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Statistis

science of collection, presentation, analysis, resonable interpretation of data

Frequency Distribution:

Age	1	2	3	4	5	6
Frequency	5	3	7	5	4	2

Cumulative Frequency:

Age	1	2	3	4	5	6
Frequency	5	3	7	5	4	6
Comulative	5	8	15	20	24	26

Data presentaion
- Numerical
- Graph
  - Categorical:
    - Bar chart, pie chart
  - Numerical
    - histogram, box plot

Bar Chart

Pie Chart

Bar chart

histogram

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Central Tendency

Mean (গড়)

Median

Mode (বহুলক)

Variance

2, 8, 2, 8

$$\text{Mean} = \frac{20}{4} = 5$$

$$\text{variance} = \frac{(2-5)^2 + (8-5)^2 + (2-5)^2 + (8-5)^2}{4}$$

$$= \frac{9+9+9+9}{4}$$

$$= 9$$

$$SD = \sqrt{9} = \sqrt{\text{variance}} = \text{আদর্শ বিচ্যুতি}$$

$$= 3$$

optiman SD is $5+3=8$

$5-3=2$

[2 to 8]

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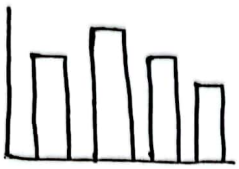
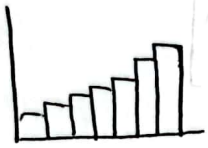
Distribution

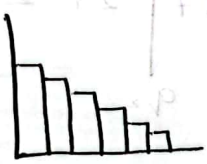
Uniform distribution:



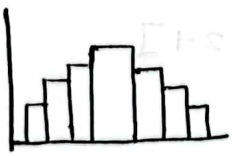
Left skewed Distribution:



Right skewed distribution:



Normal / gaussian distribution:



* Bell Curse
* Mean = Median = Mode
* Symmetrical
* kurtosis - 0.263
* Asymptotic
* Mean starting point
* -3SD to +3SD
* 1000 case
* 3413, 1359, 215

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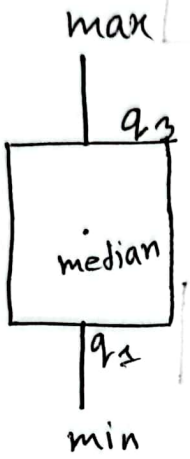
Deciles : Data / 10

Percentiles : Data / 100

Quartiles : Data / 4

Boxplot :



8 10 11 | 12 13 14 17 | 20 27 24 27 | 28 29 35 49

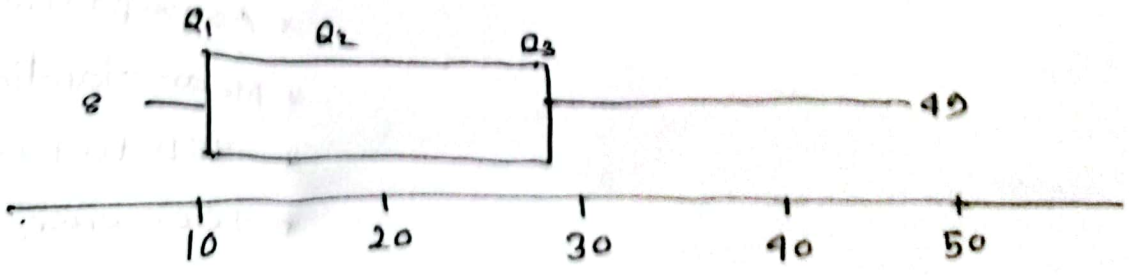
q_1 q_2 q_3

outlier:

$$[q_1 - 1.5 \times IQR,\ q_3 + 1.5 \times IQR] \qquad IQR = Q_3 - Q_1 = 16$$

$$= [12 - 24,\ 28 + 24]$$

$$= [-12,\ 52]$$



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Coefficient of Correlation

± 1 ⟶ Pefect

$\pm 0.91 - \pm 0.99$ → Most high

$\pm 0.70 - \pm 0.90$ → high

$\pm 0.51 - \pm 0.70$ → Moderate

$\pm 0.31 - \pm 0.50$ → lower

$\pm 0.11 - \pm 0.30$ → very low

$\pm 0.01 - \pm 0.10$ → Negligible

0 ⟶ zero

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

Zscore

$$Z = \frac{x - \mu}{\sigma}$$

T score

$$T = 50 + 10Z$$

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