SCHOOL:- STRONG TOWER ACADEMY, IKORODU

NAME OF TEACHER: WHENU, B, S (MR)

SUBJECT:- MATHEMATICS

LESSON:- THREE (3)

TOPIC:-MEASURE OF CENTRAL TENDENCY (MEAN & MEDIAN)

CLASS:-   SS2

Measures of Central Tendency:- This is also called measures of location . They are statistical average used to provide descriptive summary of a data and also used to describe the general location of the data. Examples are: (1) Mean (ii) Median (iii) Mode.

(1) Mean or Arithmetic Mean:- This is the average of a set of numbers. It is derived by adding the values in a set together, divided by the number of values in the set. Mean is denoted by X

Examples:

(1)Find the mean of the data below

$$5, 9, 3, 4, 5, 8, 2, 4, 1, 13.$$

Solution:

Mean, X = $\frac{\Sigma X}{N}$ = $\frac{5+9+3+4+5+8+2+4+1+13}{10}$ = $\frac{54}{10}$ = 5.4

(2) If the mean of x, 2x, 3x, 4x and 5x is 20. Find the value of x
Solution

Mean, X = $\frac{\Sigma X}{N}$ = $\frac{x+2x+3x+4x+5x}{5}$ = $\frac{15x}{5}$

$\frac{15x}{5}$=¿ 20

15x = 20 X 5

15x = 100

x = $\frac{100}{15}$ = 6.7

MEAN OF UNGROUPED DATA

Mean, X $= \dfrac{\Sigma fX}{\Sigma f}$

Examples: (1) The frequency table below represents the number of Oranges picked by 20 students. Calculation the mean of the data.

X	0	1	2	3	4	5
F	2	5	6	4	2	1

Solution

X	F	Fx
0	2	0
1	5	5
2	6	12
3	4	12
4	2	8
5	1	5
	$\Sigma f = 20$	$\Sigma fX = 42$

Mean, X $= \dfrac{\Sigma fX}{\Sigma f} = \dfrac{42}{20} = 2.1$

Median is the middle value in a data when the values are arranged in ascending or descending order. Median divides the data into two equal parts.

Examples:

(2)Find the median of the data below

        5, 9, 3, 4, 5, 8, 2, 4, 1, 13.

Solution

Re-arrange the number:- 1, 2, 3, 4, 4, 5, 5, 8, 9, 13

Median $= \dfrac{4+5}{2} = \dfrac{9}{2} = 4.5$

MEDIAN OF UNGROUPED FREQUENCY DATA

Median $= \dfrac{N+1}{2}$ where N is the total frequency

(3) The frequency table below represents the number of Apples picked by 20 students. Calculation the median of the data.

X	0	1	2	3	4	5
F	2	5	6	4	2	1

Solution

Set the Cummulative frequency table as below

X	F	CF
0	2	2
1	5	7
2	6	13
3	4	17
4	2	19
5	1	20

Median $=\dfrac{N+1}{2}=\dfrac{20+1}{2}=\dfrac{21}{2}$ =10.5th position in CF. from the cumulative table the 10.5th position falls within the value 2 and 2. Thus median =2.

MEDIAN FOR GROUPED FREQUENCY DATA

Median $=L+\dfrac{\left(\dfrac{N}{2}-Cfm\right)W}{fm}$ where, L = Lower class boundary of the median class;

N = Total frequency; $Cfm=¿$ Cummulative frequency before median: W = Class interval: fm = frequency of the median class.

Median $=\dfrac{N+1}{2}$ or $\dfrac{N}{2}$

Evaluation: Determine the mean and median of the frequency data below

X	1 -10	11 – 20	21 – 30	31 – 40	41 - 50
F	6	8	5	7	10

Assignment

(1) Essential Mathematics for Senior Secondary Schools Book 2, page 210, Exercise 14.1, No.10 - 12

(2)Essential Mathematics for Senior Secondary Schools Book 2, page 218, Exercise 8.2, No.14.4, No: 9 & 10