1. A radioactive mass emits particles at a mean rate of one every two minutes. Let $W$ be the waiting time between two successive events.

   (a) Find $P(W > 3)$.
   (b) Find $P(2 < W < 5)$.
   (c) Find $E(W)$.
   (d) Find the mean waiting time until the third event occurs.

2. Cars arrive at a parking lot according to a Poisson process with mean rate of one every five minutes.

   (a) Find the mean waiting time until the next car arrives.
   (b) It has now been ten minutes since the last car arrived. Find the mean of the time elapsed from now until the next car arrives.

3. The breaking strength of rivets has a mean of 10 kpsi with a standard deviation of 5 kpsi. Find the probability that the mean breaking strength of a sample of 60 rivets is between 9.5 and 11 kpsi.

4. Fifty-three percent of the voters in a certain large city support the incumbent mayor for re-election. A poll of 500 randomly chosen voters is taken. Use the normal approximation to find the probability that a majority of those polled support the incumbent mayor.

5. Bags of potato chips have a mean weight of 6 ounces with a standard deviation of 0.2 ounces. There are 100 bags of potato chips in a box.

   (a) What is the probability that the total weight of the 100 bags is greater than 603 ounces?
   (b) A potato chip factory produces 1000 boxes of potato chips. What is the probability that more than 70 of these boxes contain more than 603 ounces of potato chips?

6. The concentration of particles in a suspension is 5 per mL. An aliquot of 10 mL is withdrawn. Find the probability that fewer than 45 particles are withdrawn.