Descreptive statistics —

Measure of Dispersion :—

1. Variance
2. Standard deviation
3. Range

① Variance

population σ^2

Sample s^2 [1, 2, 3, 4, 5, 6]

5.3

- $\sigma^2 = \frac{1}{N} \sum_{i=1}^{N=0} (x_i - \mu)^2$

- $s^2 = \frac{1}{n-1} \sum_{i=1} (x_i - \bar{x})^2$

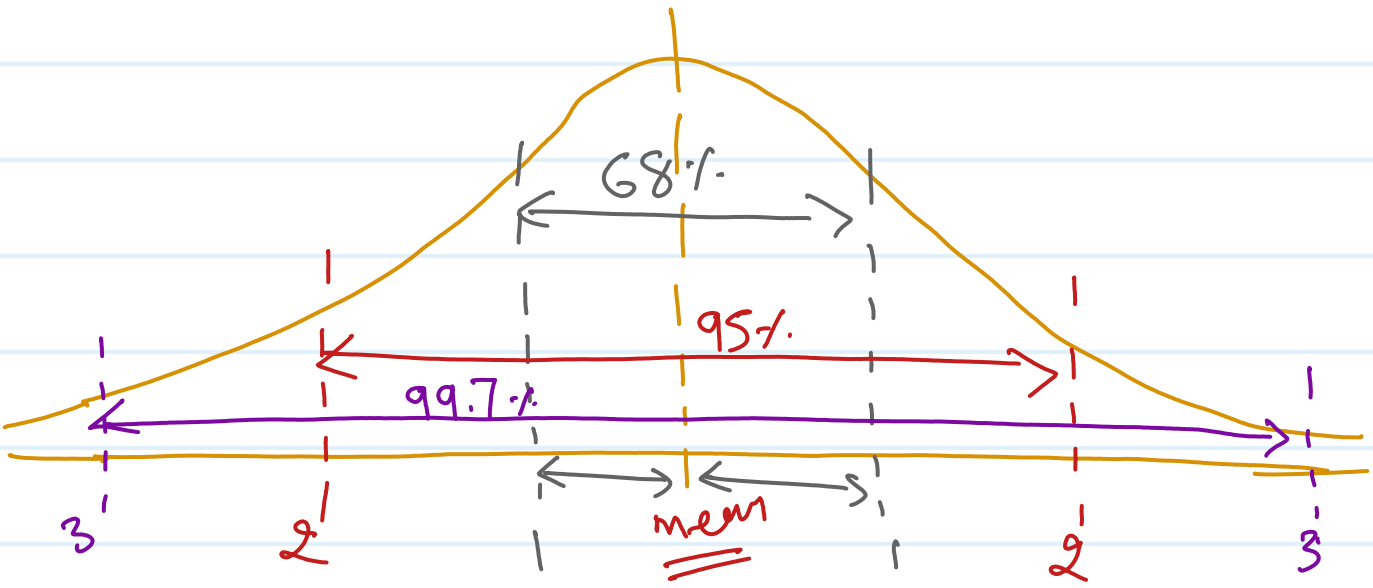
$n-1$ = Degree of freedom

Besils correction

Variance calculate spread of the data from its mean.

② Standard deviation —

It calculat distance from mean about to any particular dataset.



$$\text{population } \sigma = \sqrt{\frac{1}{N}\sum_{i=1}(x_i - \mu)^2}$$

$$\text{Sample } s = \sqrt{\frac{1}{n-1}\sum_{i=1}(x_i - \bar{x})^2}$$

(3) Range :-

[1, 2, 5, 9, 12, 13, 16, 19, 23, 27]

min = 1

max = 27

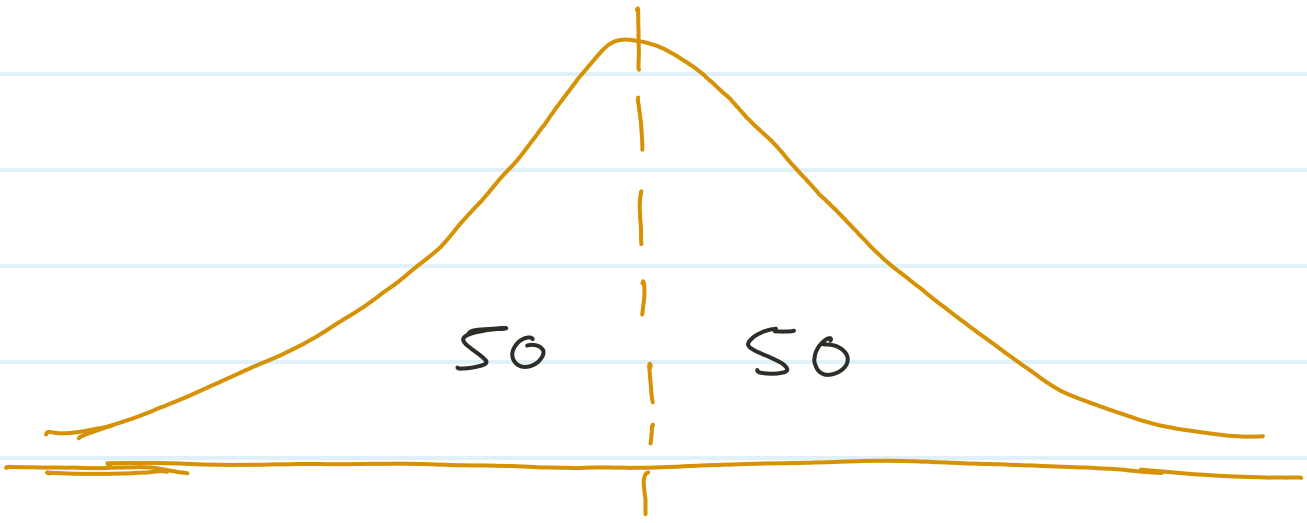
Range = max − min

Range = 26

Descriptive statistics

measure of shape

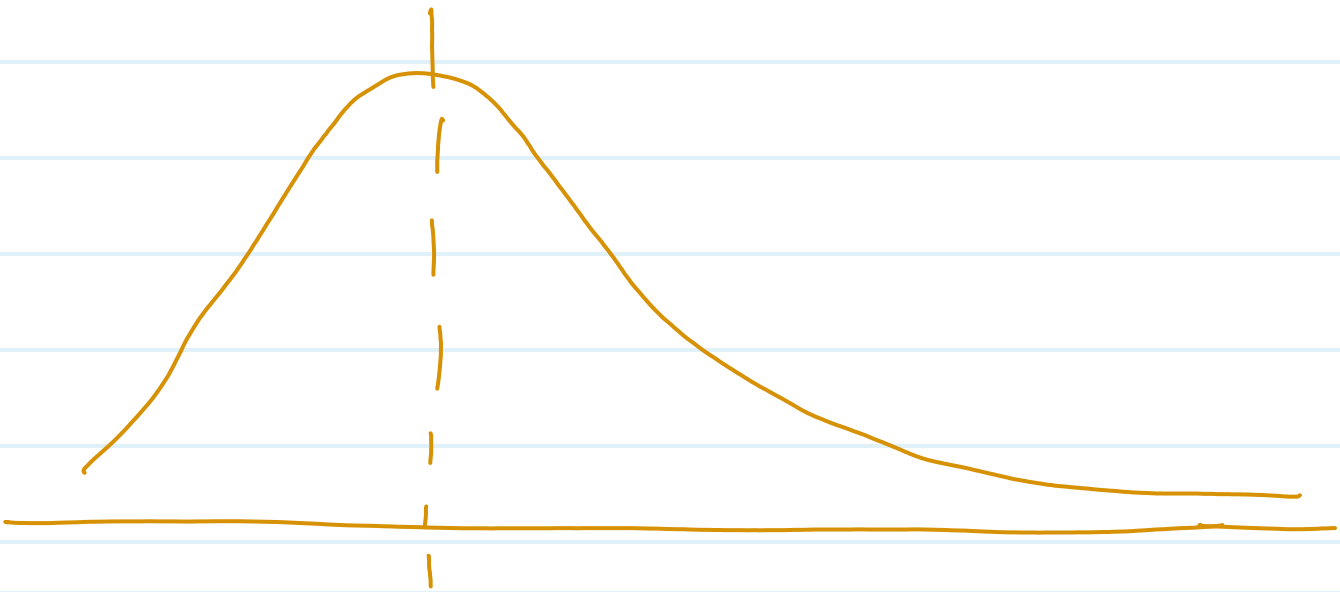
① Distribution curv

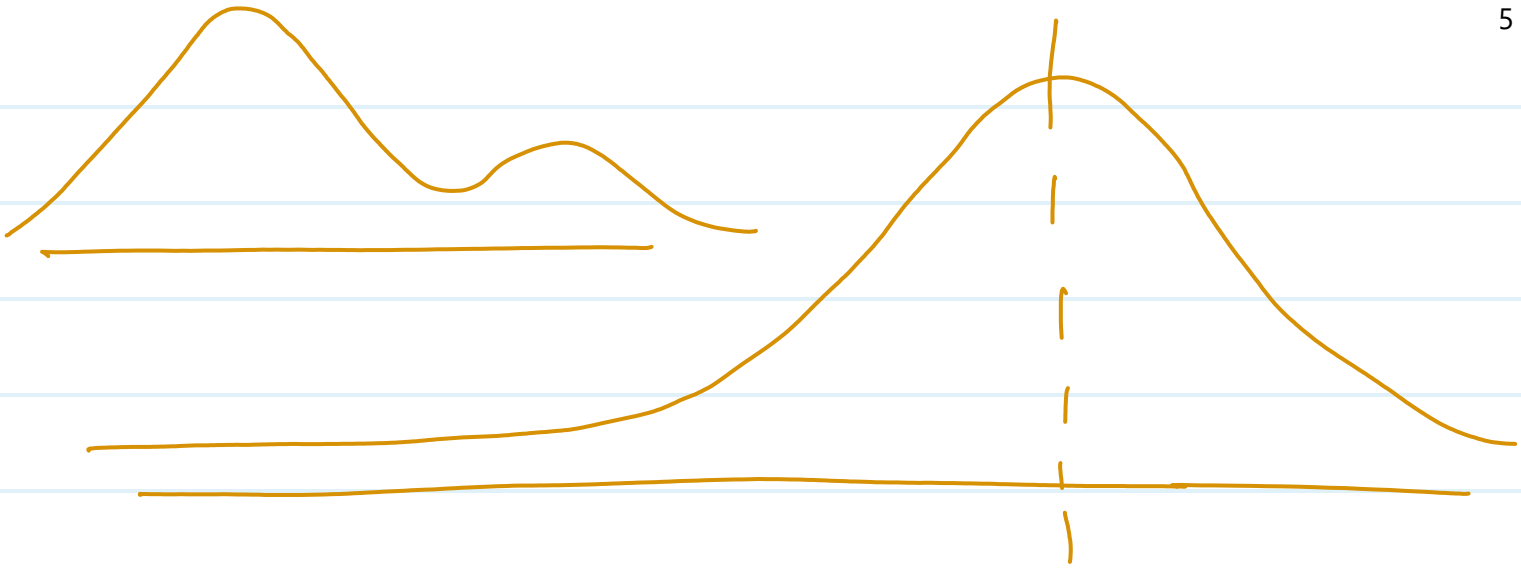


↑ Symmetric

① Symmetric Distribution curv

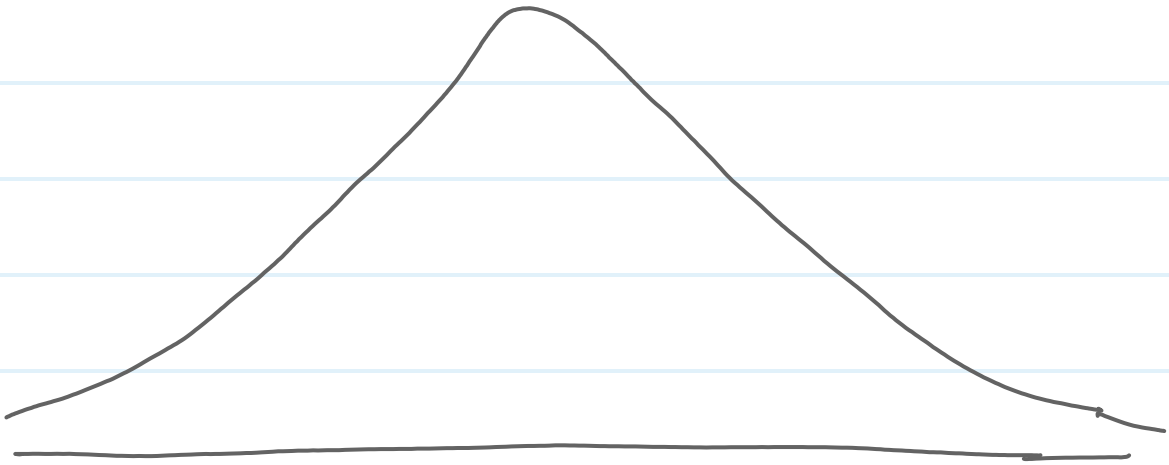
② Asymmetric Distribution curv





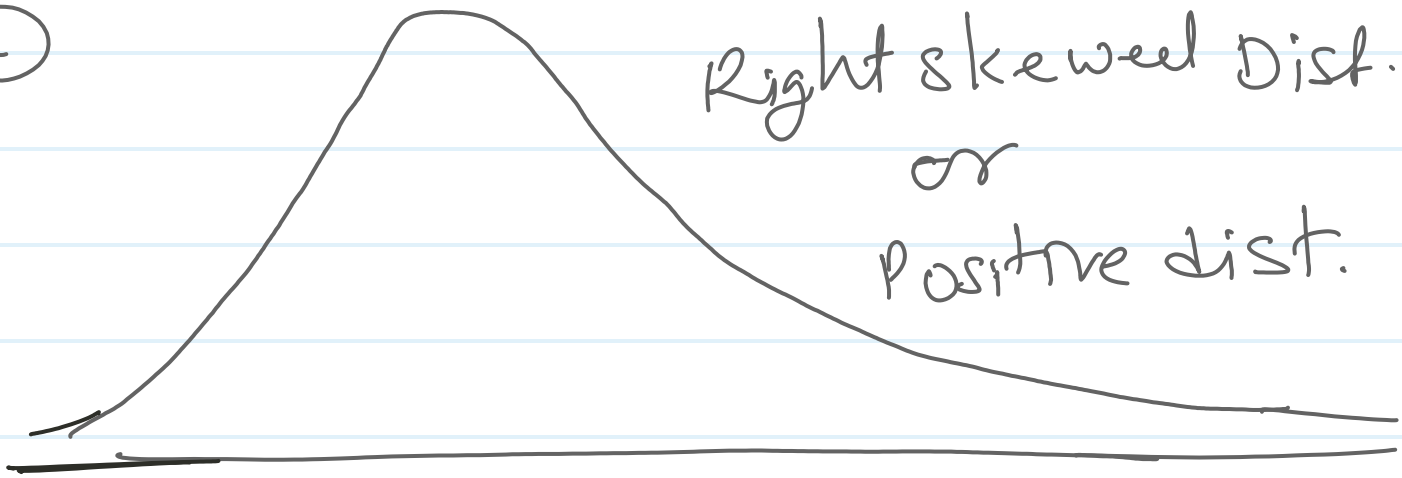
(2) Skewness :-

(1)



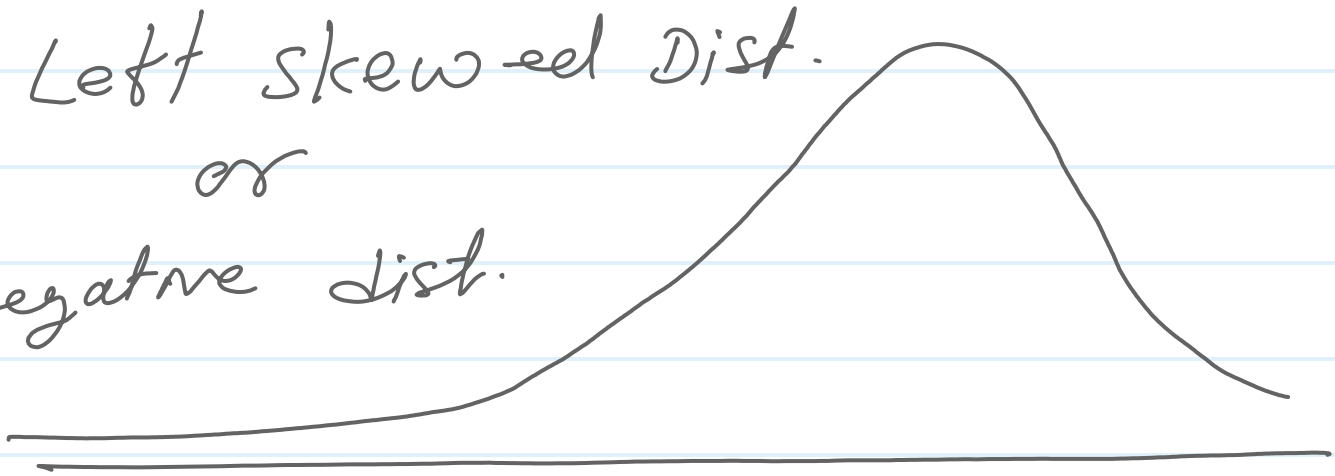
Normal distribution

(2)

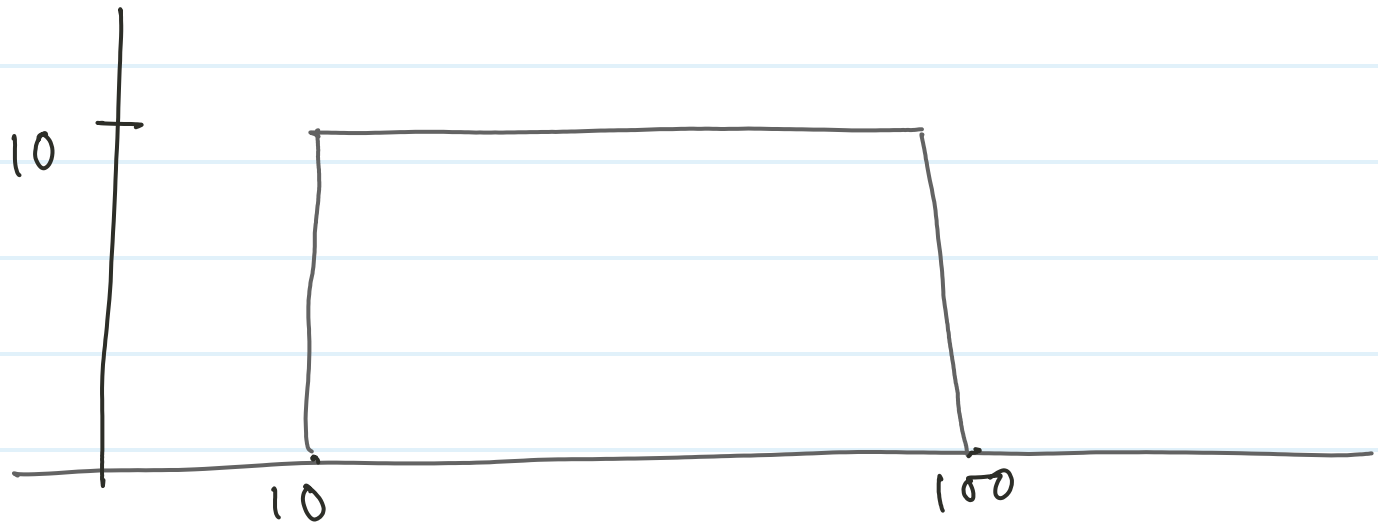


Right skewed Dist.
or
Positive dist.

③ Left skewed Dist.
or
Negative Dist.



④ uniform dist



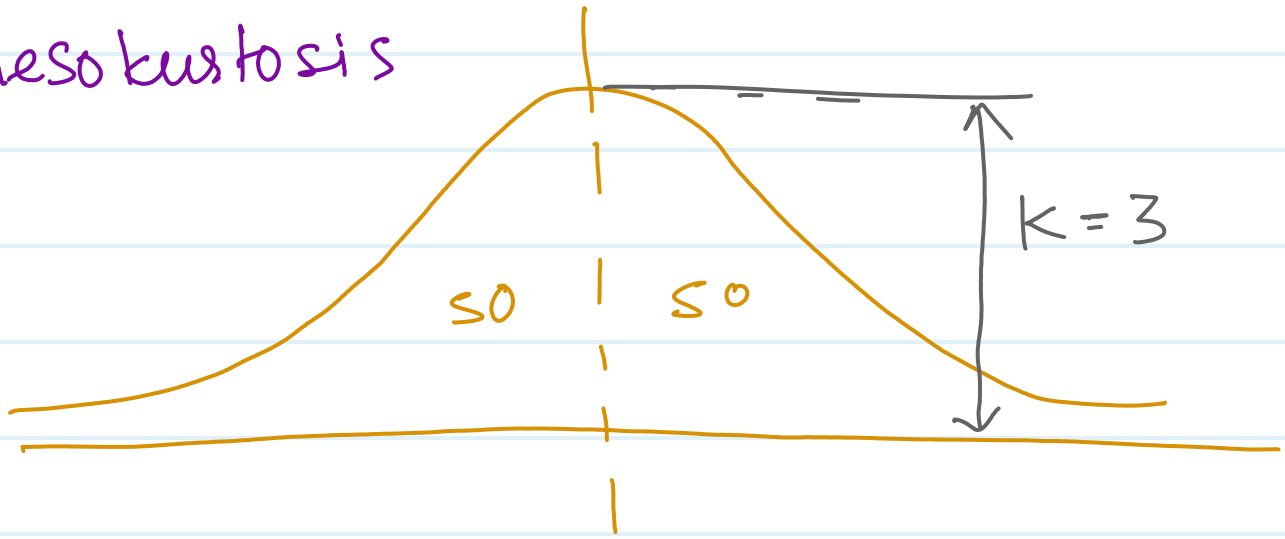
Descreptive stats

✡ measue of position

=> kustosis

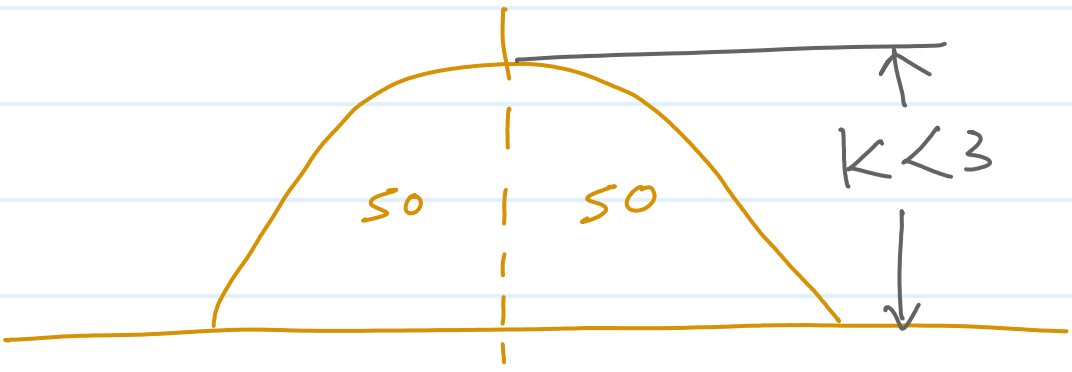
= k = denote default valu = 3

① mesokustosis

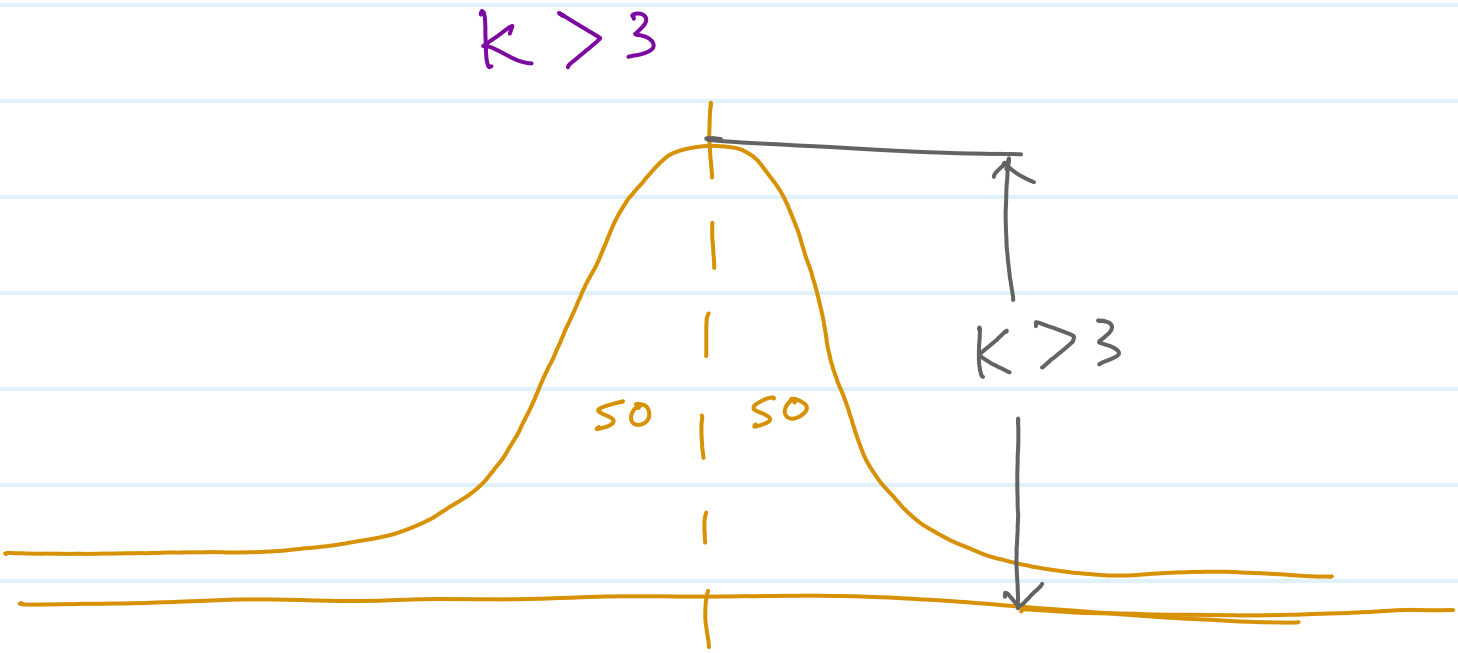


Normal Disti.

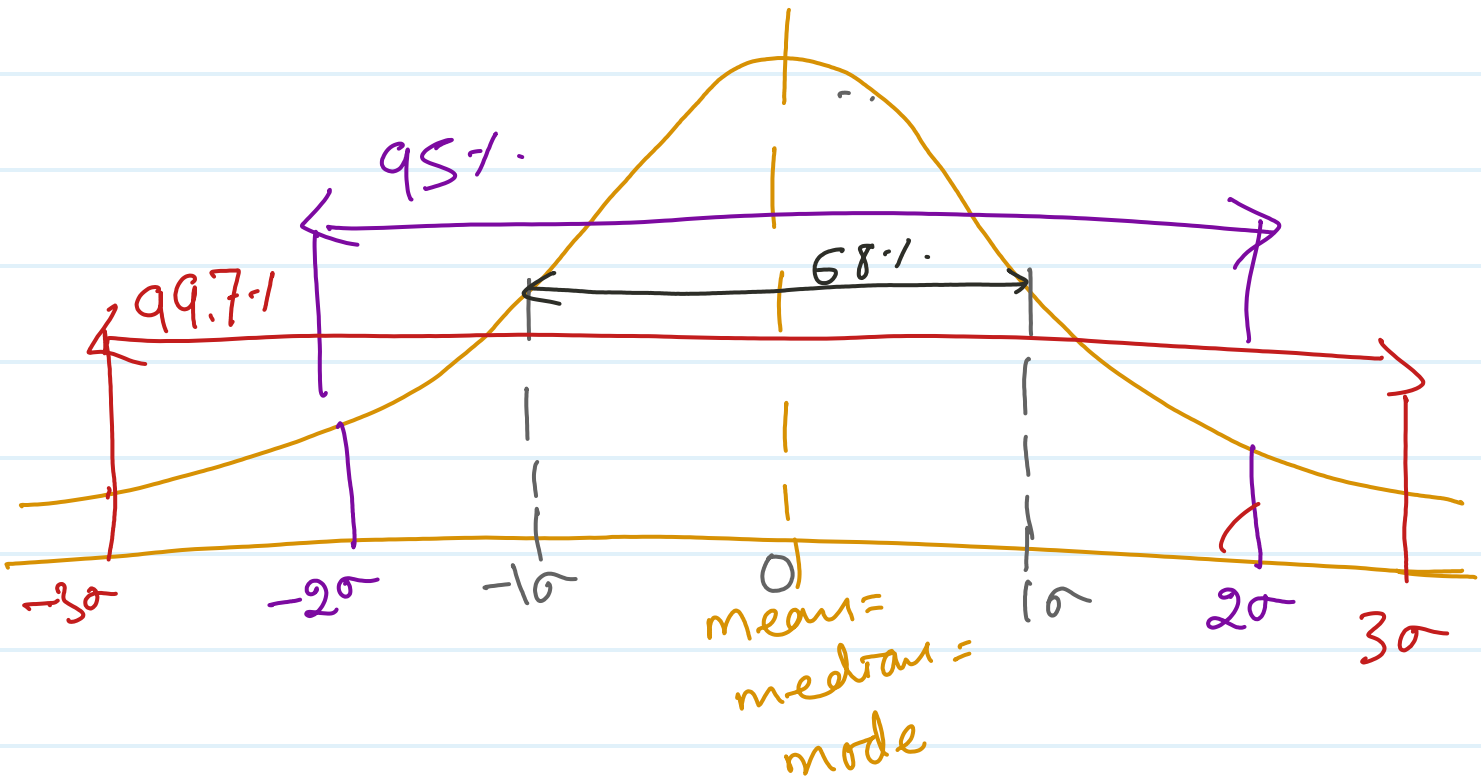
② platikurtosis – K < 3



③ Lepto kurtosis



✱ Emperical Rule of Distribution.



// Emperical formula : 68-95-99.5

✡ Variables

It is a container/box which hold value inside it.

$$X = 10$$

Type of variable

- Quantitative variable
  - Descret quant. variable (whole number)
  - Continous quant. varble (Decimale number)
- Qualitative variable
  - Nominal qula. var. (P/F, F/M, T/F)
  - Ordinal qual. var. (10^{th}, 12^{th}, UG, PG, Ph.D.)

Dataset

X_1	X_2	X_3	X_4	X_5
Age	weight	education	Home	Gender
18	40	10th	1	M
19.6	50	ph.D.	2	F
20.8	55.3	UG	3	F
30.8	75	PG	1	M
	80.8			

Variance

$$[2, 3, 5, 7, 11, 13, 12, 8, 6, 4]$$

$$s^2 = \frac{1}{n-1} \sum_{i=0} (x_i - \bar{x})^2$$

$$\bar{x} = 7.1$$

$$n = 10$$

$x_i - \bar{x}$		$(x_i - \bar{x})^2$
$2 - 7.1$	$= -5.1$	$= 26.1$
$3 - 7.1$	$= -4.1$	$= 16.81$
$5 - 7.1$	$= -2.1$	$= 4.41$
$7 - 7.1$	$= -0.1$	$= 0.01$
$11 - 7.1$	$= 3.9$	$= 15.21$
$12 - 7.1$	$= 4.9$	$= 24.01$
$13 - 7.1$	$= 5.9$	$= 33.04$
$8 - 7.1$	$= 0.9$	$= 0.81$
$6 - 7.1$	$= -1.1$	$= 1.21$
$4 - 7.1$	$= -3.1$	$= 9.61$

$$s^2 = \frac{1}{10-1}(26.1 + 16.81 + 4.41 + 0.01 + 15.21 + 24.01 + 33.64 + 0.81 + 1.21 + 9.61)$$

$$s^2 = \frac{1}{9} \times 131.22$$

$$s^2 = 14.58$$

$$s = 3.7841$$