**Resources for review**

The example in the next part of the lesson assumes you are familiar with Gaussian and binomial distributions.

Here are a few formulas that might be helpful:

**Gaussian distribution formulas**

**probability density function**

f(x ∣ μ,σ2)=12πσ2e−(x−μ)22σ2 f(x \space | \space \mu, \sigma^2) = \frac{1}{\sqrt{2\pi\sigma^2}}e^-\frac{(x-\mu)^2}{2\sigma^2} f(x ∣ μ,σ2)=2πσ2

​1​e−2σ2(x−μ)2​

 where: μ is the mean σ  is the standard deviation σ2 is the variance \begin{aligned} \ \text{where:} \ \mu& \space \text{is the mean} \ \sigma& \space \text{ is the standard deviation} \ \sigma&^2 \space \text{is the variance} \end{aligned}  where: μ​ is the mean σ​  is the standard deviation σ​2 is the variance​

**Binomial distribution formulas**

**mean**

μ=n∗p\mu = n \* pμ=n∗p

In other words, a fair coin has a probability of a positive outcome (heads) p = 0.5. If you flip a coin 20 times, the mean would be 20 \* 0.5 = 10; you'd expect to get 10 heads.

**variance**

σ2=np(1−p)\sigma^2 = n p (1 - p)σ2=np(1−p)

Continuing with the coin example, n would be the number of coin tosses and p would be the probability of getting heads.

**standard deviation**

σ=np(1−p)\sigma = \sqrt{n p (1 - p)}σ=np(1−p)

​

In other words, the standard deviation is the square root of the variance.

**probability density function**

f(k,n,p)=n!k!(n−k)!pk(1−p)(n−k) f(k, n, p) = \frac{n\footnotesize{!}}{k!(n - k)!}p^k(1-p)^{(n-k)} f(k,n,p)=k!(n−k)!n!​pk(1−p)(n−k)

**Further resources**

If you would like to review the Gaussian (normal) distribution and binomial distribution, here are a few resources:

This free Udacity course, [Intro to Statistics](https://www.udacity.com/course/intro-to-statistics--st101), has a lesson on Gaussian distributions as well as the binomial distribution.

This free course, [Intro to Descriptive Statistics](https://www.udacity.com/course/intro-to-descriptive-statistics--ud827), also has a Gaussian distributions lesson.

There are also relevant Wikipedia articles:

* [Gaussian Distributions Wikipedia](https://en.wikipedia.org/wiki/Normal_distribution)
* [Binomial Distributions Wikipedia](https://en.wikipedia.org/wiki/Binomial_distribution)

**Quiz**

Here are a few quiz questions to help you determine how well you understand the Gaussian and binomial distributions. Even if you can't remember how to answer these types of questions, feel free to move on to the next part of the lesson; however, the material assumes you know what these distributions are and that you know the basics of how to work with them.











