

May 25, 2001

Question A manufacturing facility consists of 8 machines that are subject to unexpected breakdown. The expected time to breakdown and repair time are known to be exponentially distributed with means 6 hours and 4 hours, respectively. How many repair technicians are needed to support this system?

Question Suppose you are planning for a 20-screen movie complex. You hope to determine the number of ticket windows such that the expected waiting time is less than 3 minutes.

Further, you know that 164 customers are expected to arrive per movie and customers arrive in groups of 2. A new movie starts every 6 minutes. And, on average, it takes 1 minute to buy tickets, but this is variable due to method of payment or sold out movies.

Question Cars arrive for a state-mandated vehicle inspection at a rate of 20/hour. Inspection takes **exactly** 10 minutes. How many inspectors should be employed?