ALL SAME TECHNIQUE

EX 2.5 Q 9, 10, 11, 18, 19, (23) — $\bar{x}, \sigma$ — eg 35.

Q9. $\bar{x} = 1800$

med = 1500

mode = 1600.

a) all increax by $150/week

then mean, med, mode would also all increase.

b). $1.05 \times 1800 = 1890$

$1.05 \times 1500 = 1575$

$1.05 \times 1600 = 1680$

c) 20 Boilermakers $\bar{x} = \frac{\Sigma fx}{\Sigma f}$

$1800 = \frac{\Sigma fx}{20}$

$\Sigma fx = 36000$

now add 4 more @ 2500

new $\Sigma fx = 36000 + 2500 \times 4$

$= 46000$

new $\Sigma f = 20 + 4$

$= 24$ workers

So new mean $x = \frac{\Sigma fx}{\Sigma f}$

$= \frac{46000}{24}$

$= \$1916$

Q10 $\bar{x}_B = 78$ kg $n = 12$.

$\bar{x}_G = 64$ kg. $n = 8$.

BOYS	GIRLS.
$\bar{x}_B = \frac{\Sigma x_B}{n}$	$\bar{x}_G = \frac{\Sigma x_G}{n}$
$78 = \Sigma x_B / 12$	$64 = \Sigma x_G / 8$
$\Sigma x_B = 936$	$\Sigma x_G = 512$.

So new $\bar{x}_{B+G} = \frac{\Sigma x_{B+G}}{n_{B+G}}$

$= \frac{936 + 512}{20}$

$= 72.4$ kg.

b) add teacher

$\bar{x}_{B+G+T} = \frac{1448 + 90}{21}$

$= 73.2$ kg.

Q11.

Home 1	Home 2.
$\bar{x}_1 = 68$	$\bar{x}_2 = 74$
$n_1 = 20$	$n_2 = ?$

$\bar{x}_{1+2} = 70.$

$n_{1+2} = ?$

$\bar{x}_1 = \frac{\Sigma x_1}{n_1}$ $\quad$ $\bar{x}_2 = \frac{\Sigma x_2}{n_2}$

$\Sigma x_1 = 20 \times 68$ $\quad$ $74 = \frac{\Sigma x^2}{n_2}$

$= 1360$ $\quad$ $\Sigma x_2 = 74 \times n_2$

$\bar{x}_{1+2} = \frac{\Sigma x_{1+2}}{n_{1+2}}$

$70 = \frac{1360 + 74 \times n_2}{(20 + n_2)}$

$70(20 + n_2) = 1360 + 74n_2$

$1400 + 70n_2 = 1360 + 74n_2$

$40 = 4n_2$

$n_2 = 10.$

EX 2.5

Q18 $\bar{x} = \frac{\Sigma fx}{\Sigma f}$

$= \frac{444}{10}$

$= 44.4$

Do he needs to improve.

NEW MEAN

Let x be score in each innings.

$\bar{x} = \frac{\Sigma fx}{\Sigma f}$

$50 = \frac{444 + 2x}{12}$

$600 = 444 + 2x$

$2x = 156$

$x = 78$

Do he needs to get more than 156 runs in the two remaining innings.

Q19 enter data onto calc.

Hill $\bar{x} = 15.2$ $\sigma = 2.04$

Longway $\bar{x} = 15.9$ $\sigma = 1.87$

The Hill on average is shorter

BUT

as σ is larger it is less consistent

* No correct answer, justify whether you value speed or consistency more.

BUT MUST calc σ + discuss.

EXTRA INFO.

There is a general "rule of thumb" that most data should be within 2.5 σ of mean.

HILL $15.2 \pm 2.5 \times 2.04$

$10.1 \leftrightarrow 20.3$ min

generally faster.

LONG WAY

$15.9 \pm 2.5 \times 1.87$

$11.23 \leftrightarrow 20.58$

more consistent.

Q23

	HISTORY	ART
	$^{28}/_{40}$	$^{25}/_{50}$
$\bar{x}$	22	22
σ	5	7
SD's from mean	$^{6}/_{5} = 1.2$	$^{3}/_{7} = 0.42$

He is more standard deviations from mean in HISTORY so he did better than more of class in that subject.

Friend is incorrect. Average is not good indicator of where you are compared to others in class.