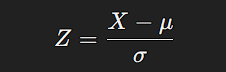
**Z-Score**

The **Z-score** tells us how many standard deviations a data point is away from the mean. It is used for standardization and identifying outliers.

### **Formula for Z-Score**



Where:

* X = Data point
* μ = Mean of the dataset
* σ = Standard deviation

### **Interpretation of Z-Score**

* **Z = 0** → The data point is **exactly at the mean**.
* **Z > 0** → The data point is **above the mean**.
* **Z < 0** → The data point is **below the mean**.
* **Z > 2 or Z < -2** → The data point is **unusual (outlier)** in a normal distribution.
* **Z > 3 or Z < -3** → The data point is **extremely rare**.

### **Use Cases of Z-Score**

✅ Identifying outliers in data  
 ✅ Comparing different datasets  
 ✅ Converting data to a standard normal distribution (mean = 0, std dev = 1)  
 ✅ Hypothesis testing