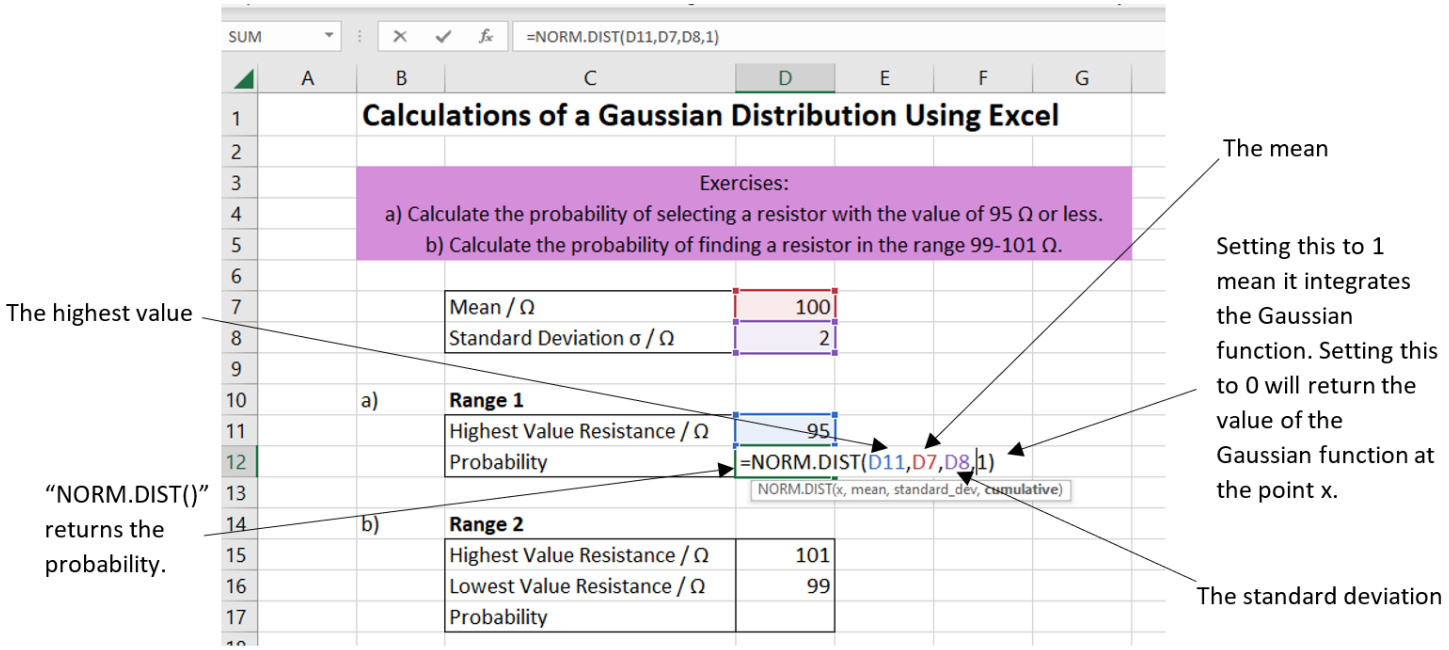
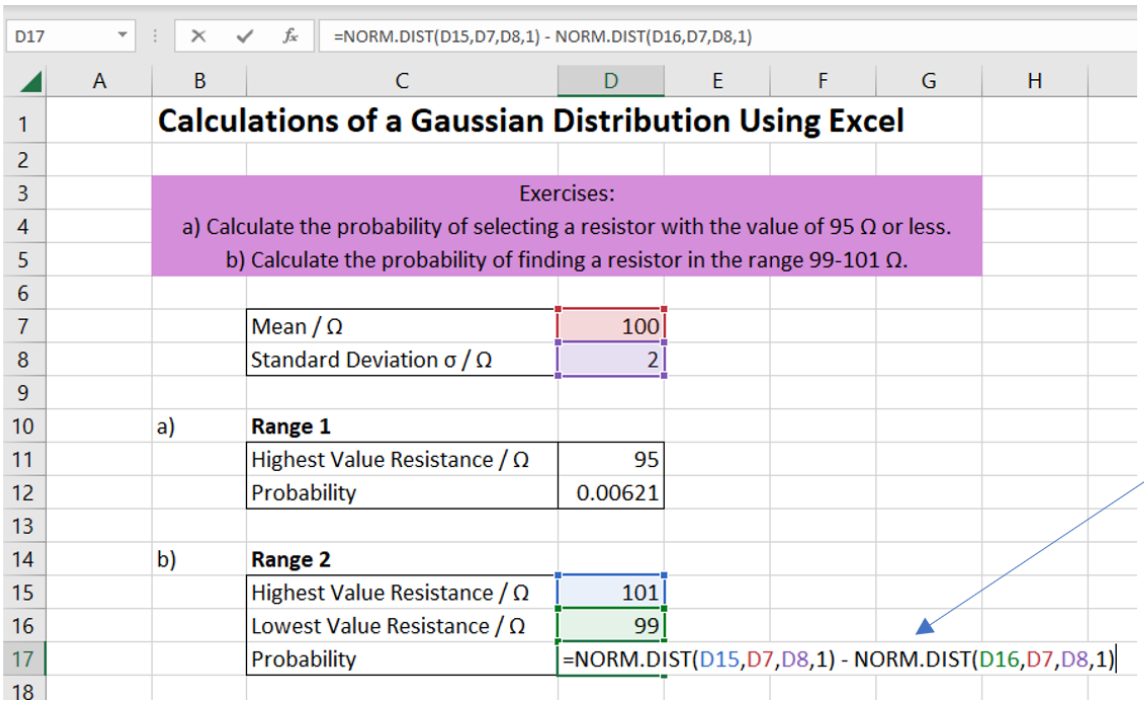
Answers: Gaussian and Poisson Distributions

Contents:

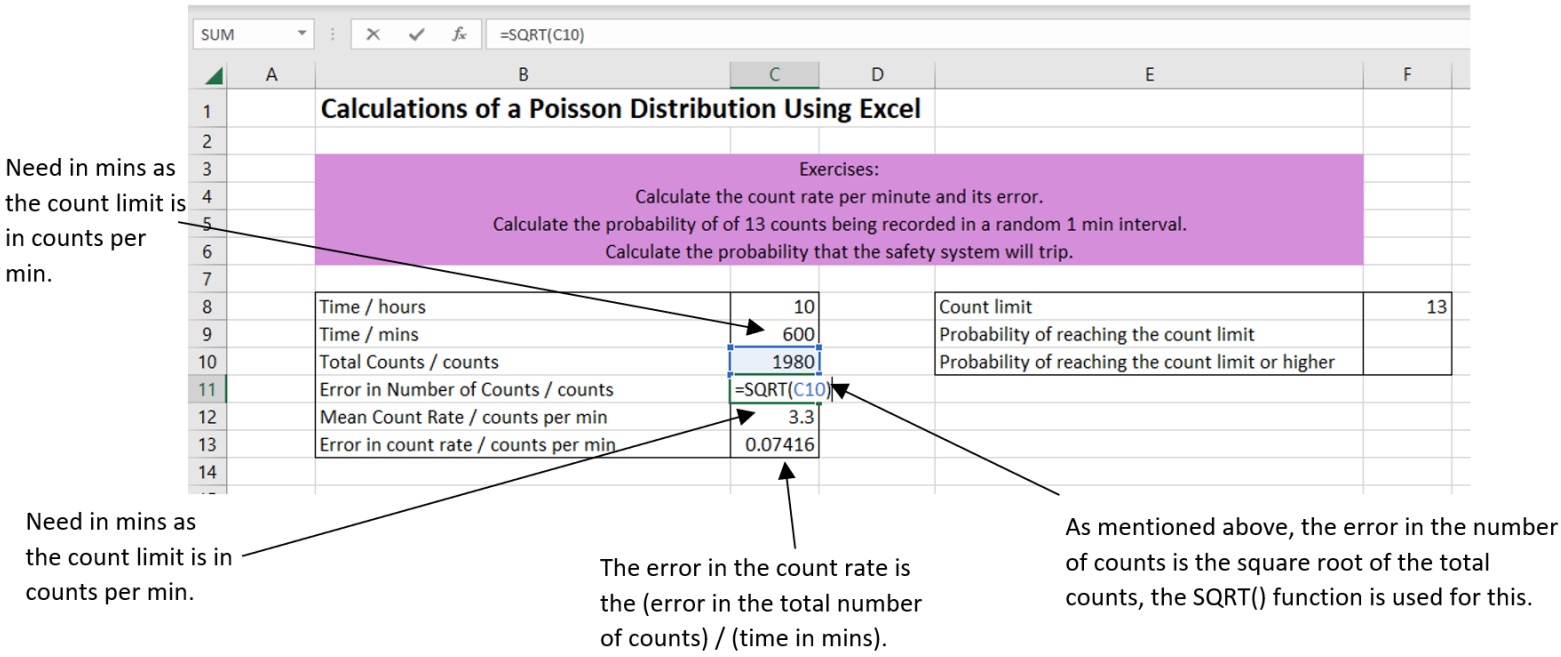
Gaussian Distribution:

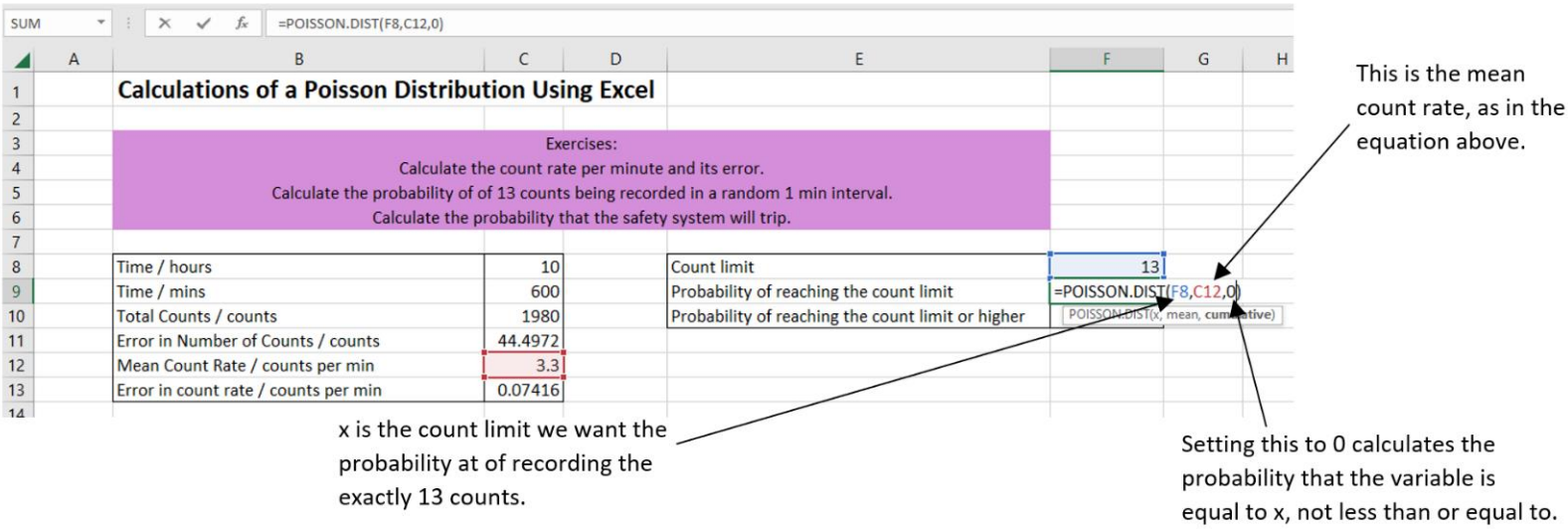




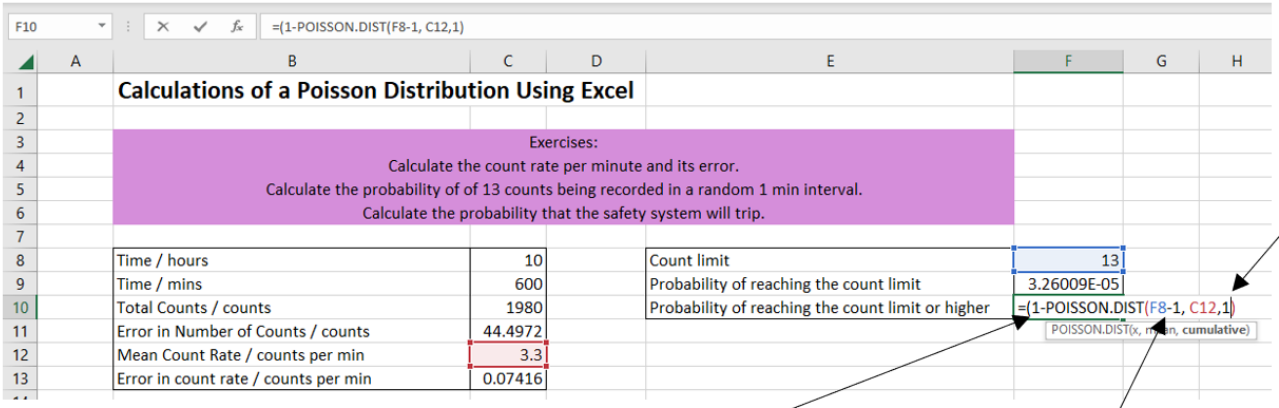
Poisson Distribution:

In Excel, the Poisson distribution is calculated using the POISSION.DIST() function.





However, this is not the answer to the problem. We need to calculate the probability that the count rate would reach 13 or higher. To take this into account, we need to calculate the probability using a cumulative Poisson Distribution, by changing the 0 to a 1. This will calculate the probability that our variable is less than or equal to the inputted value.



Change the last number from 0 to 1 so that the probability for less than or equal to x is calculated.

To calculate the probability of exceeding 13, can do 1 – (probability of being less than 13).

The Poisson distribution includes the value for x so to be less than 13, you must calculate it for 12 or below.

Note that we were considering higher than 13 counts per minute, not less than! Hence, we must calculate the probability of the reactor reading less than 13 counts per minute and removing that from 1.