[illegible] de la distancia, en kilometros, a la que se

X Y

QOIMICA	MATE	XY	X^2	Y^2
6.5	6	39	42.25	36
4.5	4	18	[illegible]20.25	16
7	8	56	[illegible]49	64
5	5	25	25	25
4	3.5	14	16	12.25
Σ 27	Σ 26.5	152	152.5	153.25

$$SCX = \Sigma x^2 - \frac{(\Sigma x)^2}{n}$$

$$SCX = 152.5 - \frac{(27[illegible])^2}{5}$$

$$SCX = 152.5 - \frac{729}{5}$$

$$SCX = 152.5 - 145.80$$

$$SCX = [illegible] = 6.7$$

$$SCY = \Sigma y^2 - \frac{(\Sigma y)^2}{n}$$

$$SCY = 153.25 - \frac{(26.5)^2}{5}$$

$$SCY = 153.25 - \frac{702.25}{5}$$

$$SCY = 153.25 - 140.45$$

$$SCY = 12.8$$

$$SCXY = \Sigma xy - \frac{(\Sigma x) * (\Sigma y)}{n}$$

$$SCXY = 152 - \frac{(27) \times (26.5)}{5}$$

$$SCXY = 152 - \frac{715.5}{5}$$

$$SCXY = 152 - 143.1$$

$$SCXY = 8.9$$

$$r = \frac{SCXY}{\sqrt{(SCX)(SCY)}}$$

$$r = \frac{8.9}{\sqrt{6.7 * 12.8}}$$

$$r = \frac{8.9}{\sqrt{85.76}} \qquad r = \frac{8.9}{9.2} \qquad r = 0.96$$

MRL $\hat{Y}$

$$B1 = \frac{SCXY}{SCX} = \frac{8.9}{[illegible]6.7} = 1.32$$

$$\overline{X} = \frac{\Sigma x}{n} = \frac{27}{5} = 5.4$$

$$\overline{Y} = \frac{\Sigma y}{n} = \frac{26.5}{5} = 5.3$$

$$B0 = \overline{Y} - b1 * \overline{X} = 5.3 - 1.32 \times 5.4$$

$$B0 = 21.49$$

$$B0 + B1 \times \hat{X}$$

$$21.49 + 1.32 \times 7.5$$

MRL $\hat{X}$

$$\frac{\hat{Y} - B0}{B1} = \frac{7.5 - 21.49}{1.32}$$

10

Un centro comercial sabe en función de la distancia, en kilometros, a la que se sitúe de un nucleo de población acuden los clientes, en cientos, que figuran en la tabla

NO. CLIENTES X	DISTANCIA Y	XY	X^2	Y^2
8	15	120	64	225
7	19	133	49	361
6	25	150	36	625
4	23	92	16	529
2	34	68	4	1,156
1	40	40	1	1,600
Σ 28	156	603	170	4,496

$$Scx = \Sigma x^2 - \frac{(\Sigma x)^2}{n}$$

$$Scx = 170 - \frac{(156)^2}{6}$$

$$Scx = 170 - \frac{24,336}{6}$$

$$Scx = 170 - 4056$$

$$Scx = -3,886$$

$$Scy = \Sigma y^2 - \frac{(\Sigma y)^2}{n}$$

$$Scy = 4496 - \frac{(156)^2}{6}$$

$$Scy = 4496 - 4,056$$

$$Scy = 440$$

$$Scxy = \Sigma xy - \frac{(\Sigma x) \times (\Sigma y)}{n}$$

$$Scxy = 603 - \frac{28 \times 156}{6}$$

$$Scxy = 603 - \frac{4368}{6}$$

$$Scxy = 603 - 728$$

$$Scxy = -125$$

$$r = \frac{Scxy}{\sqrt{(Scx)(Scy)}}$$

$$r = \frac{-125}{\sqrt{(3.886)(440)}}$$

$$r = \frac{-125}{\sqrt{1,709,840}}$$

$$r = \frac{-125}{1307} = -0.12$$

$MRL\hat{Y} - MRL\hat{X}$

$$B1 = \frac{Scxy}{Scx} = \frac{-125}{-3,886} = 0.03$$

$$\bar{X} = \frac{\Sigma x}{n} = \frac{28}{6} = 4.66$$

$$\bar{Y} = \frac{\Sigma y}{n} = \frac{156}{6} = 26$$

0.1398

$$B0 = \bar{y} - b1 * \bar{x} = 26 - 0.03 * 4.66$$

$$26 - 0.1398 = 25.86$$

$MRL\hat{Y}$

$B0 + B1 * \hat{x}$

$25.86 + 0.03 \times 5$

$25.86 + 0.15 = 26.01$ KM

$MRL\hat{X}$ 795.33

$$\frac{\hat{y} - B0}{B1}$$

$$\frac{2 - 25.86}{0.03}$$

$$\frac{23.86}{0.03}$$

Se
Es

HORAS EXTRA (x)

2	4	5	6	6	7	9	9	10	12	x=10			
12	13	9	7	12	8	6	9	7	5	y=10			

REPROBADOS (y)

x	y	xy	x^2	y^2
10	10			
2	12	24	4	144
4	13	52	16	169
5	9	45	25	81
6	7	42	36	49
6	12	72	36	144
7	8	56	49	64
9	6	54	81	36
9	9	81	81	81
10	7	70	100	49
12	5	60	144	25
Σ70	Σ88	Σ556	Σ572	Σ842

FUNCIÓN DE CORRELACIÓN "X"

$$Scx = \Sigma x^2 - \frac{(\Sigma x)^2}{n}$$

$$Scx = 572 - \frac{4900}{10}$$

$$Scx = 572 - 490$$

$$Scx = 82$$

FACTOR DE CORRELACIÓN "Y"

$$Scy = \Sigma y^2 - \frac{(\Sigma y)^2}{n}$$

$$Scy = 842 - \frac{7744}{10}$$

$$Scy = 842 - 774.4$$

$$Scy = 67.6$$

$$Scxy = \Sigma xy - \frac{(\Sigma x) \cdot (\Sigma y)}{n}$$

$$Scxy = 556 - \frac{70 \cdot 88}{10}$$

$$Scxy = 556 - \frac{6,160}{10}$$

$$Scxy = 556 - 616$$

$$Scxy = -60$$

$$r = \frac{Scxy}{\sqrt{Scx \cdot Scy}}$$

$$r = \frac{-60}{\sqrt{82 \cdot 67.2}}$$

$$r = \frac{-60}{\sqrt{5,510}}$$

$$r = \frac{-60}{74.22}$$

$$r = -0.87$$

$$r = -0.80$$

SE EVALUA A 8 OFICINAS EDUCATIVAS PARA DETERMINAR SI EL NUMERO DE PRIMARIAS EN LA ZONA ESCOLAR TIENE EFECTO SOBRE EL NUMERO DE ALUMNOS CON APTITUDES SOBRESALIENTES

	X	Y	XY	X^2	Y^2
	15	35	525	225	1225
	35	28	980	1225	784
	20	32	640	400	1024
	20	37	1160	1600	841
	40	29	1160	1600	1369
	30	35	1225	1225	1225
	5	31	155	25	961
	30	37	1110	900	1369
Σ	200	264	6535	6000	8798

$$SCX = \Sigma x^2 - \frac{(\Sigma x)^2}{n}$$

$$SCX = 6000 - \frac{(200)^2}{8}$$

$$SCX = 6000 - \frac{40000}{8}$$

$$SCX = 6000 - 5000$$

$$SCX = 1000$$

$$SCY = \Sigma Y^2 - \frac{(\Sigma Y)^2}{n}$$

$$SCY = 8798 - \frac{(264)^2}{8}$$

$$SCY = 8798 - \frac{69696}{8}$$

$$SCY = 8798 - 8712$$

$$SCY = 86$$

$$SCXY = \Sigma XY = \frac{(\Sigma X) \times (\Sigma Y)}{n}$$

$$SCXY = 6535 - \frac{(200)(264)}{8}$$

$$SCXY = 6535 - \frac{52800}{8}$$

$$SCXY = 6535 - 6600$$

$$SCXY = -65$$

$$r = \frac{SCXY}{\sqrt{(SCX)(SCY)}}$$

$$r = \frac{-65}{\sqrt{(1000) \times (86)}}$$

$$r = \frac{-65}{\sqrt{86{,}000}}$$

$$r = \frac{-65}{293.5}$$

$$r = -0.22$$

Por lo tanto podemos decir que existe una correlación debil y negativa

CALCOCAR B1

$$b1 = \frac{SCXY}{SCX} = \frac{-65}{1000} = -0{,}065 = b1$$

CALCOCAR PROMEDIOS

$$\bar{Y} = \frac{\Sigma Y}{n} = \frac{264}{8} = 33 \quad \bar{Y} = 33$$

$$\bar{X} = \frac{\Sigma X}{n} = \frac{200}{8} = 25 \quad \bar{X} = 25$$

CALCOCAR BO

$$BO = \bar{Y} - (0.065 * 25) = 1.625$$

$$33 - 1.625 = 31.375$$

$$BO = 31.375$$

$$MRL\hat{Y} = b0 + b1 \times \hat{X} = 31.375 + 0.065 \times 10$$

$$31.44 \times 10 = 314.4$$

COMPROBACIÓN

FACTOR DE CORRELACIÓN ⟷ REGRESIÓN LINEAL

REGRESIÓN 1

X	Y	XY	X^2	Y^2
2	14	28	4	196
3	20	60	9	400
5	32	160	25	1,024
7	42	294	49	1,764
8	44	352	64	1,936
Σ 25	Σ 152	894	151	5320

$$SCXY = \Sigma xy = \frac{(\Sigma x) \times (\Sigma Y)}{n}$$

$$SCXY = 894 - \frac{(25)(152)}{5}$$

$$SCXY = 894 - \frac{3800}{5}$$

$$SCXY = 894 - 760$$

$$SCXY = 134$$

REGRESIÓN LINEAL >>

CALCULAR B1

$$B1 = \frac{SCXY}{SCX} = \frac{134}{26} = 5.15$$

PROMEDIOS >>

$$\bar{Y} = \frac{\Sigma Y}{n} = \frac{152}{5} = 30.4$$

$$\bar{X} = \frac{\Sigma X}{n} = \frac{25}{5} = 5$$

CALCULAR B0

$\bar{Y} - b1 \times \bar{X}$

$30.4 - 5.15 \times 5$

$30.4 - 25.75 = 4.65$

MRL $\hat{Y}$ >>

$B0 + B1 * \hat{X}$

$4.65 + 5,15 \times 1 = 9.8$

$$SCX = \Sigma x^2 - \frac{(\Sigma x)^2}{n}$$

$$SCX = 151 - \frac{(25)^2}{5}$$

$$SCX = 151 - \frac{625}{5}$$

$$SCX = 151 - 125$$

$$SCX = 26$$

$$SCY = \Sigma Y^2 - \frac{(\Sigma Y)^2}{n}$$

$$SCY = 5320 - \frac{(152)^2}{5}$$

$$SCY = 5320 - \frac{23,104}{5}$$

$$SCY = 5320 - 4620$$

$$SCY = 700$$

$$r = \frac{SCXY}{\sqrt{(SCX)(SCY)}}$$

$$r = \frac{134}{\sqrt{(26)(700)}}$$

$$r = \frac{134}{\sqrt{18,200}}$$

$$r = \frac{134}{134.90}$$

$$r = 0.99$$

Correlacion Fuerte y Positivo

MRL $\hat{X}$ >>

$$\frac{\hat{Y} - B0}{B1} = \frac{50 - 4.65}{5.15} = \frac{43.35}{5.15} = 8.80$$