STATISTICS INTRO:

- MEAN ($\bar{X}$)
- MEDIAN (M_d)
- MODE (M_o)

→ WEIGHTED MEANS ($\bar{X}_w$)

→ FREQUENCY TABLES.

MEAN (THE AVG.)

$$\bar{X} = \frac{\text{add up all the actual scores}}{\text{NUMBER OF SCORES ADDED.}}$$

USED WHEN THERE IS NOT REALLY AN OUTLIER.

Ex: $\{10, 14, 20\}$

$$\bar{X} = \frac{10+14+20}{3} = \frac{44}{3} = 14.\overline{6}$$

$$\bar{X} = 14.\overline{6}$$

WORK BACKWARD

$\bar{X} = 15$

$\{12, 8, 10, x\}$ FIND THE VALUE OF 'X'.

$$\bar{X} = \frac{12 + 8 + 10 + x}{4}$$

$$4 \cdot 15 = \frac{30 + x}{\cancel{4}} \cdot \cancel{4}$$

$$60 = 30 + x$$

$$-30 \quad -30$$

$$\boxed{30 = x}$$

MEDIAN (Md)

1. PUT ALL THE #S IN A ROW FROM SMALLEST TO BIGGEST.
2. PICK THE MIDDLE NUMBER.
3. IF THERE IS NO MIDDLE, TAKE THE AVERAGE (MEAN) OF THE 2 MIDDLE NUMBERS.

Ex 1: $\{8, 2, 7, 15, 9\}$ $M_d = ?$

$\cancel{2}, \cancel{7}, 8, \cancel{9}, \cancel{15}$ $M_d = 8$

M_d.

Ex 2: $\{17, 6, -2, 4, 12, 8\}$ $M_d = ?$

$-\cancel{2}, \cancel{4}, 6, 8, \cancel{12}, \cancel{17}$ $M_d = 7$

$x = \frac{6+8}{2} = \frac{14}{2} = 7$

WORKING BACKWARD.

$20, 7, 2, x, 6, 2, 18, 12$ $M_d = 8$

WHAT IS THE VALUE OF 'x'?

① PUT IN ORDER. 2 2 6 7 x 12 18 20

② CROSS OUT $\cancel{2}\ \cancel{2}\ \cancel{6}\ 7\ x\ \cancel{12}\ \cancel{18}\ \cancel{20}$

$(2) \cdot 8 = \frac{7+x}{\cancel{2}} \cdot \cancel{2}$

$16 = 7 + x$

$-7 \quad -7$

$\boxed{9 = x}$

WEIGHTED MEAN ($\bar{X}_w$)

⇒ NOT ALL SCORES ARE WORTH THE SAME AMOUNT...

	WORTH	SCORE
TEST	30%	90
MID YEAR	70%	70

* TAKE EACH SCORE AND MULTIPLY IT BY THE FRACTION IT IS WORTH, THEN ADD UP ALL THE PARTS.

$$\bar{X}_w = (0.30)(90) + (0.70)(70)$$
$$= 27 + 49$$
$$\bar{X}_w = 76$$

WORKING BACKWARD.

I LOST YOUR MID-YEAR

THE $\bar{X}_w = 83$

YOUR TEST AVG = 72%

TESTS WERE WORTH 40% of THE FINAL MARK.

WHAT WAS THE MIDYEAR SCORE?

	WEIGHT	SCORE
TEST	40%	72
MID-YEAR	100% - 40% (60%)	X

$\bar{X}_w = 83$

$$\bar{X}_w = (0.40)(72) + (0.60)(x)$$

$$83 = 28.8 + 0.6x$$

$$-28.8 \quad -28.8$$

$$\frac{54.2}{0.6} = \frac{0.6x}{0.6}$$

$$90.\overline{3} = x$$

MID YEAR SCORE WAS $90.\overline{3}$ %

FREQUENCY TABLES.

SCORES PUT IN GROUPS

USE THE MIDDLE OF THE GROUP FOR YOUR CALCULATIONS

HOW MANY

HOURS OF T.V./WK.	frequency	MIDDLE #	TOTALS
[0, 10[	2	5	10
[10, 20[	6	15	90
[20, 30[	14	25	350
[30, 40[	8	35	280
TOTAL	30		730

$$\bar{X} = \frac{730}{30} = 24.\overline{3}$$

$M_d \rightarrow$ AVE OF 15th & 16th #s. $\rightarrow$ IN [20, 30[GROUP

$M_d = 25$