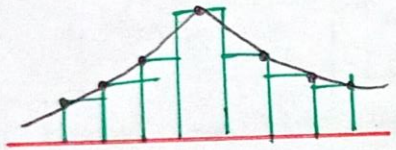
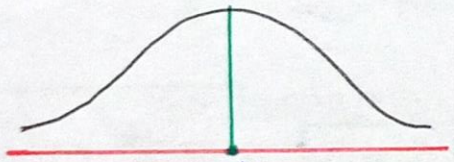
* Normal / Gaussian Distribution

- type of continous probability distribution for real valued random variable.
- Bell shaped curve
- Assumed that during any experiment measured values will follow this distribution with equal number of values before and after a 'central tendency' (mainly median).

[KDE = Kernel Density Estimator.]



apply KDE to smoothen the histogram to obtain bell curve.



↑ central tendency [CT] (mean)

→ Total area under curve is '1' or 100% as it is probability distribution.

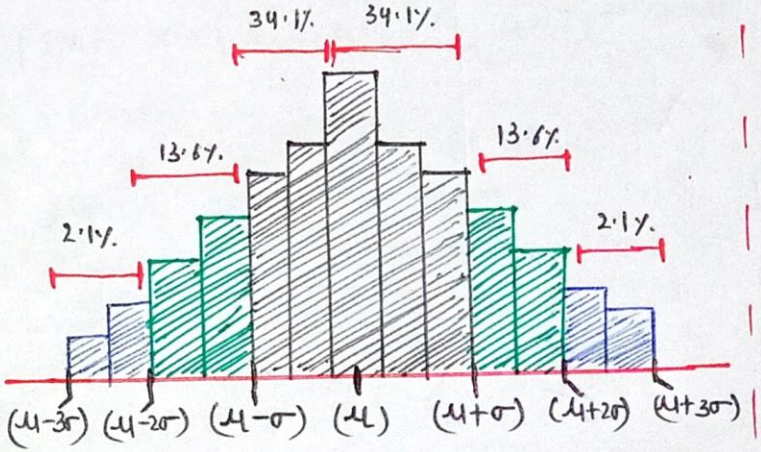
→ 50% data lie on each side of CT.

→ By exp. it is found most important data like age, height, many more follow this distribution.

65 - 95 - 99.7 %.

↳ Empirical formula of Gaussian Distribution (rule)

μ = population mean σ = standard deviation.



By experimentation it is determined that for any Gaussian Distribution,

→ 68% data lies within the range of (34.1 + 34.1) first standard deviations i.e, from $(\mu-\sigma)$ to $(\mu+\sigma)$

→ 95% data lies within range of the (34.1 + 13.6 + 34.1 + 13.6) second standard deviations i.e, from $(\mu-2\sigma)$ to $(\mu+2\sigma)$

→ 99.7% data lies within the range of (2.1 + 13.6 + 34.1 + 34.1 + 13.6 + 2.1) third standard deviations i.e from $(\mu-3\sigma)$ to $(\mu+3\sigma)$