Problem 8:

The ticket booth on the Tech campus is operated by one person, who is selling tickets for the annual Tech versus State football game on Saturday. The ticket seller can serve an average of 12 customers per hour; on average, 10 customers arrive to purchase tickets each hour.

Determine the average time a ticket buyer must wait and the portion of time the ticket seller is busy.

Problem 10: queuing analysis

The Dynaco Manufacturing Company produces a particular product in an assembly line operation. One of the machines on the line is a drill press that has a single assembly line feeding into it. A partially completed unit arrives at the press to be worked on every 7.5 minutes, on average. The machine operator can process an average of 10 parts per hour. Determine the average number of parts waiting to be worked on, the percentage of time the operator is working, and the percentage of time the machine is idle.

Problem 12: queuing analysis

The Peachtree Airport in Atlanta serves light aircraft. It has a single runway and one air traffic controller to land planes. It takes an airplane 12 minutes to land and clear the runway. Planes arrive at the airport at the rate of four per hour.

1. Determine the average number of planes that will stack up, waiting to land.
2. Find the average time a plane must wait in line before it can land.

Problem 14:

During registration at State University every semester, students in the college of business must have their courses approved by the college adviser. It takes the adviser an average of 2 minutes to approve each schedule, and students arrive at the adviser’s office at the rate of 28 per hour.

1. Compute L, Lq, W, Wq, and U.
2. The dean of the college has received a number of complaints from students about the

length of time they must wait to have their schedules approved. The dean feels that waiting 10.00 minutes to get a schedule approved is not unreasonable. Each assistant the dean assigns to the advisor’s office will reduce the average time required to approve a schedule by 0.25 minute, down to a minimum time of 1.00 minute to approve a schedule. How many assistants should the dean assign to the adviser?