Problem Statement

Suppose in a machine shop, there are three workstations and painting station. In three workstation, three types of machines - Engine Lathe (Turning Operation), Milling Machine and Painting Machine. There are two Engine Lathes (one new and one old) and two Milling Machines (one new and one old) available. Each machine can handle one part at a time.

Suppose, two different part types arrive for processing. The **Part 1** will be arrived based on the following schedule:

Hour	Arrivals per Hour
1	7
2	10
3	10
4	10
5	8
6	2

The interarrival time of **Part 2** follows an **exponential distribution** with **mean of 15.1 minutes**; the first arrival takes place at time 0.

Two different parts have the following two **process sequences**. All units are in minutes.

Part Type	Workstation/Process Time	Workstation/Process Time	Workstation/Process Time
Part 1	Turning / EXPO (9.5)	Milling / EXPO (14.1)	Painting / EXPO (2)
Part 2	Milling / EXPO (13.5)	Turning / EXPO (15)	Painting / EXPO (2)

After finished processing, parts will be routed to inspection station. About 9% of the processed items are found to be defected and sent to Rework station. **Reworking process time** follows **normal distribution** with **a mean value of 15 minutes** and **standard deviation** of **2 minutes**. 80% times reworked items are recovered and rest are scrapped.

Estimate the number of Processed items, salvaged items and scrapped items for 10 days of 6 hours/day operation.