

Computer Test Repair Shop

Imagine a facility specializing in testing and repairing computer components such as circuit boards and hard drives. When new units, named part 1, arrive at the facility, their arrival times follow a Normal distribution. These units are then processed in the part 1 preparation area, where the processing time adheres to a Triangular distribution.

Similarly, the second type of units, part 2, also arrive with interarrival times following a Normal distribution. These units move to the part 2 preparation area, which operates under a Normal distribution for processing times.

Following these preparation stages, the parts proceed to the Finishing stage, where two finishing machines are operational. Each part is assigned to either machine based on the queue's number of parts. The finished parts from machines 1 and 2 then move to the testing station, taking 2 and 1 minute respectively to arrive there. At the testing station, the testing process follows a Uniform distribution. After testing, eighty-seven percent of the parts pass inspection directly and are sent to customers. Ten percent of these parts require rework, taking 10 minutes, before being sent to customers. Lastly, three percent of the parts deemed non-functional are disposed of from the system.

Distribution (Units in minte)

Inter Arrival of Part 1	NORM (4,0.02)
Inter Arrival of Part 2	NORM (5,0.01)
Part 1 Preparation	TRIA (3,4,4.5)
Part 2 Preparation	NORM (4.5,0.03)
Finishing Process time 1	NORM (2.8,0.1)
Finishing Process time 2	TRIA (3.5,4,4.5)
Testing Process	UNIF (2,3)
Rework Process time	10 minutes