Statistics

- Descriptive
- Inferential

Population N

Sample n

measure of center tendency

mean μ = population

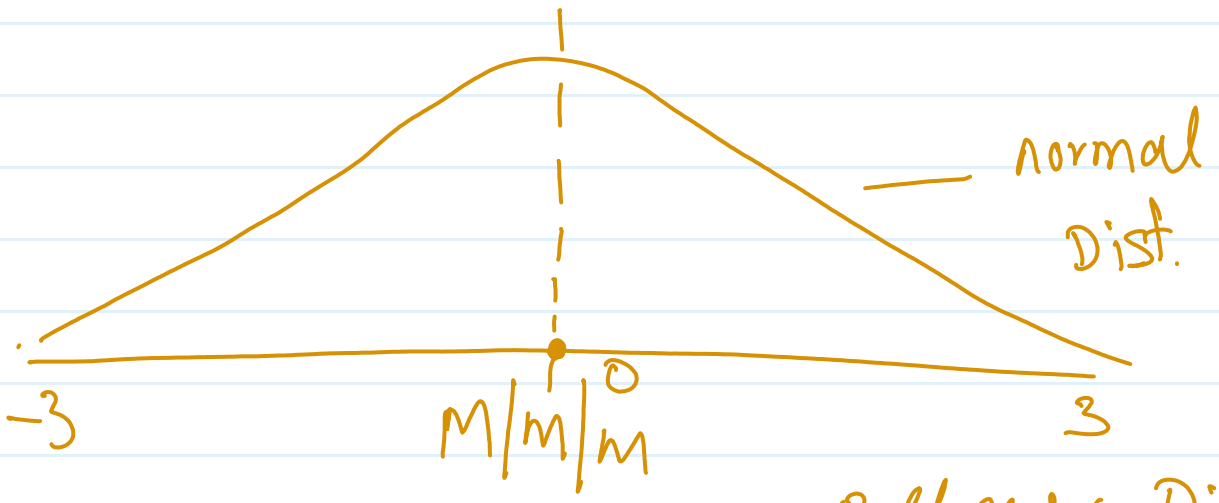
$\bar{X}$ = Sample

median = center value of Data after seqn. order.

mode = Highest frequency of any no

✱ Measure of Dispersion

1. Variance
2. Standard deviation.



Bell curv Dist.

Gaussian Dist.

(1) Variance

σ^2 = population

S^2 = Sample

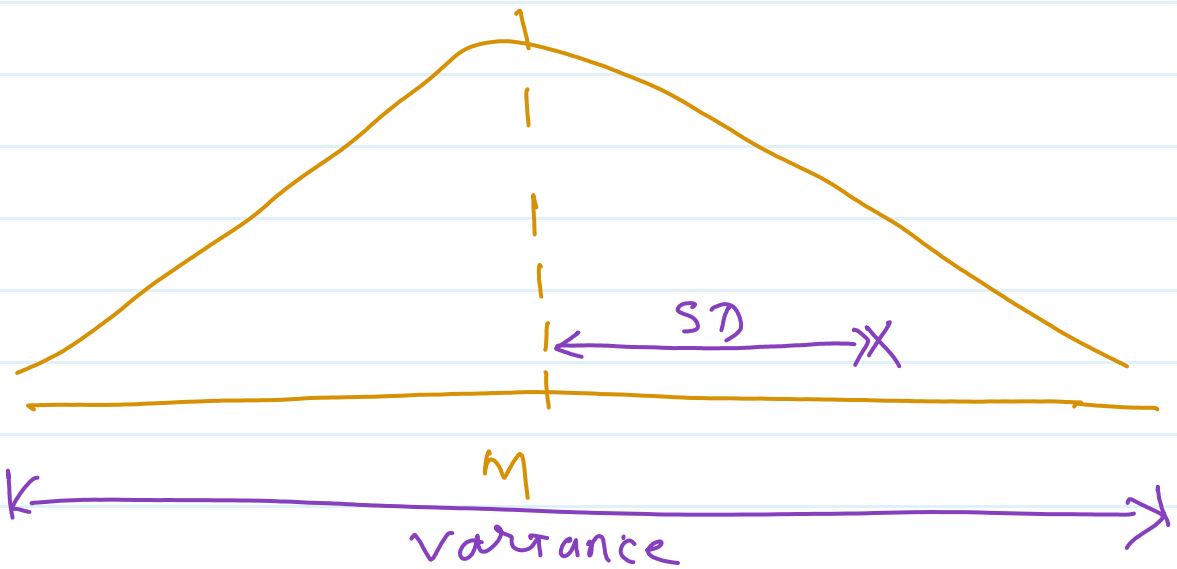
$$\sigma^2 = \sum_{i=1}^{N} \frac{(x_i - \mu)^2}{N}$$

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

(2) Standard Deviation

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

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



③ Range

max value
min value

Range = max − min

$\{1, 2, 4, 11, 17, 19, 21, 23, 40, 49, 55\}$

$= 55 - 1$
$= 54$

$\Rightarrow \quad \bar{x} = 22$

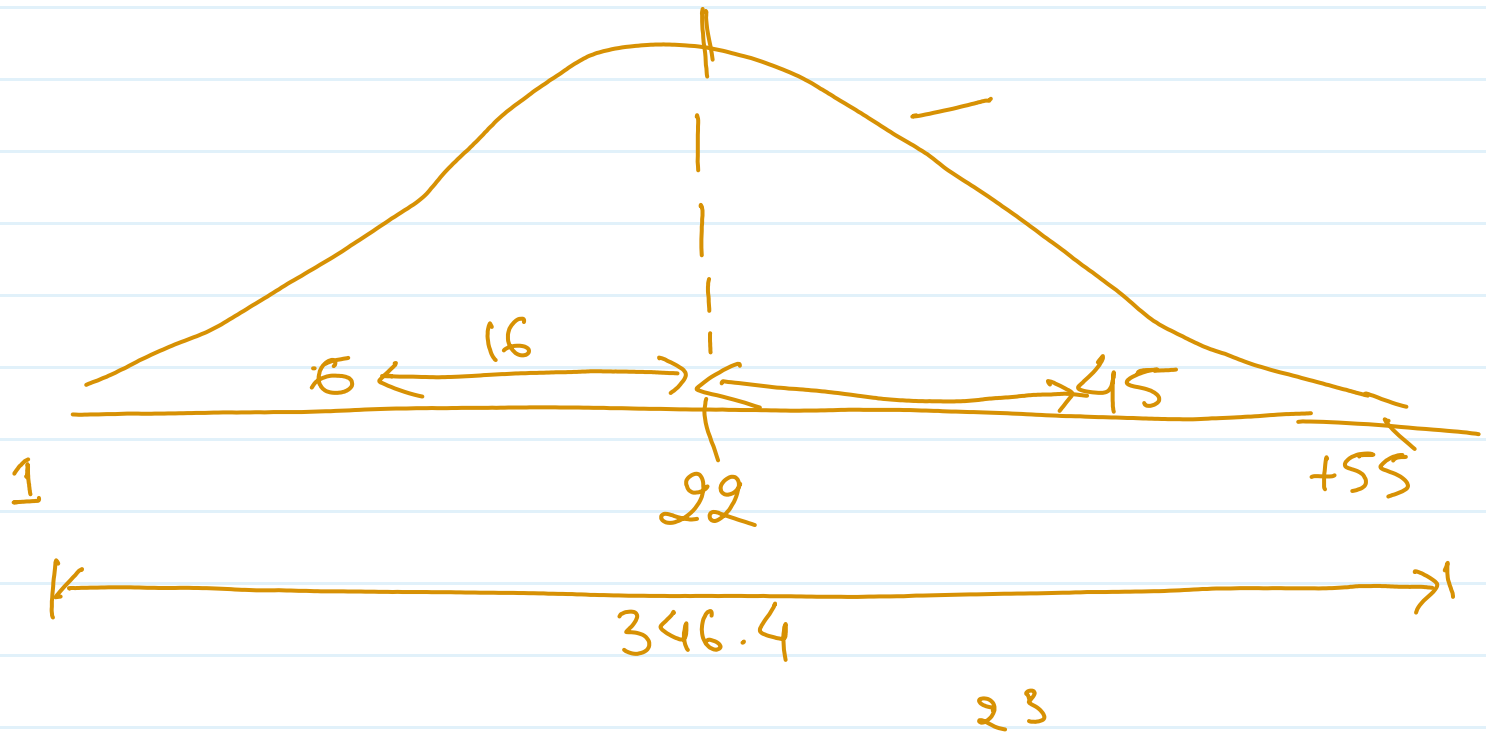
$$s^2 = \frac{(1-22)^2 + (2-22)^2 + (4-22)^2 + (11-22)^2 + (17-22)^2 + (19-22)^2 + (21-22)^2 + (23-22)^2 + (40-22)^2 + (49-22)^2 + (55-22)^2}{11-1}$$

$$s^2 = \frac{441 + 400 + 324 + 121 + 25 + 9 + 1 + 1 + 324 + 729 + 1089}{10}$$

$$s^2 = \frac{3464}{10} = \boxed{346.4}$$

$$s = \sqrt{346.4}$$

$$\boxed{s = 18.6}$$ ✓



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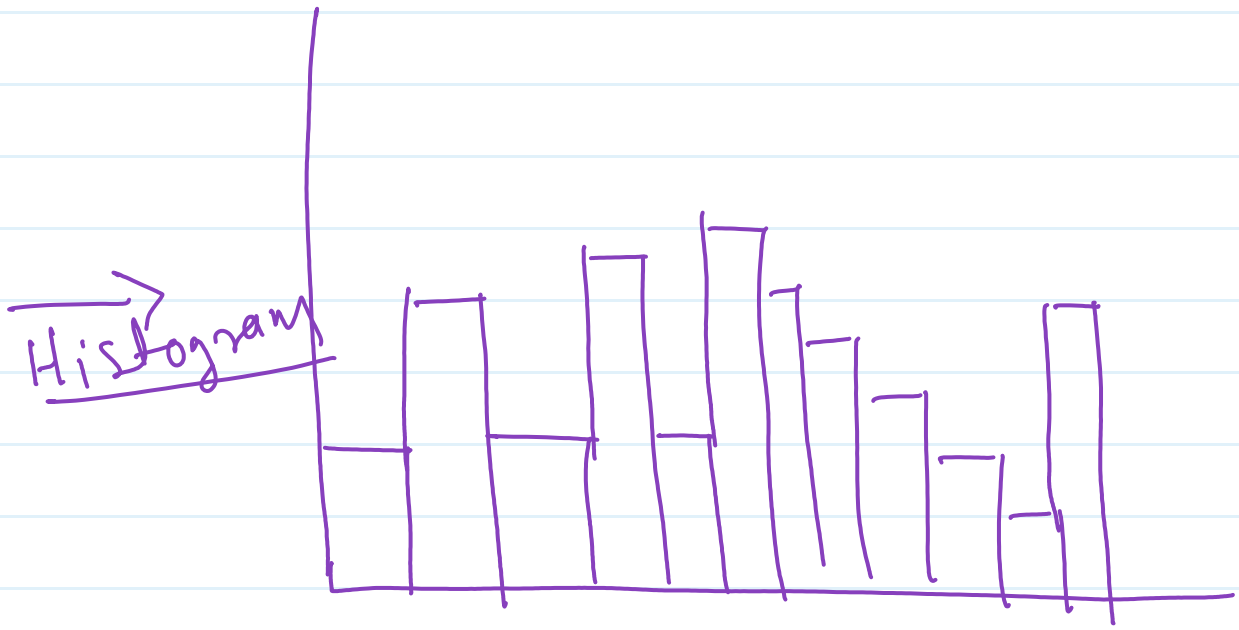
(III) Measure of shape

(IV) Measure of position


Histogram