Part 8: The Poisson Distribution

We use the Poisson distribution when there is a certain number **per** something, for example the number of calls to a call centre **per** hour, or the number of worms **per** m^2 of grass. We are given a number of formulas:

$$P(X = x) = \frac{\lambda^x e^{-\lambda}}{x!} \qquad \mu = \lambda \qquad \sigma = \sqrt{\lambda}$$

Now… what do these letters mean?

λ = the mean number per a given amount (it is pronounced lambda)
x = the specific number we are looking at
e = a mathematical constant approximately equal to 2.71828… (it's on your calculator)

We are going to look at several things, but there are a couple of assumptions that this distribution makes, it assumes that the occurrence of the item is random and independent from other occurrences, but the big one is that it is when the number of items or events is proportional to the area or the time etc. It also assumes that the items or events cannot occur simultaneously.