

## 6.5: Key Terms

---

### Normal Distribution

a continuous random variable (RV) with pdf  $f(x) =$

$$\frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} \quad (6.5.1)$$

, where  $\mu$  is the mean of the distribution and  $\sigma$  is the standard deviation; notation:  $X \sim N(\mu, \sigma)$ . If  $\mu = 0$  and  $\sigma = 1$ , the RV,  $Z$ , is called the standard normal distribution.

### Standard Normal Distribution

a continuous random variable (RV)  $X \sim N(0, 1)$ ; when  $X$  follows the standard normal distribution, it is often noted as  $Z \sim N(0, 1)$ .

### z-score

the linear transformation of the form  $z = \frac{x - \mu}{\sigma}$  or written as  $z = \frac{|x - \mu|}{\sigma}$ ; if this transformation is applied to any normal distribution  $X \sim N(\mu, \sigma)$  the result is the standard normal distribution  $Z \sim N(0, 1)$ . If this transformation is applied to any specific value  $x$  of the RV with mean  $\mu$  and standard deviation  $\sigma$ , the result is called the  $z$ -score of  $x$ . The  $z$  score allows us to compare data that are normally distributed but scaled differently. A  $z$ -score is the number of standard deviations a particular  $x$  is away from its mean value.

---

6.5: Key Terms is shared under a [not declared](#) license and was authored, remixed, and/or curated by LibreTexts.