

## Technology Insight 8 - Poisson Probabilities

The calculations for the Poisson distribution are very similar to the binomial distribution, so these note will be very condensed.

Suppose we have a Poisson distribution with mean 12.4.

### TI-84

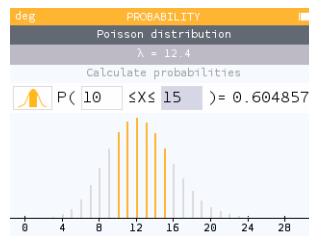
Use **poissoncdf( $\mu$ , $x$ )** or **poissonpdf( $\mu$ , $x$ )** under the *distr* menu.

- To calculate a single probability, e.g.,  $P(x = 10) = \text{poissonpdf}(12.4, 10) = 0.098$
- To calculate a left-tail probability, e.g.  $P(x \leq 8) = \text{poissoncdf}(12.4, 8) = 0.131$

### Numworks

Select the *Probability* app and choose Poisson. On the Numworks, the mean is labeled  $\lambda$ .

- Calculate  $P(10 \leq x \leq 15)$  given  $\mu = 12.4$  (or  $\lambda = 12.4$ )



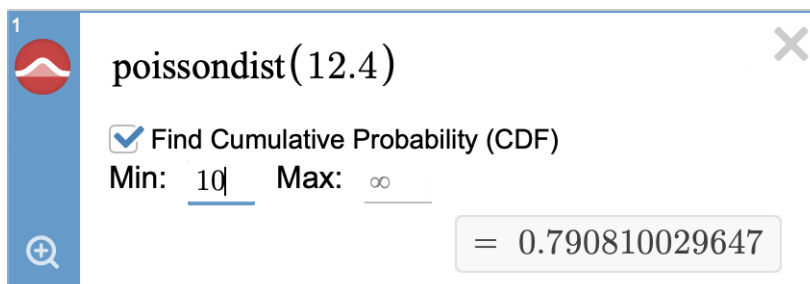
### Excel

Use **=poisson(x,  $\mu$ , [0,1])** where 0=pdf, and 1=cdf. The cumulative cdf is for left-tail values.

### Desmos

Use **poissondist( $\mu$ )** and select Find Cumulative Probability.

- Calculate  $P(x \geq 10)$  assuming  $\mu = 12.4$



# Geogebra

Go to [geogebra.org](http://geogebra.org) and select the **Probability** app. On the distribution tab select Poisson from the drop down box.

a) Given a Poisson distribution with  $\mu = 12.4$ , calculate  $P(10 \leq x \leq 15)$

