

## 5.5: Chapter Key Terms

Key Terms	Definition
<b>Conditional Probability</b>	the likelihood that an event will occur given that another event has already occurred.
<b>decay parameter</b>	The decay parameter describes the rate at which probabilities decay to zero for increasing values of $x$ . It is the value $m$ in the probability density function $f(x) = me^{(-mx)}$ of an exponential random variable. It is also equal to $m = \frac{1}{\mu}$ , where $\mu$ is the mean of the random variable.
<b>Exponential Distribution</b>	a continuous random variable (RV) that appears when we are interested in the intervals of time between some random events, for example, the length of time between emergency arrivals at a hospital. The mean is $\mu = \frac{1}{m}$ and the standard deviation is $\sigma = \frac{1}{m}$ . The probability density function is $f(x) = me^{-mx}$ or $f(x) = \frac{1}{\mu}e^{-\frac{1}{\mu}x}$ , $x \geq 0$ and the cumulative distribution function is $P(X \leq x) = 1 - e^{-mx}$ or $P(X \leq x) = 1 - e^{-\frac{1}{\mu}x}$ .
<b>memoryless property</b>	For an exponential random variable $X$ , the memoryless property is the statement that knowledge of what has occurred in the past has no effect on future probabilities. This means that the probability that $X$ exceeds $x + t$ , given that it has exceeded $x$ , is the same as the probability that $X$ would exceed $t$ if we had no knowledge about it. In symbols we say that $P(X > x + t   X > x) = P(X > t)$ .
<b>Poisson distribution</b>	If there is a known average of $\mu$ events occurring per unit time, and these events are independent of each other, then the number of events $X$ occurring in one unit of time has the Poisson distribution. The probability of $x$ events occurring in one unit time is equal to $P(X = x) = \frac{\mu^x e^{-\mu}}{x!}$ .
<b>Uniform Distribution</b>	a continuous random variable (RV) that has equally likely outcomes over the domain, $a < x < b$ ; it is often referred as the rectangular distribution because the graph of the pdf has the form of a rectangle. The mean is $\mu = \frac{a+b}{2}$ and the standard deviation is $\sigma = \sqrt{\frac{(b-a)^2}{12}}$ . The probability density function is $f(x) = \frac{1}{b-a}$ for $a < x < b$ .

This page titled [5.5: Chapter Key Terms](#) is shared under a [CC BY 4.0](#) license and was authored, remixed, and/or curated by [OpenStax](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.

- [5.4: Key Terms](#) by [OpenStax](#) is licensed [CC BY 4.0](#). Original source: <https://openstax.org/details/books/introductory-business-statistics>.