* **Percent:**

* Percent =

* New value =

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1) **Percent:** $= \dfrac{Part}{Total} \times 100$

→ what Percent of $\underset{Total}{x}$ is $\underset{Part}{Y}$?

$$= \dfrac{Y}{x} \times 100$$

Ex: what Percent of 200 is 20 ?

$$Percent = \dfrac{20}{200} \times 100 = 10 \%$$

Ex: 50 % of 400 is what number? $\rightarrow$ Part

$$50 \% \times 400 = 200$$

Note: Part = Percent × total.

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* $Percent = \dfrac{Change}{Original} \times 100$ $\quad (-)$

→ 1000 \$ $\longrightarrow$ disc $\longrightarrow$ 800 \$

$$Percent \text{ of } discount = \dfrac{1000 - 800}{1000} \times 100$$

$$\text{New value} = \begin{cases} \text{Inc} : & \text{Sales tax, Profit, earn, gain ...} \\ \text{Dec} : & \text{Sale, disc, off, Lose, ...} \end{cases}$$

$$\text{New value} = \text{Original} (1 \pm P\%)$$

$$40\% = 0.40 = 0.4$$
$$56\% = 0.56$$
$$7\% = 0.07$$

$$1 + 40\% = 1.40$$
$$1 + 56\% = 1.56$$
$$1 + 7\% = 1.07$$

$$1 - 40\% = 0.60$$
$$1 - 56\% = 0.44$$
$$1 - 7\% = 0.93$$

Joe bought a mobile from store which gave him 20% discount off the original Price If he Paid 8% sales tax to cashier for mobile which Has a Price 1000 $ find total amount he will Pay?

$$1000 (1 - 20\%)(1 + 8\%)$$
$$1000 (0.80)(1.08)$$

Compound interest:

___

$$\text{New value} = \text{Original}\left(1 + \frac{p\%}{n}\right)^{nt}$$

$n \rightarrow$ Compounded interval. $t \rightarrow$ years $\rightarrow \dfrac{\text{After}}{\text{every}}$.

Compounded annually $\rightarrow n = 1$

"   semi annually $\rightarrow n = 2$

"   Quarterly $\rightarrow n = 4$

"   monthly $\rightarrow n = 12$

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doubles $\longrightarrow$ (2)

Triples $\longrightarrow$ (3)

Quadrables $\longrightarrow$ (4)

Statistics.

* Mean
* Median
* Mode
* Range
* standard deviation.

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1) Mean: (arithemetic mean) - Average.

$$= \frac{Sum}{no.}$$

* Find average for $7, 11, 20, 19$

$$= \frac{7 + 11 + 20 + 19}{4}$$

→ **Frequency table:**

what is the mean score?

$$\frac{700 \times 10 + 650 \times 20 + 630 \times 30 + 600 \times 4}{10 + 20 + 30 + 4}$$

Score	Frequency
700	10
650	20
630	30
600	4

2) <u>Median:</u>

→ Middle after arrange.

Find median for data: 7, 5, 4, 3, 10

order = $\frac{5+1}{2}$ = ③   Arrange = 3, 4, 5, 7, 10

10, 7, 5, 4, 3

Find median for 5, 10, 12, 15

Median = $\frac{10+12}{2}$ = 11

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* <u>Frequency table:</u>

what is the median Score?

* order = $\frac{Total}{2}$

Note Total $\begin{cases} \frac{even}{2} \\ \frac{odd+1}{2} \end{cases}$

order = $\frac{31 +1}{2}$ = 16

Median = 650

Score	Students.
700	11
650	4
630	8
600	5

+18
20
13

* Mode: → Most repeated
                  Frequent

5, 7, 2, 7, 3, 7, 1

Mode = 7
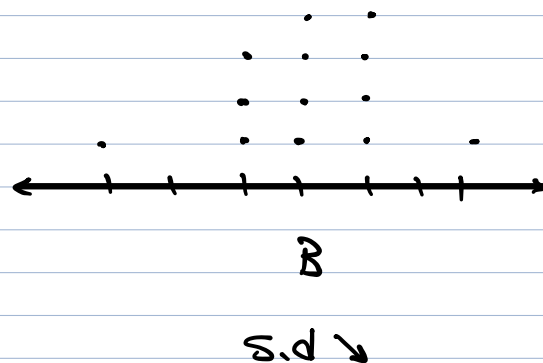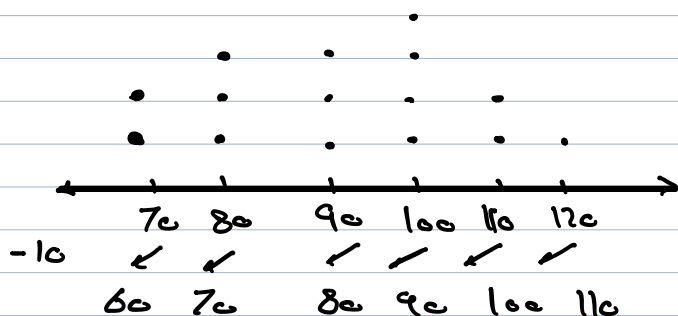
4, 3, 2, 4, 1, 3

Mode = 4, 3

Mode students ?

Mode = 630

Students	Score
700	10
650	11
630	12
600	9

* Range = Maximum − Minimum.
        = Greatest − Smallest

Find range for data   7, 42, 3, 5, 20, 1, 19

Range = 42 − 1 = 41

70 80   90 100 110 120
−10
  60 70   80 90 100 110

B

S.d ↓

Mean = x −10   S.d = The same.

$$\mu = \frac{100}{5} = 20 \quad \swarrow \text{sum}$$

$$\frac{200}{5} = 40 \quad \swarrow \text{sum}$$

$$\frac{300}{5} = 60 \quad \swarrow \text{sum}$$

$$\frac{400}{5} = 80 \quad \swarrow \text{sum}$$