Center

1) Measure of Central Tendency..

2] measure of Dispersion $\longrightarrow$ Spread
फैलाव

A measure of dispersion is a statistical measure that describe the spread or virability of dataset.
It provide information about how data is distributed around the central tendency (mean, median, mode) of the dataset.

A. Range $^\circ_\circ \Rightarrow$ The range is difference between the maximum and minimum Values in the dataset.

$^\circ_\circ \Rightarrow$ It can be affected by outlier.

Classroom Age $- [17, 18, 19, 20, 18, 20, 18, 17, 71]$

$$\boxed{\text{B} \cdot \text{Variance}} \quad (\sigma^2) \qquad (s^2)$$

$$\underline{\underline{\text{Sigma}}} \qquad \downarrow$$
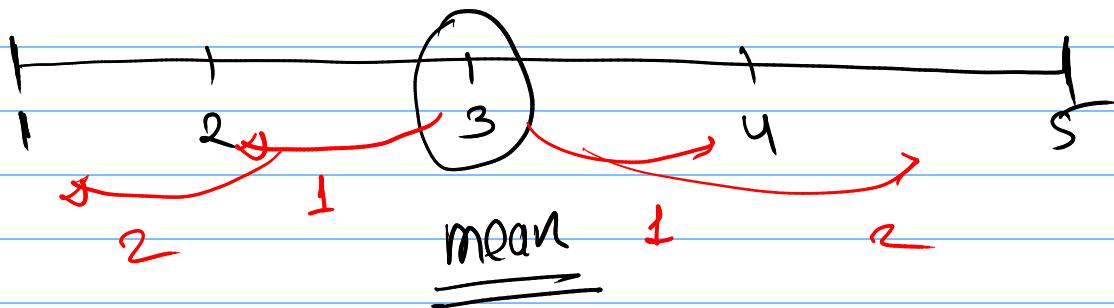
Sample Variance

Population Variance.

The Variance is the average squared difference between each data point and the mean.

data	$(x-\text{mean})$	$(x-\text{mean})^2$
3	$3-3 = 0$	0
2	$2-3 = -1$	1
1	$1-3 = -2$	4
5	$5-3 = 2$	4
4	$4-3 = 1$	1

$$\frac{0+1+4+4+1}{5}$$

$$= 10/5 = \boxed{2}$$

$$(\sigma^2)$$

$$\text{mean} = \frac{1+2+3+4+5}{5} = \frac{15}{5} = \boxed{3 = \text{mean}}$$

2 ⟵ 1 | mean | 1 ⟶ 2

mean

unit also square

km $(\text{mean} - \text{km})^2$

$$= \frac{\text{Variance}}{\text{km}^2}$$

C. Standard deviation
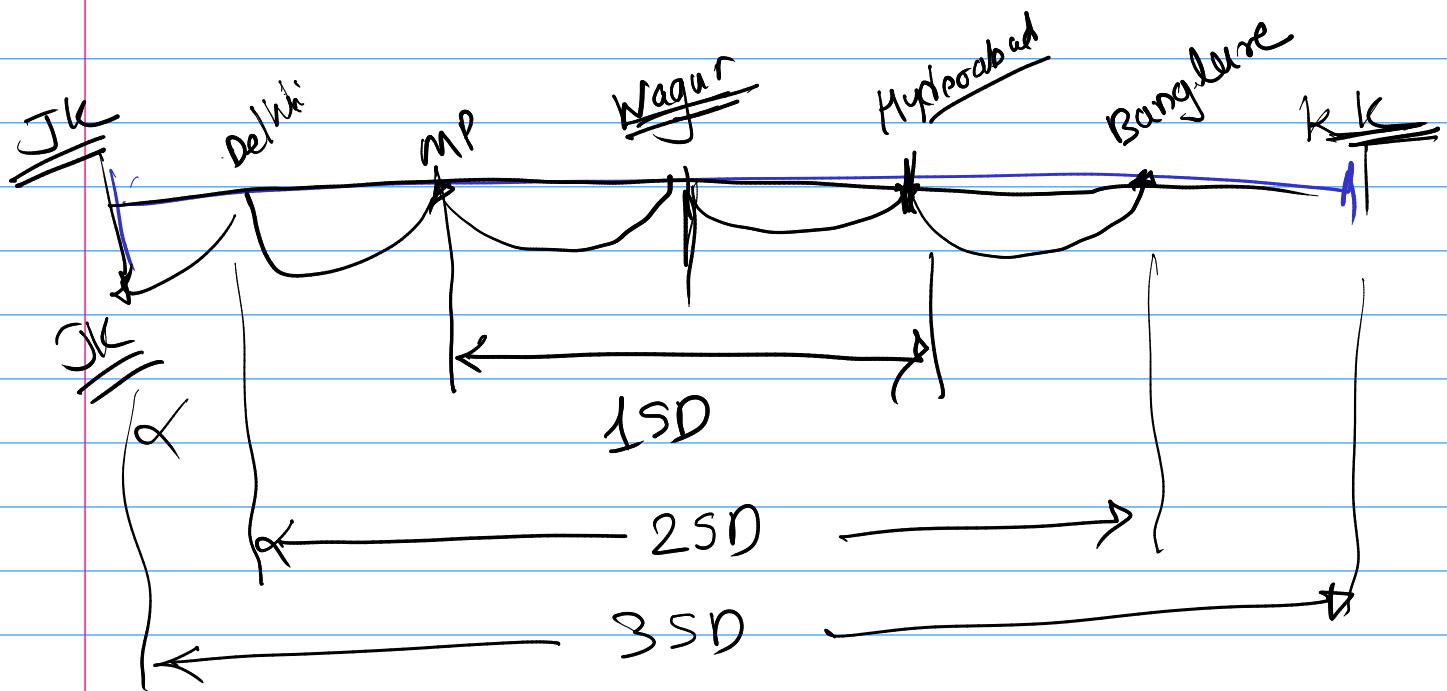
The SD is the square root of Variance.
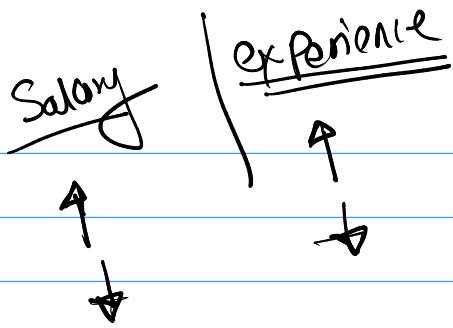
SD Population

$$\sigma = \sqrt{\sigma^2}$$

SD · sample

$$SD = \sqrt{S^2}$$

Salary | experience

D. **Coefficient of Variation** $\underline{CV}$
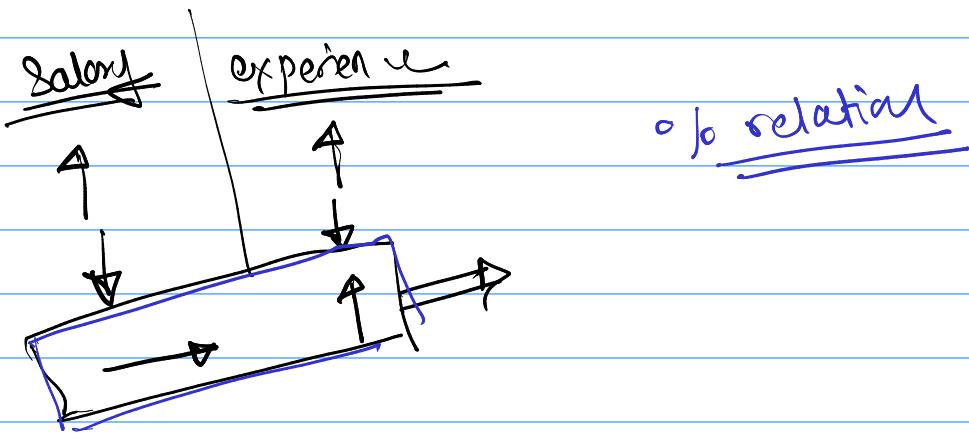
The CV is the ratio of standard deviation to the mean express in percentage.

$\bar{X}$
Sample mean

$$CV = \left(\frac{\sigma}{\mu} \right) \times 100\%$$

— sigma (Standard deviation)

← Population mean.

Salary | experience

% relation

Range $= -\infty$ to $+\infty$

ex = Doug $-\% \quad 20 \quad 200$

+ve 00 -ve

E. Correlation

Range $= -1$ to 0 to 1

-0.8
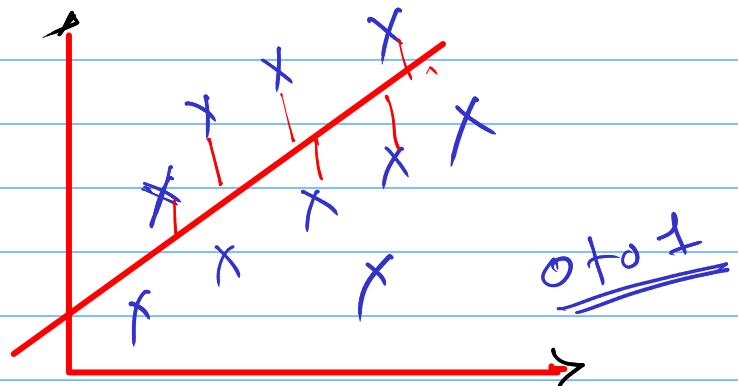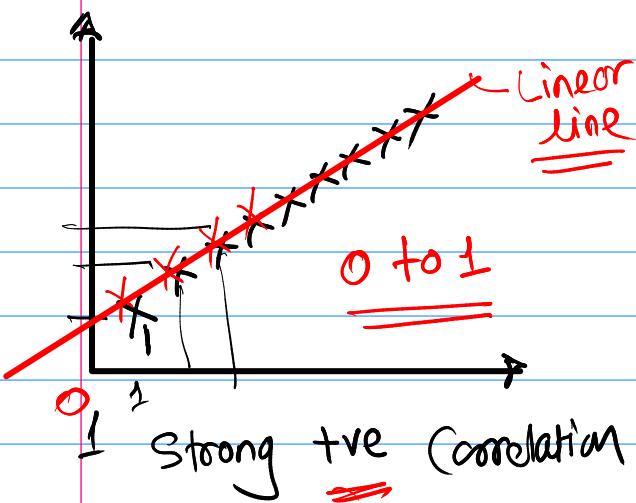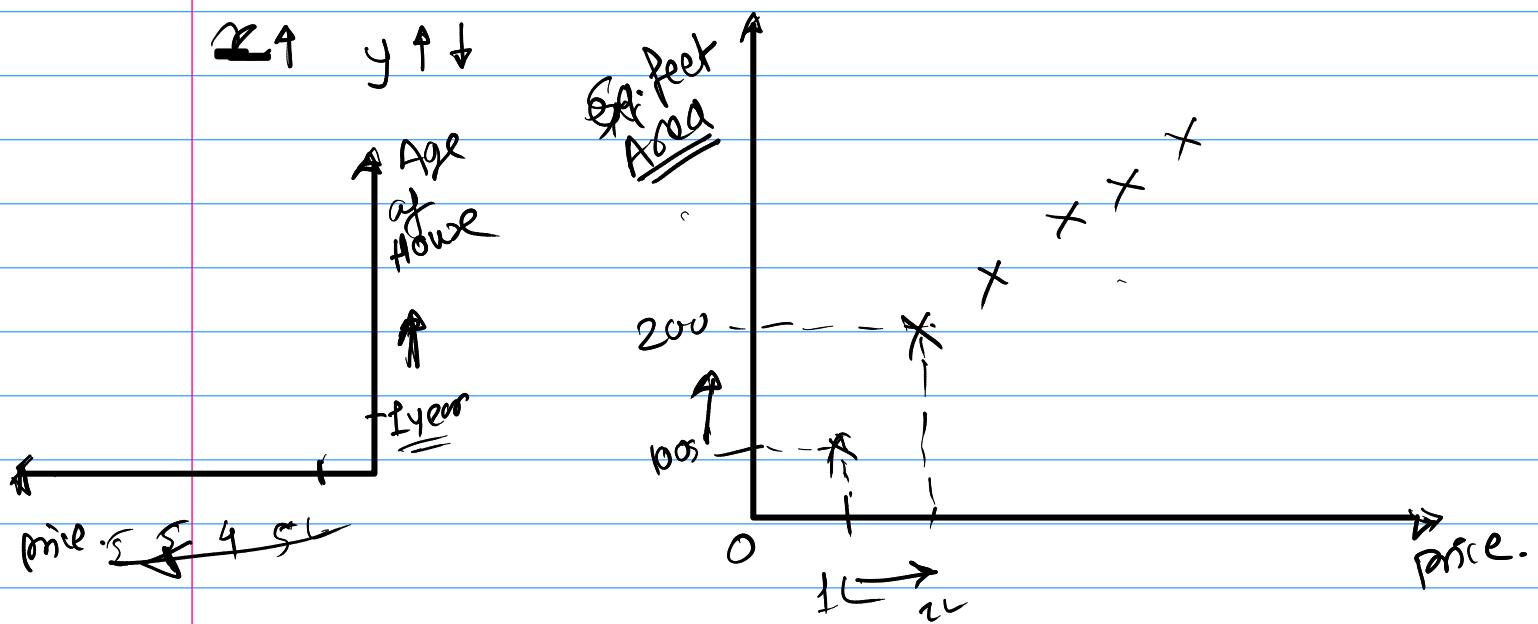
$+0.3 = 30\%$
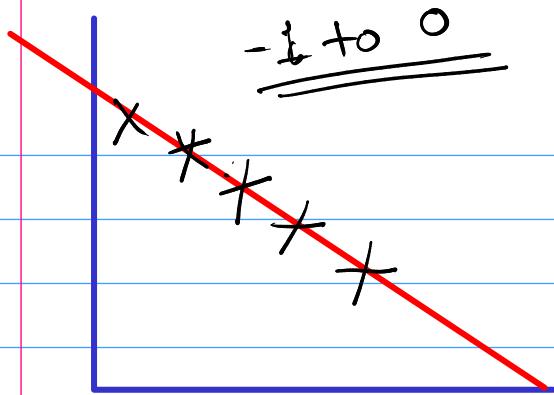
$-1 = -100\%$

$1 \; 100\%$

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① Pearson Correlation

$x ↑ \quad y ↑ ↓$

Age at House
1 year
price ₹ 4 5L

Sq. feet Area
200
100
1 → 2
O
price.

Linear line
0 to 1
0 1
1 Strong +ve Correlation

medium positive
0 to 1
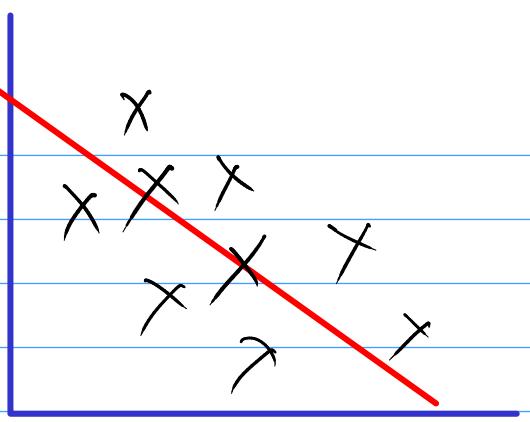
experience	Salary
1 year	1 Lakh
2 year	2 Lakh
3 year	3 Lakh
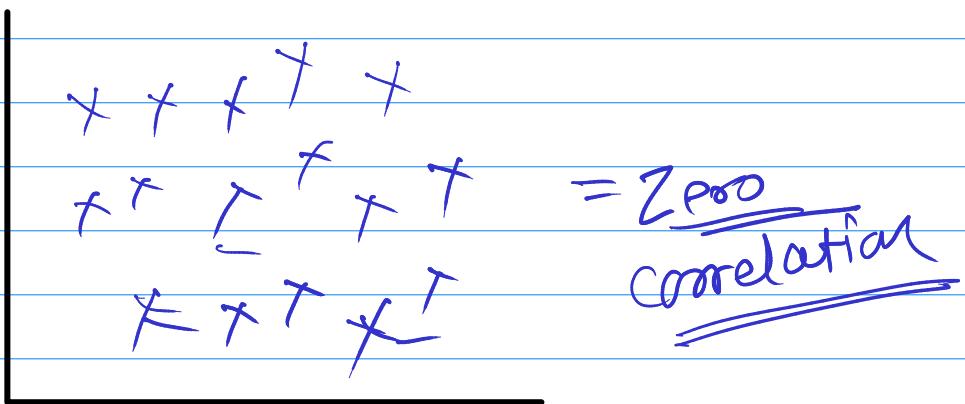
experience	Salary
1 year	50k
2 year	65k
3 year	70k

−1 to 0

Strong negative

medium negative

= Zero correlation

2. Spearman's Correlation

Line 1

Line 2

Constant
Line 3

1000 sq.

Locality
Near
Bus stop / 9
railways
station

price

8 pen.

$x \uparrow$ $y \longrightarrow$