A waiting line meeting the M/M/1 assumptions has an arrival rate of 10 per hour and a service rate of 12 per hour. Find

(a) The average waiting time on the system
(b) The average waiting time on the queue
(c) Probability that the waiting line is empty

A crew of mechanics at the Highway Department garage repair vehicles that break down at an average of $\lambda = 7.5$ vehicles per day (approximately Poisson in nature). The mechanic crew can service an average of $\mu = 10$ vehicles per day with a repair time distribution that approximates an exponential distribution.

a. What is the utilization rate for this service system?
b. What is the average time before the facility can return a breakdown to service?
c. How much of that time is spent waiting for service?
d. How many vehicles are likely to be in the system at any one time?

a) If the average time between customer arrivals is five minutes, the average arrival rate is twenty per hour

- FALSE

b) The utilization factor for a system is defined as the average time a customer spends waiting in the queue

- FALSE

c) In an M/M/1 model, arrivals are independent of preceding arrivals but the arrival rate does not change over time.

- TRUE

d) The M/M/s queue configuration allows for multiple servers

- **TRUE**

e)The M/M/s queue configuration assumes: $s\mu > \lambda$ (server × rate per server > arrival rate).

- **TRUE**