2. Your group must now build **10 cars**. 
* Stop the clock when you think you are all finished and call a **Quality Control Inspector** over to check your work.
* If there are any errors you must start the clock again and add that time to your table below.
* Record your times here:

|  |  |  |  |
| --- | --- | --- | --- |
| **Time to complete 10 cars** | **Additional time** **( to fix errors )** | **Additional time** **( to fix errors )** | **Total time** |
|  |  |  |  |

1. When the Quality Control Engineers are satisfied they will place your final time on the board. Now it is time to **think like an Industrial Engineer!**
* Examine the board. Which style seemed to be the **best for this project** ? Why?
* Can you think of anything that could be done to **improve the process**? 