Name	Faraz Ahmed.
I.D	7751
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Submitted To	Sir Anwar Shamim.

ID=7751

QNO # 01

Solution:-

X	Y	XY	X^2
53	20	1060	2809
62	32	1984	3844
57	45	2565	3249
71	60	4260	5041
78	80	6240	6084
ID 51	100	5100	2601
86	120	10320	7396
87	140	12180	7569
96	160	15360	9216
91	180	16380	8281
94	200	18800	8836
94	210	11280	8836.
$\Sigma 920$	$\Sigma 1347$	$\Sigma 105529$	$\Sigma 73762$.

$$y = a + bx \rightarrow \text{(i)}$$

$$a = \bar{y} - b\bar{x} \rightarrow \text{(ii)}$$

So

$$\bar{y} = \frac{\Sigma y}{n} = \frac{1347}{12} = 112.25 \rightarrow \text{(iii)}$$

$$\bar{x} = \frac{\Sigma x}{n} = \frac{920}{12} = 76.66 \rightarrow \text{(iv)}$$

where

$$b = \frac{n\Sigma xy - \Sigma x \Sigma y}{n\Sigma x^2 - (\Sigma x)^2}$$

$$b = \frac{12(105529) - 920 \times 1347}{12(73762) - 846400}$$

$$b = 0.699 \rightarrow \text{(v)}$$

Putting equation (iii), (iv) & (v)

in equation (ii)

$$a = \bar{y} - b\bar{x}$$

$$a = 112.25 - 0.699 \times 76.66.$$

$$\boxed{a = 58.664}.$$

Hance the derived estimated regression line y and x is

$$\hat{y} = 58.66 + 0.699x$$

The estimated regression Co-efficient, $b = 0.699$, which Indicate that the value of y increases by 0.699 unit for a unit increase in x.

QNO #02 (a)

Solution :-

$$n(S) = \binom{13}{3} = 286$$

let A = Donate all ball are of different colours.

$$n(A) = \binom{4}{1}\binom{4}{1}\binom{5}{1} = 4\times4\times5 = 80$$

$$P(A) = \frac{n(A)}{n(S)} = \frac{80}{286} = 0.28.$$

$2\times2\times2 = 8$	$3\times2\times2 = 12$	$3\times3\times2 = 18$
even x even x even = even	odd x even x even = even	odd x odd x even = even

Interpretation :-

There are 28% chances that all the ball are different colours.

ii) let B = Donate all the ball of Same colour.

Red   While   Green.

$$n(B) = \binom{4}{3} \text{ or } \binom{4}{3} \text{ or } \binom{5}{3}$$

$$= \binom{4}{3} + \binom{4}{3} + \binom{5}{3} = 4+4+10 = 18.$$

$$P(B) = \frac{n(B)}{n(S)} = \frac{18}{286} = 0.063.$$

Interpretation:-

There are 6.3% Chances that all the ball of Same colours.

Q NO # 02 (b).

Solution:-

$$n(S) = \binom{12}{4} = 495$$

Let A = denote the event that exactly one egg is bad.

$$n(A) = \binom{2}{1}\binom{10}{3} = 2 \times 120 = 240$$

$$P(A) = \frac{n(A)}{n(A)} = \frac{240}{495} = 0.48.$$

Interpretation:-

There are 48% chances that exactly one egg is bad.

(ii) Let B = be the event that at least one bad egg is selected.

$$n(B) = \binom{2}{1}\binom{10}{3} + \binom{2}{2}\binom{10}{2}$$

$= 2 \times 120 + 1 \times 45 = 240 + 45$

$= 285$

$$P(B) = \frac{n(B)}{n(S)} = \frac{285}{495} = 0.58$$

Interpretation:-

There are 58% Chances at least one bad egg is Selected.

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Solution:-

A	B	C
12	47	15
15	12	23
6	76	52
73	48	4
7	4	24
(ID) 51	51	51
199	37	74
36	48	52
84	13	13
29	3	4

$$Range = X_m - X_0$$

$$Range\ of\ A = X_m - X_0$$
$$= 199 - 6$$
$$= 193.$$

$$Rang\ of\ B = X_m - X_0$$
$$= 51 - 3$$
$$= 48$$

$$Range\ of\ C = X_m - X_0$$
$$= 51 - 4$$
$$= 47.$$

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Batsman A		Batman B		Batsman C	
X	X^2	Y	Y^2	Z	Z^2
12	144	47	2209	15	225
15	225	12	144	23	529
6	36	76	5776	52	2704
73	5329	48	2304	4	16
51	2601	51	2601	51	2601
199	39601	37	1369	74	5476.
36	1296	48	2304	52	2704
84	7056	13	169	13	169
29	841	3	9	4	16
$\Sigma x = 512$	$\Sigma x^2 = 57178$	$\Sigma Y = 339$	$\Sigma Y^2 = 16901$	$\Sigma Z = 312$	$\Sigma Z^2 = 15016$

Batsman A =

$$\bar{x} = \frac{\Sigma x}{n} = \frac{512}{10} = 51.2.$$

Batsman B :-

$$\bar{Y} = \frac{\Sigma Y}{n} = \frac{339}{10} = 33.9$$

Batsman C :-

$$\bar{Z} = \frac{\Sigma Z}{n} = \frac{312}{10} = 31.2$$

For Batsman A :-

$$S_x = \sqrt{\frac{\Sigma x^2}{n} - \left(\frac{\Sigma x}{n}\right)^2}$$

$$= \sqrt{\frac{57178}{10} - \left(\frac{512}{10}\right)^2}$$

$$S_x = 55.64.$$

$$C.V = \frac{55.64 \times 100}{51.2}$$

$$C.V = 108.76\ \%$$

For Batsman B :-

$$S_y = \sqrt{\frac{\Sigma y^2}{n} - \left(\frac{\Sigma y}{n}\right)^2}$$

$$= \sqrt{\frac{16901}{10} - \left(\frac{339}{10}\right)^2}$$

$$= 23.25\ \cancel{\%}$$

$$C.V = \frac{23.25}{33.9} \times 100$$

$$C.V = 68.58\ \%$$

For Batsman C :-

$$S_z = \sqrt{\frac{\Sigma z^2}{n} - \left(\frac{\Sigma z}{n}\right)^2}$$

$$S_z = \sqrt{\frac{15016}{10} - \left(\frac{312}{10}\right)^2}$$

$$S_z = 22.98$$

$$C.V = \frac{S_z}{\bar{z}} = \frac{22.98}{31.2} \times 100$$

$$C.V = 73.65\ \%$$

Batsman B is more consistant

as it value of Co-efficient

of Varience is Smallest

Compare A with B.

B is consistant

Compare B with A.

B is more Consistant

Compare A with C.

C is more consistant.