Mgt 128 SOM Midterm Practice Prof SU

Name: _____

1. A manufacturer decides to ration a total supply of 100,000 units of its most popular toy to its retailers. The toy is sold at a margin of $4 in the discount retail channel, and at a margin of $6 in the high-service channel. The manufacturer has forecasted that the demand for the toy at the high-service channel is normally distributed with mean 40,000 and std 15,000. How many toys should the manufacturer ration to high-service channel?

2. An airline serving Denver's Stapleton Airport and Steamboat Springs, Colorado is considering overbooking its flights to avoid flying with empty seats. During the past month, the no-show experience has been:

# of No-Shows	**Probability**
0	0.1
1	0.25
2	0.2
3	0.35
4	0.1

A round-trip ticket sells for $180. If the reservation cannot be honored, the airline will offer the customer a seat on the next flight plus a voucher, which leads to a net loss of $150. How many reservations should the airline accept, if the plane has 100 seats?

3. A new shopping mall is considering setting up an information desk manned by one employee. Based upon information obtained from similar information desks, it is believed that people will arrive at the desk at a rate of 20 per hour. It takes an average of 2 minutes to answer a question. It is assumed that the arrivals follow a Poisson distribution and answer times are exponentially distributed.
   (a) Find the probability that the employee is idle.
   (b) Find the proportion of the time that the employee is busy.

(c) Find the average number of people receiving and waiting to receive some information.

(d) Find the average number of people waiting in line to get some information.

(e) Find the average time a person seeking information spends in the system.

(f) Find the expected time a person spends just waiting in line to have a question answered (time in the queue).