

## **Example - Exponential distribution**

Suppose that the length of a phone call in minutes is an exponential random variable with parameter  $\lambda = 1/10$ . If someone arrives immediately ahead of you at a public telephone booth, find the probability that you will have to wait:

- 1) more than 10 minutes.
- 2) between 10 and 20 minutes.

## **Example - Exponential Distribution**

In a previous exercise we discussed the distribution of shark attacks which turned out to be approximated well by a Poisson process with rate 2/year.

1) What is the probability that an attack will occur within two years from the last attack?

2) Recalculate the probability from 1) including the fact that no attacks have occurred in one year after the last attack.

## **Example - Exponential Distribution**

Consider a post office that is staffed by two clerks. Suppose that when Mr Smith enters in the office, he discovers that Ms Jones is served by one of the clerks and Mr Brown by the other. Assuming that the time a clerk spends with any customer is exponentially distributed with parameter  $\lambda$ , calculate the probability that Mr Smith will be the last customer to leave the postal office.

## **Example - Exponential Distribution**

Suppose that the number of kilometers that a car can run before its battery runs out is exponentially distributed with an average value of 10,000km. If a person desires to take a 5000-kilometer trip, what is the probability that she will be able to complete the trip before the battery runs out?