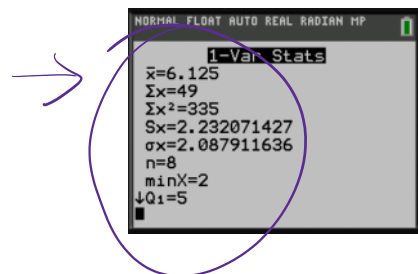
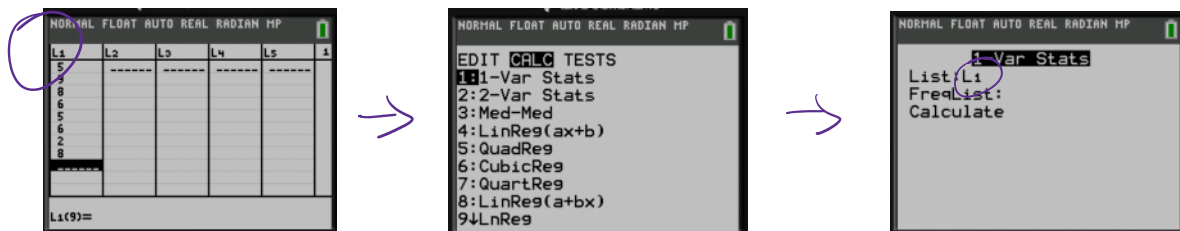


Inter-Quartile Range (IQR)

The IQR provides a robust measure of dispersion, as it minimizes the influence of extreme values, or outliers.

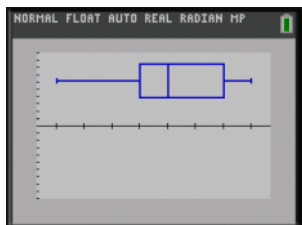
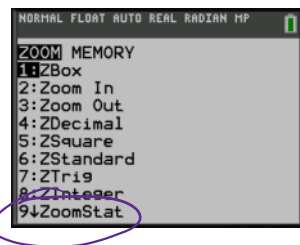
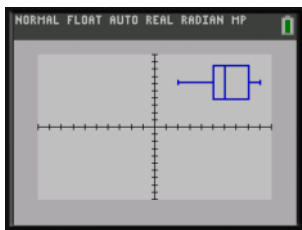
$$IQR = Q_3 - Q_1$$



eg $IQR = Q_3 - Q_1$

$$IQR = 8 - 5$$
$$= \boxed{3}$$

Boxplot :



VII. Measure of Center

It is the characteristic of the center of the data set.

Notation:

x is usually not written. It is each data value in the data set. It has orders: $x_1, x_2, x_3, \dots, x_n$.

n is the number of data values in a sample.

N - - - - - a population.

s is the standard deviation for a sample set of data.
 level of intensity eg grade. eg credit score eg hotel stars

σ - - - - - Population

V - - - - - Variance - - - a sample set of data.

V - - - - - a population set of data.

Σ is the sum of all the data set.

eg. Given the data set : $\overset{x_1}{2}, \overset{x_2}{4}, \overset{x_3}{3}, \overset{x_4}{1}, \overset{x_5}{7}$. Find the sum.

S: We have x 's.

$$\Sigma x = 2 + 4 + 3 + 1 + 7 \\ = \boxed{17}$$

$$\boxed{\sum_{x=1}^5 x}$$

eg. Find the total from the data set:

22 26 22 24 25 27 26

S:

L1	L2	L3	L4	L5
5	22			
6	26			
7	22			
8	24			
9	25			
0	27			
1	26			



1-Var Stats	
List:	L2
FreqList:	
Calculate	



1-Var Stats	
$\bar{x}$	=24.57142857
Σx	=172
Σx^2	=4250
Sx	=1.988059595
σx	=1.840585532
n	=7
minX	=22
Q1	=22

$$\boxed{172}$$

i. Mean

It is the average of the data

$\bar{x}$ is the sample mean.

μ is the population mean.

Greek

μ : mu

Note: If the data set is not specified population,

... if the data set is not specified population,
they are automatically sample.

eg Find the mean for the sample data:

22 22 26 23

$$\begin{aligned} S: \quad \bar{x} &= \frac{22 + 22 + 26 + 23}{4} \\ &= \frac{93}{4} \\ &= \boxed{23.25} \end{aligned}$$

ii. Median (Q2)

It is the middle value. Notation: $\tilde{x}$

$\tilde{x}$ is x tilde

odd number — $\tilde{x}$ is the middle value
even number — $\tilde{x}$ is $\frac{\text{middle 1} + \text{middle 2}}{2}$

eg Given the data set: 5, 1, 4, 7, 10. Find the median.

S: Sort: 1, 4, 5, 7, 10

$$\tilde{x} = \boxed{5}$$

eg Given the data set: 1 5 4 0 10 7 5 1 1 1

eg Given the data set: 1, 5, 4, 8, 10, 7. Find the median.

S: Sort: 1, 4, 5, 7, 8, 10

$$\tilde{x} = \frac{5+7}{2} = \boxed{6}$$

eg Find the median for the following:

a. 3 5 3 3 6

b. 4 8 2 10 15 20

S: a. 3 3 3 5 6 ✓

$$\text{median} = \boxed{3}$$

b. 2 4 8 10 15 20

$$\begin{aligned}\text{median} &= \frac{8+10}{2} \\ &= \boxed{9}\end{aligned}$$

iii. mode ← no symbol
← can tie

It is the most repeated data value.

eg 5.4, 1.1, 0.4, 0.7, 1.1, 0.6, 1.8

✓ 0.1, 1.1, 0.4, 0.1, 1.1, 0.6, 1.8

$$\text{mode} = \boxed{1.1}$$

eg 27 27 26 25 27 25 26

$$\text{mode} = \boxed{27}$$

eg 4, 8, 8, 4, 5, 2, 4, 8, 9, 5, 2, 5

$$\text{mode} = \boxed{4}, \boxed{8}, \boxed{5}$$

eg 1, 6, 8, 2, 3, 10

$$\text{mode} = \boxed{\text{none}}$$

iv. Range

It is the difference from the smallest data value to the largest.
That is,

$$\boxed{\text{range} = \text{max} - \text{min}}$$

eg 4, 5, 3, 2, 10

$$\text{range} = 10 - 2$$

$$= \boxed{8}$$

eg NCAA coach salary: 47k, 70k, 100k, 65k, 2 million.

$$\text{range} = 2 \text{ million} - 47k$$

$$= \boxed{1,953,000} \text{ dollars}$$

eg NBA's salary range: 100 million - 5 million

$$= \boxed{95 \text{ million}}$$