Uniform distribution (from http://www.math.wm.edu/~leemis/chart/UDR/UDR.html)
The shorthand $X \sim U(a,b)$ is used to indicate that the random variable $X$ has the uniform distribution with minimum $a$ and maximum $b$. A uniform random variable $X$ has probability density function

$$f(x) = \frac{1}{b-a}, \quad a < x < b,$$

for $-\infty < a < b < \infty$. The uniform distribution is used to model a random variable that is equally likely to occur between $a$ and $b$. The uniform distribution is central to random variate generation. The uniform distribution would be an appropriate model for the position of the puncture on a flat tire. Event times associated with a Poisson process are uniformly distributed over an interval. The probability density function is illustrated below.

The cumulative distribution function on the support of $X$ is

$$F(x) = P(X \leq x) = \frac{x-a}{b-a}, \quad a < x < b.$$  

The survivor function on the support of $X$ is

$$S(x) = P(X \geq x) = \frac{b-x}{b-a}, \quad a < x < b.$$  

The hazard function on the support of $X$ is

$$h(x) = \frac{f(x)}{S(x)} = \frac{1}{b-x}, \quad a < x < b.$$  

The cumulative hazard function on the support of $X$ is

$$H(x) = -\ln S(x) = \ln(b-a) - \ln(b-x), \quad a < x < b.$$  

The inverse distribution function of $X$ is

$$F^{-1}(u) = a + u(b-a), \quad 0 < u < 1.$$
The median of $X$ is
$$\frac{1}{2} (a + b).$$

The moment generating function of $X$ is
$$M(t) = E \left[ e^{tX} \right] = \begin{cases} 1 & t = 0 \\ \frac{e^{bt} - e^{at}}{t(b-a)} & t \neq 0. \end{cases}$$

The characteristic function of $X$ is
$$\phi(t) = E \left[ e^{itX} \right] = \begin{cases} 1 & t = 0 \\ \frac{e^{its} - e^{iat}}{i(b-a)} & t \neq 0. \end{cases}$$

The population mean, variance, skewness, and kurtosis of $X$ are
$$E[X] = \frac{1}{2} (a + b) \quad V[X] = \frac{1}{12} (b - a)^2 \quad E \left[ \left( \frac{X-\mu}{\sigma} \right)^3 \right] = 0 \quad E \left[ \left( \frac{X-\mu}{\sigma} \right)^4 \right] = \frac{9}{5}.$$