Servente (1º semestre)

Nivel Mental

Idade = variavel x

Nota = variavel y

Nota	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40	41-42	43-44	f	d	fd	fd²
0-4											1 91 91			1	-13	-13	169
5-9				1		1 24 24								2	-12	-24	288
10-14				2		1 22 22								3	-11	-33	363
15-19					1 10 10	1 20 20	1 30 30							3	-10	-30	300
20-24			2 18 9	1		1 18 18	2 54 27							6	-9	-54	486
25-29					1 8 8	2 32 16								3	-8	-24	192
30-34		1 14 14	2 14 7	1	6 42 7	2 28 14			1 35 35					13	-7	-91	637
35-39		2 24 12	1 6 6	2		1 12 12								6	-6	-36	216
40-44			1 5 5		1 5 5	3 30 10	3 45 15						1 45 45	9	-5	-45	225
45-49				3	2 8 4	1 8 8	1 12 12							7	-4	-28	112
50-54			3 9 3	1	3 9 3	3 18 6	4 36 9	1 12 12	1 15 15					16	-3	-48	144
55-59		3 12 4	1 2 2	3	2 4 2	4 16 4	2 12 6							14	-2	-28	56
60-64		5 10 2	3 3 1	4	8 8 1		2 6 3							22	-1	-22	22
[illegible]		2	7	4	7	10	6							55	0	-476	
70-74	1 3 3	4 [illegible] 2	6 6 1	14	10 10 1	10 20 2	5 15 3	1 4 4						51	+1	+51	51
75-79	2 12 6	13 52 4	9 18 2	15	12 24 2	14 56 4	8 48 6							73	+2	146	292
80-84	1 9 9	15 90 6	11 33 3	16	10 30 3	11 66 6	2 18 9							68	+3	204	612
85-89	3 36 12	16 128 8	10 40 4	8	6 24 4	6 48 8	4 48 12							53	+4	212	848
90-94		[illegible] 60 10	10 50 5		5 25 5	7 70 10	4 60 15		1 25 25					42	+5	210	1050
95-99		8 96 12	2 12 6	3	2 12 6	1 12 12								21	+6	126	756
100-104		1 14 14	1 7 7											2	+7	14	98
f	7	82	76	28	76	79	46	2	3	0	1	0	1	470		963 Σ=487	6917
d	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9				
fd	-21	-164	-76	[illegible]	+76	158	138	8	15	0	7	0	9	411 Σ=150			
fd²	63	328	76		76	316	414	32	75	0	49	0	81	1510			

+117   −108   ×615   −642

Σ(xy) = −650

Variavel y

$c = \frac{487}{470} \times 5 = 1,036 \times 5 = 5,180$

$M = 67,5 + 5,180 = 72,680$

$\sigma = 5\sqrt{\frac{6917}{470} - 1,036^2} = 5 \times 3,693 = 18,465$

$C.V. = \frac{18,465}{72,680} \times 100 = 25,4$

Variavel x

$c = \frac{150}{470} \times 2 = 0,319 \times 2 = 0,638$

$M = 26 + 0,638 = 26,638$

$\sigma = 2\sqrt{\frac{1510}{470} - 0,319^2} = 2 \times 1,763 = 3,526$

$C.V. = \frac{3,526}{26,638} \times 100 = 13,2$

Coeficiente de correlação

$r = \frac{\frac{-650}{470} - (1,036 \times 0,319)}{18,465 \times 3,526} \times 10 =$

$= \frac{-(1,382 - 0,330484)}{65,107590} \times 10 =$

$= \frac{-1,712484}{65,107590} \times 10 =$

$= -0,026 \times 10 = -0,260$

$\sigma_r = \frac{1 - 0,260^2}{\sqrt{470}} =$

$= \frac{1 - 0,067600}{21,69} =$

$= \frac{0,932400}{21,69} = \pm\ 0,043$

C.R.B. 11-X-40

Guarda Sanitário (1º concurso)

Nivel Mental

Idade = variavel x

Nota = variavel y

	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39	40-41	f	d	fd	fd²
0 - 4		1 / 10 / 10	1 / 5 / 5	1		1 / 10 / 10		3 / 60 / 20	1 / 25 / 25			8	-5	-40	200
5 - 9			3 / 12 / 4	3	2 / 8 / 4	1 / 8 / 8	1 / 12 / 12	3 / 48 / 16				13	-4	-52	208
10-14	1 / 9 / 9		2 / 6 / 3	1	2 / 6 / 3		1 / 9 / 9	1 / 12 / 12 (322)				8	-3	-24	72
15-19	1 / 6 / 6	1 / 40 / 4 (×115)	5 / 10 / 2	5	3 / 6 / 2	1 / 4 / 4	4 / 24 / 6	3 / 24 / 8	2 / 20 / 10	1 / 12 / 12		35	-2	-70	140
20-24	1 / 3 / 3	4 / 8 / 2	6 / 6 / 1	6	2 / 2 / 1	1 / 2 / 2	2 / 6 / 3	2 / 8 / 4	2 / 10 / 5	1 / 6 / 6		27	-1	-27	27
25-29	1	2	11	8	4	1	2	2	3			34	·	-213	
30-34	4 / 12 / 3	3 / 6 / 2	7 / 7 / 1	4	2 / 2 / 1	7 / 14 / 2	9 / 27 / 3			1 / 6 / 6	1 / 7 / 7	38	+1	+38	38
35-39	3 / 18 / 6	6 / 24 / 4	5 / 10 / 2	2	5 / 10 / 2	1 / 4 / 4	1 / 6 / 6	2 / 16 / 8	3 / 30 / 10	1 / 12 / 12		29	+2	58	116
40-44	4 / 36 / 9	6 / 39 / 6 (381)	6 / 18 / 3	2	4 / 12 / 3	2 / 12 / 6	1 / 9 / 9 (×230)	1 / 12 / 12	1 / 15 / 15			26	+3	78	234
45-49	5 / 60 / 12	3 / 24 / 8	4 / 16 / 4	3	3 / 12 / 4	1 / 8 / 8	×	1 / 16 / 16				20	+4	80	320
50-54	1 / 15 / 15		1 / 5 / 5	1								3	+5	15	75
f	21	34	51	36	27	16	21	18	12	4	1	241		269 Σ = 56	1430
d	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7				
fd	-63	-68	-51	[illegible]	27	32	63	72	60	24	7	286 Σ = 103			
fd²	189	136	51		27	64	189	288	300	144	49	1437			

(Σ (xy) = -258)

Variavel y

$c = \frac{56}{241} \times 5 = 0,232 \times 5 = 1,160$

$M = 27,5 + 1,160 = 28,660$

$\sigma = 5\sqrt{\frac{1430}{241} - 0,232^2} = 5 \times 2,424 = 12,120$

$C.V. = \frac{12,120}{28,660} \times 100 = 42,2$

Variavel x

$c = \frac{103}{241} \times 2 = 0,427 \times 2 = 0,854$

$M = 27 + 0,854 = 27,854$

$\sigma = 2\sqrt{\frac{1437}{241} - 0,427^2} = 2 \times 2,404 = 4,808$

$C.V. = \frac{4,808}{27,854} \times 100 = 17,2$

Coeficiente de correlação

$r = \frac{\frac{-258}{241} - (0,232 \times 0,427)}{12,120 \times 4,808} \times 10 =$

$= \frac{-(1,070 - 0,099064)}{58,272960} \times 10 =$

$= \frac{-1,175064}{58,272960} \times 10 =$

$= -0,020 \times 10 = -0,200$

$\sigma_r = \frac{1 - 0,200^2}{\sqrt{241}}$

$= \frac{1 - 0,040000}{15,52} =$

$= \frac{0,960000}{15,52} = \pm 0,061$

C.R.B. 18-XI-40

Estatístico-Auxiliar (2º concurso)

Correlações parciais

Estatística = 1
Matemática = 2
R. Mental = 3

$$r_{12.3} = \frac{0,150 - (0,050 \times 0,150)}{\sqrt{0,997500}\ \sqrt{0,977500}} =$$

$$= \frac{0,150 - 0,007500}{0,998 \times 0,988} =$$

$$= \frac{0,142500}{0,986024} = 0,144$$

$$r_{13.2} = \frac{0,050 - (0,150 \times 0,150)}{\sqrt{0,977500}\ \sqrt{0,977500}} =$$

$$= \frac{0,050 - 0,022500}{0,988 \times 0,988} =$$

$$= \frac{0,027500}{0,977500} = 0,028$$

$$r_{23.1} = \frac{0,150 - (0,150 \times 0,050)}{\sqrt{0,977500}\ \sqrt{0,997500}} =$$

$$= \frac{0,150 - 0,007500}{0,988 \times 0,998} =$$

$$= \frac{0,142500}{0,986024} = 0,144$$

Erros padrões

$$\sigma_{r_{12.3}} = \frac{1 - 0,144^2}{\sqrt{77}} = \frac{1 - 0,020736}{8,77} = \frac{0,979264}{8,77} =$$

$$= 0,111$$

$$\sigma_{r_{13.2}} = \frac{1 - 0,028^2}{\sqrt{77}} = \frac{1 - 0,000784}{8,77} = \frac{0,999216}{8,77} =$$

$$= 0,113$$

$$\sigma_{r_{23.1}} = \frac{1 - 0,144^2}{\sqrt{77}} = \frac{1 - 0,020736}{8,77} = \frac{0,979264}{8,77} =$$

$$= 0,111$$

Estatístico - Auxiliar

(2º concurso)

Candidatos aprovados

Correlações simples

Variaveis	N	r	σ_r
Est. x Mat.	77	0,150	0,111
N.M. x Mat.	77	0,150	0,111
N.M. x Est.	77	-0,050	0,113
N.M. x Port.	77	0,125	0,112
Mat. x Port.	77	0,100	0,112
Est. x Port.	77	0,225	0,108

Correlações parciais

Variaveis	r	σ_r
Est. x Mat.	0,144	0,111
N.M. x Est.	0,028	0,113
Mat. x N.M.	0,144	0,111

C.R.B.

Estatístico-Auxiliar (2º concurso)

Candidatos aprovados

Português = variável x

	40-44	45-49	50-54	55-59	60-64	65-69	70-74	74-79	f	d	fd	fd²
60-64	1 8 8	2 12 6	3 12		23	7 14 2			42	-2	-84	168
65-69		1 3 3		1 1 1	8	2 2 1			12	-1	-12	12
70-74			1	1	8	1	1		12	0	-96	
75-79					5	1 1			6	+1	+6	6
80-84					1		4 4	6 6	3	+2	6	12
85-89					2				2	+3	6	18
f	1	3	4	2	53	11	2	1	N=77		18 ≈ -78	216
d	-4	-3	-2	-1	0	+1	+2	+3				
fd	-4	-9	-8	-2	52	+11	4	3	18 ≈ -5			
fd²	16	27	16	2		11	8	9	89			

Σ(xy) = 31

Estatística - variável y

$\sigma_x = \frac{1 - 0,225^2}{\sqrt{77}} = \frac{1 - 0,050625}{8,77} =$

$= \frac{0,949375}{8,77} = \pm 0,108$

Variável y

$c = \frac{-78}{77} \times 5 = -1,012 \times 5 = -5,060$

$M = 72,5 - 5,060 = 67,440$

$\sigma = 5\sqrt{\frac{216}{77} - 1,012^2} = 5 \times 1,334 = 6,670$

$C.V. = \frac{6,670}{67,440} \times 100 = 9,8$

Variável x

$c = \frac{-5}{77} \times 5 = -0,064 \times 5 = -0,320$

$M = 62,5 - 0,320 = 62,180$

$\sigma = 5\sqrt{\frac{89}{77} - 0,064^2} = 5 \times 1,072 = 5,360$

$C.V. = \frac{5,360}{62,180} \times 100 = 8,6$

Coeficiente de correlação

$r = \frac{\frac{31}{77} - (-1,012 \times 0,064)}{6,670 \times 5,360} \times 25 =$

$= \frac{0,402 - 0,064768}{35,751200} \times 25 =$

$= \frac{0,337232}{35,751200} \times 25 =$

$= 0,009 \times 25 = 0,225$

C.B.

Estatística - Auxiliar (2º concurso)

Candidatos aprovados:

Português = variável x

Matemática - variável y

	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	f	d	fd	fd^2
60-64	12	18	12		12				34	-3	-102	306
65-69		6	2		6	4			11	-2	-22	44
70-74				1	2				7	-1	-7	7
75-79					1			1	12	0	-131	
80-84						2			5	+1	+5	5
85-89									2	+2	4	8
90-94			6		3				5	+3	15	45
95-100									1	+4	4	16
f	1	3	4	2	11	2	1		N=77		28 z=103	431
d	-4	-3	-2	-1	+1	+2	+3					
fd	-4	-9	-8	-2	+11	4	3		18 z=5			
fd^2	16	27	16	2	11	8	9		89			

$\Sigma(xy) = 26$

$\sigma_r = \frac{1 - 0,100^2}{\sqrt{77}} = \frac{1 - 0,010}{8,77} = \frac{0,990}{8,77} = \pm 0,112$

Variável y

$c = \frac{-103}{77} \times 5 = -1,337 \times 5 = -6,685$

$M = 77,5 - 6,685 = 70,815$

$\sigma = 5\sqrt{\frac{431}{77} - 1,337^2} = 5 \times 1,951 = 9,755$

$C.V. = \frac{9,755}{70,815} \times 100 = 13,7$

Variável x

$c = \frac{-5}{77} \times 5 = -0,064 \times 5 = -0,320$

$M = 62,5 - 0,320 = 62,180$

$\sigma = 5\sqrt{\frac{89}{77} - 0,064^2} = 5 \times 1,072 = 5,360$

$C.V. = \frac{5,360}{62,180} \times 100 = 8,6$

Coeficiente de correlação

$r = \frac{\frac{26}{77} - (-1,337 \times 0,064)}{9,755 \times 5,360} \times 25 =$

$= \frac{0,337 - 0,085568}{52,286800} \times 25 =$

$= \frac{0,251432}{52,286800} \times 25 =$

$= 0,004 \times 25 = \underline{0,100}$

C.R.B.

Estatístico - Auxiliar (2º concurso)

Candidatos aprovados

Português = variável x

Nível mental = variável y

	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	f	d	fd	fd²
55-59			1 10 10						1	-5	-5	25
60-64		1 12 12			1		1 8 8		3	-4	-12	48
65-69			29		4			13	4	-3	-12	36
70-74		X			4	1 2 2			5	-2	-10	20
75-79	1 4 4		1 2 2	1 1 1	4			1 3 3	8	-1	-8	8
80-84		1	1	1	13				22		-47	
85-89		1 3 3	1 2 2			3 1			14	+1	+14	14
90-94		15			13		1 4 4	10	14	+2	28	56
95-100					2	1 3 3	X		6	+3	18	54
f	1	3	4	2	2	11	2	1	N=77		60 =13	261
d	-4	-3	-2	-1	0	+1	+2	+3				
fd	-4	-9	-8	-2	0	+11	4	3	18 =-5			
fd²	16	27	16	2	0	11	8	9	89			

$\sigma = \frac{1-0,150}{\sqrt{77}} = \frac{1-0,015625}{8,77} = \varepsilon=(xy) = 21$

$= \frac{0,984375}{8,77} = \pm 0,112$

Variável y

$c = \frac{13}{77} \times 5 = 0,168 \times 5 = 0,840$

$M = 82,5 + 0,840 = 83,340$

$\sigma = 5\sqrt{\frac{261}{77} - 0,168^2} = 5 \times 1,833 = 9,165$

$C.V. = \frac{9,165}{83,340} \times 100 = 10,9$

Variável x

$c = \frac{-5}{77} \times 5 = -0,064 \times 5 = 0,320$

$M = 62,5 - 0,320 = 62,180$

$\sigma = 5\sqrt{\frac{89}{77} - 0,064^2} = 5 \times 1,072 = 5,360$

$C.V. = \frac{5,360}{62,180} \times 100 = 8,6$

Coeficiente de correlação

$r = \frac{\frac{21}{77} - (0,168 \times 0,064)}{9,165 \times 5,360} \times 25 =$

$= \frac{0,272 + 0,010752}{49,124400} \times 25 =$

$= \frac{0,282752}{49,124400} \times 25 =$

$= 0,005 \times 25 = \underline{0,125}$

C.R.B.

Estatístico-Auxiliar (2º concurso)

<u>Candidatos aprovados</u>

Estatística = variavel x

M. Mental = variavel y

	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
55-59	1 10 10								1	-5	-5	25
60-64	1 8 8		1		1 8 8				3	-4	-12	48
65-69	2 12 6	1 3 3		1 3 3					4	-3	-12	36
70-74	3 12 4	1 2 2	1						5	-2	-10	20
75-79	1 2 2	3 3 1	3		1 2 2				8	-1	-8	8
21-24	16	2		3		1			22	·	-47	
85-89	7 14 2	2 2 1	4			1 3 3			14	+1	+14	14
90-94	6 24 4	3 6 2	3	1 2 2	1 4 4				14	+2	28	56
95-100	5 30 6			1 3 3					6	+3	18	54
f	42	12		6	3	2	–	–	N = 77		60 Σ = 13	261
d	-2	-1	·	+1	+2	+3	–	–				
fd	-84	-12	36	+6	6	6	–	–	18 Σ = -78			
fd²	168	12		6	12	18	–	–	216			

- 13 (diagonal), x 12 (diagonal)

$\Sigma (xy) = -25$

$\sigma_r = \frac{1 - 0{,}050^2}{\sqrt{77}} = \frac{1 - 0{,}002500}{8{,}77} =$

$= \frac{0{,}997500}{8{,}77} = \pm 0{,}113$

Variavel y

$c = \frac{13}{77} \times 5 = 0{,}168 \times 5 = 0{,}840$

$M = 82{,}5 + 0{,}840 = 83{,}340$

$\sigma = 5\sqrt{\frac{261}{77} - 0{,}168^2} = 5 \times 1{,}833 = 9{,}165$

$C.V. = \frac{9{,}165}{83{,}340} \times 100 = 10{,}9$

Variavel x

$c = \frac{-78}{77} \times 5 = -1{,}012 \times 5 = -5{,}060$

$M = 72{,}5 - 5{,}060 = 67{,}440$

$\sigma = 5\sqrt{\frac{216}{77} - 1{,}012^2} = 5 \times 1{,}334 = 6{,}670$

$C.V. = \frac{6{,}670}{67{,}440} \times 100 = 9{,}8$

<u>Coeficiente de correlação</u>

$r = \frac{\frac{-25}{77} - (0{,}168 \times -1{,}012)}{9{,}165 \times 6{,}670} \times 25 =$

$= \frac{-0{,}324 + 0{,}170016}{61{,}130550} \times 25 =$

$= \frac{-0{,}153984}{61{,}130550} \times 25 =$

$= -0{,}002 \times 25 = \underline{-0{,}050}$

C.R.B.

Estatístico - Auxiliar (2º concurso)

Candidatos aprovados

Matemática - variável x

	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
55-59	15								1	-5	-5	25
60-64	12	16							3	-4	-12	48
65-69	9				3				4	-3	-12	36
70-74	12	8	2						5	-2	-10	20
75-79	12		2						8	-1	-8	8
80-84									22	·	-47	
85-89	18		1		1	4	6		14	+1	+14	14
90-94	54	93	2		4		36		14	+2	28	56
95-100	28				3	X	18		6	+3	18	54
f	34	11	7		5	2	5	1	N=77		60	261
d	-3	-2	-1	0	+1	+2	+3	+4			z=13	
fd	-102	-22	-7		+5	4	15	4	28			
fd²	306	44	7		5	8	45	16	z=-103			

M. Mental, variável y

$\sigma_r = \frac{1 - 0,150^2}{\sqrt{77}} = \frac{1 - 0,022500}{8,77} =$

$= \frac{0,977500}{8,77} = \pm 0,111$

$\Sigma(xy) = 28$

Variável y

$c = \frac{13}{77} \times 5 = 0,168 \times 5 = 0,840$

$M = 82,5 + 0,840 = 83,340$

$\sigma = 5\sqrt{\frac{261}{77} - 0,168^2} = 5 \times 1,833 = 9,165$

$c.v. = \frac{9,165}{83,340} \times 100 = 10,9$

Variável x

$c = \frac{-103}{77} \times 5 = -1,337 \times 5 = -6,685$

$M = 77,5 - 6,685 = 70,815$

$\sigma = 5\sqrt{\frac{431}{77} - 1,337^2} = 5 \times 1,951 = 9,755$

$c.v. = \frac{9,755}{70,815} \times 100 = 13,7$

Coeficiente de correlação

$r = \frac{\frac{28}{77} - (0,168 \times 1,337)}{9,165 \times 9,755} \times 25 =$

$= \frac{0,363 + 0,224616}{89,404575} \times 25 =$

$= \frac{0,587616}{89,404575} \times 25 =$

$= 0,006 \times 25 = \underline{0,150}$

C.R.B.

Estatístico - Auxiliar (2º concurso)

Candidatos aprovados

Matemática = variável x

Estatística = variável y

	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
60-64	22 132 6	6 24 2	3 6 1	5	1 2 2	1 4 4	3 18 6	1 8 8	42	-2	-84	168
65-69	4 12 3	2 4 2	2 1	3	1 1 1				12	-1	-12	12
70-74	6		2	1	2		1		12	0	-96	
75-79	1 3 3	1 2 2		2	1 1		1 3 3		6	+1	+6	6
80-84	1 6 6	1 2 2		1					3	+2	6	12
85-89	/	1 6 6				1 6 6			2	+3	6	18
f	34	11	7	10	5	2	5	1	N=77		18 -78	216
d	-3	-2	-1	0	+1	+2	+3	+4				
fd	102	22	7	130	5	4	15	4	28 -103			
fd²	306	44	7		5	8	45	16	431			

Σ(xy) = 136

$\sigma_r = \frac{1 - 0,150^2}{\sqrt{77}} = \frac{1 - 0,022500}{8,77} = \frac{0,977500}{8,77} = \pm 0,111$

Variável y

$c = \frac{-78}{77} \times 5 = -1,012 \times 5 = -5,060$

$M = 72,5 - 5,060 = 67,440$

$\sigma = 5\sqrt{\frac{216}{77} - 1,012^2} = 5 \times 1,334 = 6,670$

$C.V. = \frac{6,670}{67,440} \times 100 = 9,8$

Variável x

$c = \frac{-103}{77} \times 5 = -1,337 \times 5 = -6,685$

$M = 77,5 - 6,685 = 70,815$

$\sigma = 5\sqrt{\frac{431}{77} - 1,337^2} = 5 \times 1,951 = 9,755$

$C.V. = \frac{9,755}{70,815} \times 100 = 13,7$

Coeficiente de correlação

$r = \frac{\frac{136}{77} - (-1,012 \times -1,337)}{6,67 - 0 \times 9,755} \times 25 =$

$= \frac{1,766 - 1,353044}{65,065850} \times 25 =$

$= \frac{0,412956}{65,065850} \times 25 =$

$= 0,006 \times 25 = 0,150$

C.R.B.

Estatístico-Auxiliar (1º concurso)

4ª Parte = variavel x

5ª Parte = variavel y	0-1	2-3	4-5	6-7	8-9	10-11	f	d	fd	fd²
0-1	10 90 9	3 18 6	3 9 3	10	4 12 2		30	-3	-90	270
2-3	2 12 6	1 4 4	3 6 2	4	2 4 2		15	-2	-30	60
4-5	3 9 3	4 8 2	5 5 1	18	20 1 1		50	-1	-50	50
6-7	4	6	9	21	34	5	49	0	-170	
8-9	3 9 3	1 2 2	3 3 1	35	51 1	10 2	98	+1	+98	98
10-11	1 6 6	2 8 4	5 10 2	23	51 2	36 4	91	+2	+182	364
12-13				2	18 3	12 6	17	+3	51	153
14-15					4 4		1	+4	4	16
f	23	17	28	116	176	21	381		335 =165	1011
d	-3	-2	-1	0	+1	+2				
fd	-69	-34	-28	0	+176	+42	318 =87			
fd²	207	68	28		176	84	563			

Σ(xy) = 341

Variavel y

$c = \frac{165}{381} \times 2 = 0,433 \times 2 = 0,866$

$M = 7 + 0,866 = 7,866$

$\sigma = 2\sqrt{\frac{1011}{381} - 0,433^2} = 2 \times 1,570 = 3,140$

$C.V. = \frac{3,140}{7,866} \times 100 = 39,9$

Variavel x

$c = \frac{87}{381} \times 2 = 0,228 \times 2 = 0,456$

$M = 7 + 0,456 = 7,456$

$\sigma = 2\sqrt{\frac{563}{381} - 0,228^2} = 2 \times 1,193 = 2,386$

$C.V. = \frac{2,386}{7,456} \times 100 = 32$

Coeficiente de correlação

$$r = \frac{\frac{341}{381} - (0,433 \times 0,228)}{3,140 \times 2,386} \times 4 =$$

$$= \frac{0,895 - 0,098724}{7,492040} \times 4 =$$

$$= \frac{0,796276}{7,492040} \times 4 =$$

$$= 0,106 \times 4 = 0,424$$

$$\sigma_r = \frac{1 - 0,424^2}{\sqrt{381}} =$$

$$= \frac{1 - 0,179776}{19,51} =$$

$$= \frac{0,820224}{19,51} = 0,042$$

C.R.B 23-4-40

Estatistico-Ansiliar (1º concurso)

3ª Parte = variavel x

	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	f	d	fd	fd²
0-1	8 168 21		2 30 15		2 18 9		1 3 3	1		5 30 6	11 99 9				30	-3	-90	270
2-3	1 14 14	2 24 12		1 18 8		1 4 4	1 2 2		2 4 2	2 8 4	5 30 6				15	-2	-30	60
4-5	10 70 7	3 18 6		1 4 4	2 6 3	2 4 2	2 2 1	3	3 3 1	11 22 2	13 39 3				50	-1	-50	50
6-7	12	5	3	5	4			2	7	12	29				79	·	-170	
8-9	10 70 7	3 18 6	3 15 5	2 8 4	1 3 3	4 8 2	2 2 1	4	11 11 1	10 20 2	47 141 3			1 6 6	98	+1	+98	98
10-11	2 28 14	2 24 12	1 10 10	5 40 8	1 6 6	3 12 4	4 8 2	1	4 8 2	14 56 4	54 324 6				91	+2	182	364
12-13	1 21 21		1 15 15							3 18 6	12 108 9				17	+3	51	153
14-15		1 24 24													1	+4	4	16
f	44	16	10	14	10	10	10	11	27	57	171	-	-	1	381		335	1011
d	-7	-6	-5	+4	-3	-2	-1	·	+1	+2	+3	-	-	+6				
fd	-308	-96	-50	-56	-30	-20	-10	-570	+27	114	513	-	-	6	660			
fd²	2156	576	250	224	90	40	10		27	228	1539	-	-	36	5176			

Σ = (xy) = 520

Variavel y

$c = \frac{165}{381} \times 2 = 0,433 \times 2 = 0,866$

$M = 7 + 0,866 = 7866$

$\sigma = 2\sqrt{\frac{1011}{381} - 0,433^2} = 2 \times 1,570 = 3,140$

$C.V. = \frac{3,140}{7,866} \times 100 = 39,9$

Variavel x

$c = \frac{90}{381} \times 3 = 0,236 \times 3 = 0,708$

$M = 22,5 + 0,708 = 23,208$

$\sigma = 3\sqrt{\frac{5176}{381} - 0,236^2} = 3 \times 3,678 = 11,034$

$C.V. = \frac{11,034}{23,208} \times 100 = 47,5$

Coeficiente de correlação

$r = \frac{\frac{520}{381} - (0,433 \times 0,236)}{3,140 \times 11,034} \times 6 =$

$= \frac{1,364 - 0,102188}{34,646760} \times 6 =$

$= \frac{1,261812}{34,646760} \times 6 =$

$= 0,036 \times 6 = 0,216$

$\sigma_r = \frac{1 - 0,216^2}{\sqrt{381}} =$

$= \frac{1 - 0,046656}{19,51} =$

$= \frac{0,953344}{19,51} = \pm 0,048$

C.R.B. 19-IV-40

Estatístico-Auxiliar (1º concurso)

4ª Parte = variavel x

	0-1	2-3	4-5	6-7	8-9	10-11	f	d	fd	fd²
0-2	11 231 31	2 28 14	4 28 7	15	11 77 7	1 14 14	44	-7	-308	2156
3-5			3 18 6	7	6 36 6		16	-6	-96	576
6-8	3 45 15			3	4 20 5		10	-5	-50	250
9-11	1 12 12	2 16 8	2 8 4	4	5 20 5		14	-4	-56	224
12-14	X 43 14	4 24 6	1 3 3	3	2 6 3		10	-3	-30	90
15-17	2 12 6		1 2 2	4	3 6 2		10	-2	-20	40
18-20	1 3 3	1 2 2	2 2 1	4	2 2 1		10	-1	-10	10
21-23		1	0	5	3		11	0	-570	
24-26	2 6 3	1	5 5	3	12 12	1 2 2	27	+1	+27	27
27-29	3 18 6	2 8 4	3 6 2	18	30 60 10	1 4 4	57	+2	114	228
30-32		5 30 6	5 15 3	26	97 291	18 108 6	171	+3	513	1539
33-35	88				X 485		-	-	-	-
36-38	1						-	-	-	-
39-41					1 6 6		1	+6	6	36
Σ	23	17	28	116	176	21	381		660 x=90	6176
d	-3	-2	-1	0	+1	+2				
Σd	-69	-34	-28	0	+176	42	218 x=87			
Σd²	207	68	28		176	84	563			

3ª Parte = variavel y

Variavel y

$$c = \frac{90}{381} \times 3 = 0,236 \times 3 = 0,708$$

$$M = 22,5 + 0,708 = 23,208$$

$$\sigma = 3\sqrt{\frac{5176}{381} - 0,236^2} = 3 \times 3,678 = 11,034$$

$$c.v. = \frac{11,034}{23,208} \times 100 = 47,5$$

Variavel x

$$c = \frac{87}{381} \times 2 = 0,228 \times 2 = 0,456$$

$$M = 7 + 0,456 = 7,456$$

$$\sigma = 2\sqrt{\frac{563}{381} - 0,228^2} = 2 \times 1,193 = 2,386$$

$$c.v. = \frac{2,386}{7,456} \times 100 = 32$$

Coeficiente de variação

$$r = \frac{\frac{648}{381} - (0,236 \times 0,228)}{11,034 \times 2,386} \times 6 =$$

$$= \frac{1700 - 0053808}{26,327124} \times 6 =$$

$$= \frac{1,646192}{26,327124} \times 6 =$$

$$= 0,062 \times 6 = \underline{0,372}$$

$$\sigma_r = \frac{1 - 0,372^2}{\sqrt{381}} =$$

$$= \frac{1 - 0,138384}{19,51} =$$

$$= \frac{0,861616}{19,51} = 0,044$$

C.R.B. 16-IV-40

Estatístico Auxiliar (1º concurso)

2ª Parte - variável x

5ª Parte - variável y	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29	30-31	f	d	fd	fd²
0-1	4 60 15	5 60 12	3 27 9	2 12 6	5 15 3	4	3 9 3	1 6 6	2 18 9	1 12 12							30	-3	-90	270
2-3	2 20 10	2 16 8		2 8 4	2 4 2	3	1 2 2	1 4 4	1 6 6	1 8 8							15	-2	-30	60
4-5	2 10 5	4 16 4	3 9 3	9 18 2	10 10 1	10	4 4 1	5 10 2	2 6 3							1 10 10	50	-1	-50	50
6-7	3	8	8	7	14	10	14	8	5	2							79	0	-170	
8-9	2 10 5	3 12 4	8 24 3	13 26 2	11 11 1	11	16 16 1	22 44 2	6 18 3	3 12 4							98	+1	+98	98
10-11	2 20 10	2 16 8	4 24 6	8 32 4	8 16 2	14	14 28 2	20 80 4	12 72 6	7 56 8							91	+2	182	364
12-13				1 6 6	4 12 3	2	1 3 3	4 24 6	2 18 9	3 36 12							17	+3	51	153
14-15				1 8 8													1	+4	4	16
f	15	24	26	43	54	57	53	61	30	17	-	-	-	-	-	1	381		335 = 165	1011
d	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	-	-	-	-	-	+10				
fd	-75	-96	-78	-86	-54	-389	+53	122	90	68	-	-	-	-	-	10	343 = -46			
fd²	375	384	234	172	54		53	244	270	272	-	-	-	-	-	100	2158			

$\Sigma = (xy) = 380$

Variável y

$c = \frac{145}{381} \times 2 = 0,433 \times 2 = 0,866$

$M = 7 + 0,866 = 7,866$

$\sigma = 2\sqrt{\frac{1011}{381} - 0,433^2} = 2 \times 1,570 = 3,140$

$C.V. = \frac{3,140}{7,866} \times 100 = 39,9$

Variável x

$c = \frac{-46}{381} \times 2 = -0,120 \times 2 = -0,240$

$M = 11 - 0,240 = 10,760$

$\sigma = 2\sqrt{\frac{2158}{381} - 0,120^2} = 2 \times 2,376 = 4,752$

$C.V. = \frac{4,752}{10,760} \times 100 = 44,1$

Coeficiente de correlação

$r = \frac{\frac{380}{381} - (0,433 \times -0,120)}{3,140 \times 4,752} \times 4 =$

$= \frac{0,994 + 0,051960}{14,921280} \times 4 =$

$= \frac{1,048960}{14,921280} \times 4 =$

$= 0,070 \times 4 = 0,280$

$\sigma_r = \frac{1 - 0,280^2}{\sqrt{381}} =$

$= \frac{1 - 0,078400}{19,51} =$

$= \frac{0,921600}{19,51} = \pm 0,047$

C.R.B. 10-IV-40

Estatísticos - Auxiliar (1º Concurso)

2ª Parte = variável x

	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29	30-31	f	d	fd	fd²
0-1	3 45 15	5 60 12	3 27 9	4 24 6	4 12 3	2		1 6 6	1 9 9								23	-3	-69	207
2-3	2 20 10	3 24 8	1 6 6	2 8 4	5 10 2		3 6 2			1 8 8							17	-2	-34	68
4-5	3 15 5	2 8 4	3 9 3	4 14 2	6 6 1	3	1 1 1	2 4 2	1 3 3								28	-1	-28	28
6-7	6	10	13	15	16	23	15	12	4	2							116	•	-131	
8-9	1 5 5	4 16 4	6 18 3	14 28 2	23 23 1	37	31 1	43 86 2	16 48 3	10 40 4						1 10 10	176	+1	+176	176
10-11				1 4 4		2	3 6 3	3 12 4	8 48 6	4 32 8							21	+2	42	84
f	15	24	26	43	54	57	53	61	30	17	-	-	-	-	-	1	381		218 -87	563
d	-5	-4	-3	-2	-1	•	+1	+2	+3	+4	-	-	-	-	-	+10				
fd	-75	-96	-78	-86	-54	-389	+53	122	90	68	-	-	-	-	-	10	343 -46			
fd²	375	384	234	172	54		53	244	270	272	-	-	-	-	-	100	2158			

Σ = (xy) = 470

Variável y

c = $\frac{87}{381} \times 2 = 0,228 \times 2 = 0,456$

M = 7 - 0,456 = 7,456

σ = $2\sqrt{\frac{563}{381} - 0,228^2} = 2 \times 1,193 = 2,386$

C.V. = $\frac{2,386}{7,456} \times 100 = 32$

Variável x

c = $\frac{-46}{381} \times 2 = -0,12012 = -0,240$

M = 11 - 0,240 = 10,760

σ = $2\sqrt{\frac{2158}{381} - 0,120^2} = 2 \times 2,376 = 4,752$

C.V. = $\frac{4,752}{10,760} \times 100 = 44,1$

Coeficiente de correlação

$$n = \frac{\frac{470}{381} - (0,228 \times -0,120)}{2,386 \times 4,752} \times 4 =$$

$$= \frac{1,233 + 0,027360}{11,338272} \times 4$$

$$= \frac{1,260360}{11,338272} \times 4 =$$

$$= 0,111 \times 4 = 0,444$$

$$\sigma_n = \frac{1 - 0,444^2}{\sqrt{381}} =$$

$$= \frac{1 - 0,197136}{19,51} =$$

$$= \frac{0,802864}{19,51} = \pm 0,041$$

C.R.B. 2-IV-40

Estatístico - Auxiliar (1º concurso)

2ª Parte - variável x

	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29	30-31	fi	d	fd	fd²
0-2	3 105 35	7 196 28	8 168 21	8 112 14	6 42 7	4	4 28 7	1 14 14	2 42 21	1 28 28							44	-7	-308	2156
3-5		2 48 24		2 24 12	3 18 6	3.	4 24 6	1 12 12								1 60 60	16	-6	-96	576
6-8	1 25 25	1 20 20	1 15 15	2 20 10	4 20 5	1											10	-5	-50	250
9-11	2 40 20	1 16 16	2 24 12	2 16 8	2 8 4	3	1 4 4	1 8 8									14	-4	-56	224
12-14	1 15 15	2 24 12	2 18 9	1 6 6	1 3 3	1	1 3 3	1 6 6									10	-3	-30	90
15-17		1 8 8	2 12 6	1 4 4		6											10	-2	-20	40
18-20		1 4 4	2 6 3	3 6 2	1 1 1	1	2 2 1										10	-1	-10	10
21-23		1	1	3	1	1	3		1								11	·	-570	
24-26	1 5 5	1 4 4	1 3 3	4 8 2	3 3 1	4	4 4 1	7 14 2	1 3 3	1 4 4							27	+1	+27	27
27-29	2 20 10	1 8 8	1 6 6	7 28 4	15 30 3	9	11 22 2	7 28 4	4 24 6								57	+2	114	228
30-32	5 75 15	6 72 12	6 54 9	10 60 6	18 54 3	21	23 69 3	42 252 6	22 198 9	15 180 10							171	+3	513	1539
33-35																	-	-	-	-
36-38																	-	-	-	-
39-41								1 12 13									1	+6	6	36
Σ	15	21	26	43	64	67	53	61	30	17	-	-	-	-	-	1	381		660 Σ=90	5176
d	-5	-4	-3	-2	-1	·	+1	+2	+3	+4	-	-	-	-	-	+10				
Σd	-75	-96	-78	-86	-64	-389	53	122	90	68	-	-	-	-	-	10	343 Σ=-46			
Σd²	375	384	234	172	64		53	244	270	272	-	-	-	-	-	100	2158			

3ª parte = variável y

$c = \frac{30}{381} \times 3 = 0,236 \times 3 = 0,708$

$M = 22,5 + 0,708 + 23,208$

$\sigma = 3\sqrt{\frac{5176}{381} - 0,236^2} = 3 \times 3,678 = 11,034$

$C.V. = \frac{11,034}{23,208} \times 100 = 47,5$

Variável x

$c = \frac{-46}{381} \times 2 = -0,120 \times 2 = -0,240$

$M = 11 - 0,240 = 10,760$

$\sigma = 2\sqrt{\frac{2158}{381} - 0,120^2} = 2 \times 1376 = 7,752$

$C.V. = \frac{4,752}{10,760} \times 100 = 44,1$

Coeficiente de correlação

$r = \frac{\frac{2073}{381} - (0,236 \times -0,120)}{11,034 \times 4,752} \times 6 =$

$= \frac{5,440 + 0,028320}{52,433568} \times 6 =$

$= \frac{5,468320}{52,433568} \times 6 =$

$= 0,104 \times 6 = 0,624$

$\sigma_r = \frac{1 - 0,624^2}{\sqrt{381}} =$

$= \frac{1 - 0,389376}{19,51} =$

$= \frac{0,610624}{19,51} = \pm 0,030$

C.R.B. 29-III-40

Estatístico-Auxiliar (1º concurso)

5ª Parte - variavel x

	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	f	d	fd	fd²
0-1	60 (15)	10 (10)	40 (5)		10 (5)	20 (10)			20	-5	-100	500
2-3	72 (12)	16 (8)	32 (4)		24 (4)	16 (8)			32	-4	-128	512
4-5	45 (9)	6 (6)	6 (3)		15 (3)	6			19	-3	-57	171
6-7		8 (4)	8 (2)						11	-2	-22	44
8-9	12 (3)		5 (1)		6 (1)	4 (2)	3 (3)	4 (4)	25	-1	-25	25
10-11						6			34	0	-332	
12-13	3 (3)	6 (2)	4 (1)		13 (1)	22 (2)	3 (3)		43	+1	+43	43
14-15	12 (6)	12 (6)	4 (2)		36 (2)	80 (4)	6 (6)		60	+2	120	240
16-17	18 (9)	6 (6)	18 (3)		54 (3)	114 (6)	54 (9)		58	+3	174	522
18-19	24 (12)	16 (8)	20 (4)		72 (4)	152 (8)	60 (12)		62	+4	248	992
20-21	15 (15)				20 (5)	90 (10)	30 (15)		17	+5	85	425
Σ	30	15	50	42	38	21	14	1	381		670 = 338	3474
d	+3	+2	+1	0	+1	+2	+3	+4				
fd	-90	-30	-50	-140	98	182	51	4	335 = 165			
fd²	270	60	50		98	364	153	16	1011			

Σ = (xy) = 860

Variavel y

$c = \frac{338}{381} \times 2 = 0,887 \times 2 = 1,774$

$M = 11 + 1,774 = 12,774$

$\sigma = 2\sqrt{\frac{3474}{381} - 0,887^2} = 2 \times 2,886 = 5,772$

$C.V. = \frac{5,772}{12,774} \times 100 = 45,1$

Variavel x

$c = \frac{165}{381} \times 2 = 0,433 \times 2 = 0,866$

$M = 7 + 0,866 = 7,866$

$\sigma = 2\sqrt{\frac{1011}{381} - 0,433^2} = 2 \times 1,570 = 3,140$

$C.V. = \frac{3,140}{7,866} \times 100 = 39,9$

Coeficiente de correlação

$$r = \frac{\frac{860}{381} - (0,887 \times 0,433)}{5,772 \times 3,140} \times 4 =$$

$$= \frac{2,257 - 0,384071}{18,124080} \times 4 =$$

$$= \frac{1,872929}{18,124080} \times 4 =$$

$$= 0,061 \times 4 = \underline{0,103}$$

$$\sigma_r = \frac{1 - 0,103^2}{\sqrt{381}} =$$

$$= \frac{1 - 0,010609}{19,51} =$$

$$= \frac{0,989391}{19,51} = 0,050$$

C.R.B. 27-III-40

Estatístico-Auxiliar (1º concurso)

4ª Parte = variavel x

1ª Parte = variavel y	0-1	2-3	4-5	6-7	8-9	10-11	f	d	fd	fd^2
0-1	4 60 15	3 30 10	1 5 5	7	5 25 5		20	-5	-100	500
2-3	5 60 12	4 32 8	2 8 4	12	9 36 4		32	-4	-128	512
4-5	3 27 9	2 12 6	2 6 3	5	6 18 3	1 6 6	19	-3	-57	171
6-7	1 6 6	4 12 3	3 6 2	3	3 6 2		11	-2	-22	44
8-9	3 9 3	2 4 2	4 4 1	7	9 9 1		25	-1	-25	25
10-11	2	1	5	14	11	1	34	0	-332	
12-13	2 6 3		5 5 1	13	17 17 1		43	+1	+43	43
14-15	2 12 6	3 12 4	4 8 2	16	34 68 2	1 4 4	60	+2	120	240
16-17		1 6 6	1 3 3	16	33 105 3	30 6	58	+3	174	522
18-19	1 12 12		1 4 4	20	38 152 4	12 96 8	62	+4	248	992
20-21				25	9 45 5	1 10 10	17	+5	85	425
f	22	17	28	116	176	21	381		670 =1338	3474
d	-3	-2	-1	0	+1	+2				
fd	-69	-34	-28	+121	+176	42	218 =887			
fd^2	207	68	28		176	84	563			

$\Sigma = (xy) = 632$

Variavel y

$c = \frac{338}{381} \times 2 = 0,887 \times 2 = 1,774$

$M = 11 + 1,774 = 12,774$

$\sigma = 2\sqrt{\frac{3474}{381} - 0,887^2} = 2 \times 2,886 = 5,772$

$C.V. = \frac{5,772}{12,774} \times 100 = 45,1$

Variavel x

$c = \frac{87}{381} \times 2 = 0,228 \times 2 = 0,456$

$M = 7 + 0,456 = 7,456$

$\sigma = 2\sqrt{\frac{563}{381} - 0,228^2} = 2 \times 1,193 = 2,386$

$C.V. = \frac{2,386}{7,456} \times 100 = 32$

Coeficiente de correlação

$$r = \frac{\frac{632}{381} - (0,887 \times 0,228)}{5,772 \times 2,386} \times 4 =$$

$$= \frac{1,658 - 0,202236}{13,771992} \times 4 =$$

$$= \frac{1,455764}{13,771992} \times 4 =$$

$$= 0,105 \times 4 = 0,420$$

$$\sigma_r = \frac{1 - 0,420^2}{\sqrt{381}} =$$

$$= \frac{1 - 0,176400}{19,51} =$$

$$= \frac{0,823600}{19,51} = \pm 0,042$$

C.R.B. 25-III-40

Estatístico-Auxiliar (1º concurso)

3ª Parte = variavel x

2ª Parte = variavel y	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	f	d	fd	fd²
0-2	13 273 21	2 36 18	1 15 15	1 12 12	1 9 9	1 6 6	2 6 3		1 3 3	11 66 6	10 90 9				43	-3	-129	387
3-5	6 84 14		2 20 10	3 24 8	3 18 6			2		4 16 4	8 48 6				28	-2	-56	112
6-8	1 7 7	1 6 6	X	1 4 4	2 6 3		2 2 1	1	3 3 1	3 6 2	5 15 3				19	-1	-19	19
9-11	11	3	2	1	1	1	3	2	5	10	12				51	·	-204	
12-14	7 49 7	4 24 6	4 20 5	4 16 4	1 3 3	1 2 2	2 2 1	3	9 9 1	9 18 2	24 72 3				68	+1	+68	68
15-17	4 56 14	5 60 12	1 10 10	3 24 8	1 6 6	3 12 4	1 2 2	2	7 14 2	13 52 4	53 318 6				93	+2	186	372
18-20	2 42 21	1 18 18		1 12 12	1 9 9	4 24 6		1	2 6 3	7 42 6	59 531 9			1 18 18	79	+3	237	711
f	44	16	10	14	10	10	10	11	27	57	171	-	-	1	N=381		491 Σ=287	1669
d	-7	-6	-5	-4	-3	-2	-1	·	+1	+2	+3	-	-	+6				
fd	-308	-96	-50	-56	-30	-20	-10	-570	+27	114	513	-	-	6	660 Σ=90			
fd²	2156	576	250	224	90	40	10		27	228	1539	-	-	36	5176			

Σ=(xy) = 9113

Variavel y

$c = \frac{287}{381} \times 3 = 0,753 \times 3 = 2,259$

$M = 10,5 + 2,259 = 12,759$

$\sigma = 3\sqrt{\frac{1669}{381} - 0,753^2} = 3 \times 1,952 = 5,856$

$C.V. = \frac{5,856}{12,759} \times 100 = 45,8$

Variavel x

$c = \frac{90}{381} \times 3 = 0,236 \times 3 = 0,708$

$M = 22,5 + 0,708 = 23,208$

$\sigma = 3\sqrt{\frac{5176}{381} - 0,236^2} = 3 \times 3,678 = 11,034$

$C.V. = \frac{11,034}{23,208} \times 100 = 47,5$

Coeficiente de correlação

$$r = \frac{\frac{9113}{381} - (0,753 \times 0,236)}{5,856 \times 11,034} \times 9 =$$

$$= \frac{2,1475 - 0,177708}{64,615104} \times 9 =$$

$$= \frac{2,297292}{64,615104} \times 9 =$$

$= 0,035 \times 9 = \underline{0,315}$

$\sigma_r = \frac{1 - 0,315^2}{\sqrt{381}} =$

$= \frac{1 - 0,099225}{19,51} =$

$= \frac{0,900775}{19,51} = \pm 0,041$

Estatístico-Auxiliar (1º concurso)

2ª Parte - variável x

	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29	30-31	f	d	fd	fd²
0-1	6 150 25	4 80 20	2 30 15	4 40 10		2			1 15 15	1 20 20							20	-5	-100	500
2-3	3 60 20	7 112 16	5 60 12	4 32 8	7 28 4	4	2 8 4										32	-4	-128	512
4-5	2 30 15	2 24 12	3 27 9	2 12 6	4 12 3	2	2 6 3	2 12 6									19	-3	-57	171
6-7	1 10 10	3 24 8			2 4 2	2	2 4 2		1 6 6								11	-2	-22	44
8-9	1 5 5	1 4 4	5 15 3	9 18 2	3 3 1	1	1 1 1	3 6 2								1 10 10	25	-1	-25	25
10-11	2	1	5	6	7	6	2	4	1								34	·	-332	
12-13		1 4 4	1 3 3	6 12 2	9 9 1	5	9 9 1	9 18 2	2 6 3	1 4 4							43	+1	+43	43
14-15		3 24 8	4 24 6	6 24 4	9 18 2	10	15 30 2	9 36 4	3 18 6	1 8 8							60	+2	120	240
16-17		2 24 12		5 30 6	3 27 3	12	9 27 3	10 60 6	7 63 9	4 48 12							58	+3	174	522
18-19			1 12 12	1 8 8	3 12 4	3	9 36 4	21 168 8	11 132 12	7 112 16							62	+4	248	992
20-21					1 5 5	1	2 10 5	3 30 10	4 60 15	3 60 20							17	+5	85	425
f	15	24	26	43	54	57	33	61	30	17	-	-	-	-	-	1	N=381		670 Σ=338	3474
d	-5	-4	-3	-2	-1	·	+1	+2	+3	+4	—	—	—	—	—	+10				
fd	-75	-96	-78	-86	-54	-383	+33	122	90	68	-	-	-	-	-	10	343 Σ=-46			
fd²	375	384	234	172	54		33	244	270	272	-	-	-	-	-	100	2158			

Σ(xy) = 1391

1ª Parte - variável y

Variável y

$c = \frac{338}{381} \times 2 = 0,887 \times 2 = 1,774$

$M = 11 + 1,774 = 12,774$

$\sigma = 2\sqrt{\frac{3474}{381} - 0,887^2} = 2 \times 2,886 = 5,772$

$C.V. = \frac{5,772}{12,774} \times 100 = 45,1$

Variável x

$c = \frac{-46}{381} \times 2 = -0,120 \times 2 = -0,240$

$M = 11 - 0,240 = 10,760$

$\sigma = 2\sqrt{\frac{2158}{381} - 0,120^2} = 2 \times 2,376 = 4,752$

$C.V. = \frac{4,752}{10,760} \times 100 = 44,1$

Coeficiente de correlação

$r = \frac{\frac{1391}{381} - (0,887 \times -0,120)}{5,772 \times 4,752} \times 4 =$

$= \frac{3,650 + 0,106440}{27,428544} \times 4 =$

$= \frac{3,756440}{27,428544} \times 4 =$

$= 0,136 \times 4 = 0,544$

$\sigma_r = \frac{1 - 0,544^2}{\sqrt{381}} =$

$= \frac{1 - 0,295936}{19,51} =$

$= \frac{0,704064}{19,51} = \pm 0,036$

C.R.B. 13-III-40

Correlações parciais

Estatística = 1
Matemática = 2
R. Mental = 3

$$r_{13.2} = \frac{0,250 - (0,250 \times 0,425)}{\sqrt{0,937500}\ \sqrt{0,819375}} =$$

$$= \frac{0,250 - 0,106250}{0,968 \times 0,905} =$$

$$= \frac{0,143750}{0,876040} = 0,164$$

$$r_{12.3} = \frac{0,425 - (0,250 \times 0,250)}{\sqrt{0,937500}\ \sqrt{0,937500}} =$$

$$= \frac{0,425 - 0,062500}{0,968 \times 0,968} =$$

$$= \frac{0,362500}{0,937500} = 0,386$$

$$r_{23.1} = \frac{0,250 - (0,405 \times 0,250)}{\sqrt{0,819375}\ \sqrt{0,937500}} =$$

$$= \frac{0,250 - 0,106250}{0,905 \times 0968} =$$

$$= \frac{0,143750}{0,876040} = 0,164$$

C.F.S.B. 7/II/40

Êrros padrões

$$\sigma_{r_{13.2}} = \frac{1 - 0,164^2}{\sqrt{124}} = \frac{1 - 0,026896}{11,13} = \frac{0,973104}{11,13} =$$

$$= 0,087$$

$$\sigma_{r_{12.3}} = \frac{1 \cdot 0,386^2}{\sqrt{124}} = \frac{1 - 0,148996}{11,13} = \frac{0,851004}{11,13} =$$

$$= 0,076$$

$$\sigma_{r_{23.1}} = \frac{1 - 0,164^2}{\sqrt{124}} = \frac{1 - 0,026896}{11,13} = \frac{0,973104}{11,13} =$$

$$= 0,087$$

Concurso de Escriturário

(1º concurso)

Candidatos aprovados

Correlações simples

Variaveis	N	r	σ_r
N.M. x Mat.	124	0,250	0,084
N.M. x Port.	124	0,175	0,087
N.M. x Est.	124	0,250	0,084
Mat. x Est.	124	0,425	0,073
Port. x Est	124	0,150	0,087
Mat. x Port.	124	0,175	0,087

Correlações parciais

Variaveis	r	σ_r
Est. x Mat.	0,386	0,076
N.M. x Est.	0,164	0,087
Mat. x N.M.	0,164	0,087

C.R.B.

Escriturário (1º concurso)

Candidatos aprovados

Aritmética = variável x

	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	f	d	fd	fd²
60-64	12 96 8	8 48 6	10 30 4	11 22 2	17	13 26 2	9 36 4	3 18 6		83	-2	166	332
65-69	1 4 4	4 12 3	3 6 2	4 4 1	8	6 6 1	5 10 2		1 4 4	32	-1	32	32
70-74				1		1				2	·	-198	
75-79	1 4 4	1 2 2	6		1	1 1		1 3 3	1 4 4	6	+1	6	6
80-84		/						1 6 6		1	+2	2	4
f	14	13	13	15	26	21	14	5	2	N=124		8 ≤=-190	374
d	-4	-3	-2	-1	·	+1	+2	+3	+4				
fd	56	39	26	16	-137	21	28	15	8	72 ≤=-65			
fd²	224	117	52	16		21	56	45	32	563			

Σ(xy) = 140

$\sigma_h = \frac{1-0,175^2}{\sqrt{124}} = \frac{1-0,030625}{11,13} =$

$= \frac{0,969375}{11,13} = \pm 0,087$

Português variável y

Variável y

$c = \frac{-190}{124} \times 5 = -1,532 \times 5 = -7,660$

$M = 72,5 - 7,660 = 64,840$

$\sigma = 5\sqrt{\frac{374}{124} - 1,532^2} = 5 \times 0,817 = 4,085$

$C.V. = \frac{4,085}{64,840} = 6,3$

Variável x

$c = \frac{-65}{124} \times 5 = -0,524 \times 5 = -2,620$

$M = 72,5 - 2,620 = 69,880$

$\sigma = 5 \times \sqrt{\frac{563}{124} - 0,524^2} = 5 \times 2,065 = 10,325$

$C.V. = \frac{10,325}{69,880} = 14,7$

Coeficiente de correlação

$r = \frac{\frac{140}{124} - (-1,532 \times -0,524)}{4,085 \times 10,925} \times 25 =$

$= \frac{1,129 - 0,802768}{42,177625} \times 25 =$

$= \frac{0,326232}{42,177625} \times 25 =$

$= 0,007 \times 25 = 0,175$

C.R.B.

Escriturário (1º concurso)

Candidatos aprovados

Estatística - variável x

Português - variável y

	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
60-64	10	10	8	6	4	2	18	32	60	48	30	12	14	83	-2	-166	332
65-69	5	4	3	8	4		3	12	6	8	5	6	14	32	-1	-32	32
70-74														2	0	0	198
75-79			3				1	4				6		6	+1	+6	6
80-84											10			1	+2	2	4
f	2	6	10	13	16	16	13	17	12	8	5	3	3	N=124		8 Σ=190	374
d	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7				
fd	-10	-24	-30	-26	-16	0	+13	+34	+36	32	25	18	21	179 Σ=73			
fd²	50	96	90	52	16	0	13	68	108	128	125	108	147	1001			

$\sigma_n = \frac{1 - 0,150^2}{\sqrt{124}} = \frac{1 \cdot 0,022500}{11,13} = \frac{0,977500}{11,13} = \pm 0,087$

$\Sigma = (xy) = -68$

Variável y

$c = \frac{-190}{124} \times 5 = -1,532 \times 5 = -7,660$

$M = 72,5 - 7,660 = 64,840$

$\sigma = 5\sqrt{\frac{374}{124} - 1,532^2} = 5 \times 0,817 = 4,085$

$C.V. = \frac{4,085}{64,840} = 6,3$

Variável x

$c = \frac{73}{124} \times 5 = 0,588 \times 5 = 2,940$

$M = 62,5 + 2,940 = 65,440$

$\sigma = 5\sqrt{\frac{1001}{124} - 0,588^2} = 5 \times 2,779 = 13,895$

$C.V = \frac{13,895}{65,440} = 21,2$

Coeficiente de correlação

$r = \frac{\frac{-68}{124} - (1,532 \times 0,588)}{4,085 \times 13,895} \times 25 =$

$= \frac{-0,548 + 0,900816}{56,761075} \times 25 =$

$= \frac{0,352816}{56,761075} \times 25 =$

$= 0,006 \times 25 = 0,150$

C.R.B.

Escriturário (1º concurso)

Candidatos aprovados

Estatística = variável x

	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
50-54		2 32 16	2 24 12	1 8 8	4 16 4	2	2 8 4		1 12 12					14	-4	-56	224
55-59	1 15 15	1 12 12	2 18 9	3 18 6	1 3 3	2		1 6 6	1 9 9	2 24 12				13	-3	-39	117
60-64	1 10 10	1 8 8	1 6 6	1 4 4	2 4 2	1	2 4 2	2 8 4	2 12 6					13	-2	-26	52
65-69		1 4 4	2 6 3	2 4 2	2 2 1	4		1 2 2	3 9 3		1 5 5			16	-1	-16	16
70-74														26	0	-137	
75-79		1 4 4	1 3 3	2 4 2	2 2 1	2	3 3 1	5 10 2	3 9 3	1 4 4	1 5 5			21	+1	+21	21
80-84				2 8 4	2 4 2	2	2 4 2	2 8 4		2 16 8	1 10 10		1 14 14	14	+2	28	56
85-89								1 6 6		1 12 12	2 30 15	1 18 18		5	+3	15	45
90-94								1 8 8					1 28 28	2	+4	8	32
f	2	6	10	13	16	16	13	17	12	8	5	3	3	N=124		72 Σ=-65	563
d	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7				
fd	-10	-24	-30	-26	-16	0	+13	34	36	32	25	18	21	179 Σ=73			
fd²	50	96	90	52	16	0	13	68	108	128	125	108	147	1001			

$$\sigma_r = \frac{1-0,425^2}{\sqrt{124}} = \frac{1-0,180625}{11,13} = \frac{0,819375}{11,13} \pm 0,073 \qquad \Sigma = (xy) = 267$$

Aritmética - variável y

Variável y

$$c = \frac{-65}{124} \times 5 = -0,524 \times 5 = -2,620$$

$$M = 72,5 - 2,620 = 69,880$$

$$\sigma = 5\sqrt{\frac{569}{124} - 0,524^2} = 5 \times 2,065 = 10,325$$

$$C.V. = \frac{10,325}{69,880} = 14,7$$

Variável x

$$c = \frac{73}{124} \times 5 = 0,588 \times 5 = 2,940$$

$$M = 62,5 + 2,940 = 65,440$$

$$\sigma = 5\sqrt{\frac{1001}{124} - 0,588^2} = 5 \times 2,779 = 13,895$$

$$C.V. = \frac{13,895}{65,440} = 21,2$$

Coeficiente de correlação

$$r = \frac{\frac{267}{124} - (-0,524 \times 0,588)}{10,325 \times 13,895} \times 25 =$$

$$= \frac{2,153 + 0,308112}{143,465875} \times 25 =$$

$$= \frac{2,461112}{143,465875} \times 25 =$$

$$= 0,017 \times 25 = 0,425$$

C.R.B.

Escriturário (1º concurso)

Candidatos aprovados:

Estatística = variável x

n. mental = variável y	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
50-54							1 6 6							1	-6	-6	36
55-59		1 20 20												1	-5	-5	25
60-64					2 8 4		1 4 4			1 16 16				4	-4	-16	64
65-69			9 18 9		1 3 3	2	1 3 3		1 9 9	6				7	-3	-21	63
70-74		1 8 8	1 6 6	1 4 4		2	1 2 2	1 4 4			1 10 10			8	-2	-16	32
75-79	1 5 5	2 8 4	1 3 3	3 6 2	3 3 1	2		2 4 2				1 6 6		15	-1	-15	15
80-84	1					5	6	3	4	1	2	1		40	•	-79	
85-89		1 4 4	2 6 3	2 4 2	2 2 1	4	1 1 1	10 20 2	6 18 3	5 20 4			2 14 7	35	+1	+35	35
90-94			2 12 6		1 2 2	1	2 4 2	1 4 4	1 6 6	1 8 8	2 20 10	1 12 12	1 14 14	13	+2	26	52
95-100														–		–	–
f	2	6	10	13	16	16	13	17	12	8	5	3	3	N=124		61 Σ=-18	322
d	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7				
fd	-10	-24	-30	-26	-16	0	+13	34	36	32	25	18	21	179 Σ=73			
fd²	50	96	90	52	16		13	68	108	128	125	108	147	1001			

$\Sigma = (xy) = 139$

$\sigma_r = \frac{1-0,250^2}{\sqrt{124}} = \frac{1-0,0625}{11,13} = \frac{0,937500}{11,13} = \pm 0,084$

Variável y

$c = \frac{-18}{124} \times 5 = -0,145 \times 5 = 0,725$

$M = 82,5 - 0,725 = 81,775$

$\sigma = 5\sqrt{\frac{322}{124} - 0,145^2} = 5 \times 1,604 = 8,020$

$c.v. = \frac{8,020}{81,775} = 9,8$

Variável x

$c = \frac{73}{124} \times 5 = 0,588 \times 5 = 2,940$

$M = 62,5 + 2,940 = 65,440$

$\sigma = 5\sqrt{\frac{1001}{124} - 0,588^2} = 5 \times 2,779 = 13,895$

$c.v. = \frac{13,895}{65,440} = 21,2$

Coeficiente de correlação

$r = \frac{\frac{139}{124} - (0,145 \times 0,588)}{8,020 \times 13,895} \times 25 =$

$= \frac{1,120 + 0,085260}{111,437900} \times 25 =$

$= \frac{1,205260}{111,437900} \times 25 =$

$= 0,010 \times 25 = 0,250$

C.R.B.

Escriturário (1º concurso)

Candidatos aprovados

Português = variável x

	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100	f	d	fd	fd²
50-54	1 +12 12								1	-6	-6	36
55-59	1 +10 10								1	-5	-5	25
60-64	4 +32 8								4	-4	-16	64
65-69	5 +30 6	+3 3		1 -3 3					7	-3	-21	63
70-74	5 +20 4	3 +6 2							8	-2	-16	32
75-79	10 +20 2	4 +4 1		1 -1 1					15	-1	-15	15
80-84	29	11							40	.	-79	
85-89	22 -44	10 -10 1	2	1 +1 1					35	+1	+35	35
90-94	6 -24 4	3 - 6 2		3 +6 2	1 +4 4				13	+2	26	52
95-100									—		—	—
f	83	32	2	6	1	—	—	—	n=124		61 z=18	322
f'	=2	-1		+1	+2							
f'²	166	32	198	6	2	—	—	—	8 z=-190			
f'd²	332	32		6	4	—	—	—	374			

m. mental = variável y

$$\sigma_r = \frac{1-r^2}{\sqrt{n}} = \frac{1-0,175^2}{\sqrt{124}} = \frac{1-0,030625}{11,13} = \frac{0,969375}{11,13} = 0,087$$

$\Sigma(xy) = 60$

Variável y

$$c = \frac{-18}{124} \times 5 = -0,145 \times 5 = -0,725$$

$$M = 82,5 - 0,725 = 81,775$$

$$\sigma = 5\sqrt{\frac{322}{124} - 0,145^2} = 5 \times 1,604 = 8,020$$

$$C.V. = \frac{8,020}{81,775} = 9,8$$

Variável x

$$c = \frac{-190}{124} \times 5 = -1,532 \times 5 = -7,660$$

$$M = 72,5 - 7,660 = 64,840$$

$$\sigma = 5\sqrt{\frac{874}{124} - 1,532^2} = 5 \times 0,817 = 4,085$$

$$C.V. = \frac{4,085}{64,840} = 6,3$$

Coeficiente de correlação

$$r = \frac{\frac{60}{124} - (0,145 \times -1,532)}{8,020 \times 4,085} \times 25 =$$

$$= \frac{0,483 - 0,222140}{32,761700} \times 25 =$$

$$= \frac{0,260860}{32,761700} \times 25 = 0,007 \times 25 = 0,175$$

C.R.B.

Escriturário (1º concurso) — Candidatos aprovados

Aritmética - variável x

	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	f	d	fd	fd²
50-54	1 24 24									1	-6	6	36
55-59	1 20 20									1	-5	5	25
60-64	1 16 16	1 12 12			2					4	-4	16	64
65-69	2 24 12	1 9 9	1 6 6	2 6 3	1					7	-3	21	63
70-74	1 8 8	1 6 6	2 8 4	1 2 2	1	2 4 2				8	-2	16	32
75-79	1 4 4	5 15 3	1 2 2	3 3 1	3		2 4 2			15	-1	15	15
80-84	4	3	5	3	1	6	6			40	0	-79	
85-89	3 12 4	3 9 3	4 8 2	5 5 1	2	4 4 1	5 10 2	2 6 3	1 4 4	35	+1	35	35
90-94				2 4 2	2	4 8 2	1 4 4	3 18 6	1 8 8	13	+2	26	52
95-100										—		—	—
f	14	13	13	16	16	21	14	5	2	N=124		61 Σ=-18	322
d	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	
fd	56	39	26	16	-137	21	28	15	8	72 Σ=-65			
fd²	224	117	52	16		21	56	45	32	563			

Σ=(x)=181

$$c = \frac{1 - 0,250^2}{\sqrt{124}} = \frac{1 - 0,062500}{11,13} = \frac{0,937500}{11,13} = \pm 0,084$$

Variável y

$$c = \frac{-18}{124} \times 5 = -0,145 \times 5 = -0,725$$

$$M = 82,5 - 0,725 = 81,775$$

$$\sigma = 5\sqrt{\frac{322}{124} - 0,145^2} = 5 \times 1,604 = 8,020$$

$$C.V. = \frac{8,020}{81,775} = 9,8$$

Variável x

$$c = \frac{-65}{124} \times 5 = -0,524 \times 5 = -2,620$$

$$M = 72,5 - 2,620 = 69,880$$

$$\sigma = 5\sqrt{\frac{563}{124} - 0,524^2} = 5 \times 2,065 = 10,325$$

$$C.V. = \frac{10,325}{69,880} = 14,7$$

Coeficiente de correlação

$$r = \frac{\frac{181}{124} - (0,145 \times 0,524)}{8,020 \times 10,325} \times 25 =$$

$$= \frac{1,459 - 0,075980}{82,806500} \times 25 =$$

$$= \frac{1,383020}{82,806500} \times 25 =$$

$$= 0,010 \times 25 = 0,250$$

N. Mental = variável y

C.R.B.

Escriturário (1º concurso) (Nivel Mental)

Mental level

Nota = variavel x

Idade = variavel y

IQ

Cells: frequency: product / deviation product

	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	f	d	fd	fd²
19-20								1: 18 / 18			2: 18 / 9	4: 24 / 6	5: 15 / 3	5	9: 27 / 3	5: 30 / 6	8: 72 / 9	5: 60 / 12	1: 45 / 15	45	-3	-135	405
21-22				1: 20 / 20	1: 18 / 18	2: 32 / 16	2: 28 / 14	4: 48 / 12	3: 30 / 10	6: 48 / 8	8: 48 / 6	9: 36 / 4	18: 36 / 2	10	26: 52 / 2	25: 100 / 4	29: 174 / 6	16: 128 / 8	4: 40 / 10	164	-2	-328	656
23-24		2: 24 / 12	1: 11 / 11		2: 18 / 9	2: 16 / 8	4: 28 / 7	3: 18 / 6	5: 25 / 5	5: 20 / 4	12: 36 / 3	21: 42 / 2	21: 21 / 1	20	30: 30 / 1	15: 30 / 2	24: 72 / 3	17: 68 / 4	4: 20 / 5	190	-1	-190	190
25-26	1	1		2	2	4	5	6	6	6	9	14	15	15	8	19	15	6	3	135	·	-653	
27-28			2: 22 / 11	3: 30 / 10	1: 9 / 9	2: 16 / 8		4: 24 / 6	3: 15 / 5	5: 20 / 4	5: 15 / 3	7: 14 / 2	13: 13 / 1	7	11: 11 / 1	17: 34 / 2	9: 27 / 3	9: 36 / 4	5: 25 / 5	103	+1	+103	103
29-30					1: 18 / 18	1: 16 / 16	3: 42 / 14	3: 36 / 12	5: 50 / 10		4: 24 / 6	2: 8 / 4	7: 14 / 2	7	7: 14 / 2	7: 28 / 4	9: 54 / 6	8: 64 / 8		64	+2	128	256
31-32						3: 48 / 24	1: 21 / 21		1: 15 / 15	1: 12 / 12	1: 9 / 9	4: 24 / 6	4: 12 / 3	2	5: 15 / 3	6: 36 / 6	6: 54 / 9			33	+3	99	297
33-34		1: 48 / 48			1: 36 / 36				1: 20 / 20					1	1: 4 / 4				1: 20 / 20	6	+4	24	96
35-36					1: 45 / 45				1: 25 / 25	1: 20 / 20		2: 20 / 10	1: 5 / 5							6	+5	30	150
37-38						2: 96 / 48		1: 36 / 36		1: 24 / 24			1: 6 / 6	1		1: 12 / 12				7	+6	42	252
39-40									1: 35 / 35		1: 21 / 21									2	+7	14	98
41-42																				–	–	–	–
43-44																				–	–	–	–
45-46													1: 10 / 10							1	+10	10	100
f	1	4	3	6	9	15	15	21	25	25	42	63	86	70	97	95	100	61	18	756		450 Σ=-203	2603
d	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	·	+1	+2	+3	+4	+5				
fd	-13	-48	-33	-60	-81	-120	-105	-126	-125	-100	-126	-126	-86	-1149	+97	190	300	244	90	921 Σ=-228			
fd²	169	576	363	600	729	960	735	756	625	400	378	252	86		97	380	900	976	450	9432			

648 — 948 — 964 — 434

Σ=(xy) = -800

Variavel y

$$c = \frac{-203}{756} \times 2 = -0,268 \times 2 = -0,536$$

$$M = 26 - 0,536 = 25,464$$

$$\sigma = 2\sqrt{\frac{2603}{756} - 0,268^2} = 2 \times 1,836 = 3,672$$

$$C.V. = \frac{3,672}{25,464} \times 100 = 14,4$$

Variavel x

$$c = \frac{-228}{756} \times 5 = -0,301 \times 5 = -1,505$$

$$M = 67,5 - 1,505 = 65,995$$

$$\sigma = 5\sqrt{\frac{9432}{756} - 0,301^2} = 5 \times 3,519 = 17,595$$

$$C.V. = \frac{17,595}{65,995} \times 100 = 26,6$$

Coeficiente de correlação

$$r = \frac{\frac{-800}{756} - (-0,268 \times -0,301)}{3,672 \times 17,595} \times 10 =$$

$$= \frac{-(1,058 - 0,080668)}{64,608840} \times 10 =$$

$$= \frac{-1,138668}{64,608840} \times 10 =$$

$$= -0,018 \times 10 = \underline{-0,180}$$

$$\sigma_r = \frac{1 - 0,180^2}{\sqrt{756}} =$$

$$= \frac{1 - 0,032400}{27,49} =$$

$$= \frac{0,967600}{27,49} = \pm 0,035$$

C.R.B. 18-X-40

Instituto de Ensino Secundario

(Nivel Mental)

Idade = variavel x

	11-12	13-14	15-16	17-18	f	d	fd	fd^2
0-4						-	-	-
5-9			5		1	-5	-5	25
10-14	7					-	-	-
15-19	6				4	-3	-12	36
20-24	12		8	4	14	-2	-28	56
25-29	3		4	2	14	-1	-14	14
30-34						0	0	0
35-39			3	4	9	+1	+9	9
40-44			12		10	+2	20	40
45-49	21		6		10	+3	30	90
50-54			4		1	+4	4	16
					76		63	286

$\Sigma(fd) = 6$

Variavel y

$c = \frac{4}{76} \times 5 = 0,052 \times 5 = 0,260$

$M = 32,5 + 0,260 = 32,760$

$\sigma = 5\sqrt{\frac{286}{76} - 0,052^2} = 5 \times 1,939 = 9,695$

$C.V. = \frac{9,695}{32,760} \times 100 = 29,5$

Variavel x

$c = \frac{13}{76} \times 2 = 0,171 \times 2 = 0,342$

$M = 14 + 0,342 = 14,342$

$\sigma = 2\sqrt{\frac{63}{76} - 0,171^2} = 2 \times 0,893 = 1,786$

$C.V. = \frac{1,786}{14,342} \times 100 = 12,4$

Coeficiente de correlação

$r = \frac{\frac{6}{76} - (0,260 \times 0,342)}{9,695 \times 1,786} \times 10 =$

$= \frac{0,078 - 0,088920}{17,315270} \times 10 =$

$= \frac{-0,010920}{17,315270} \times 10 =$

$= -0,0006 \times 10 = -0,006$

$\sigma_r = \frac{1 - 0,006^2}{\sqrt{76}} =$

$= \frac{1 - 0,000036}{8,71} =$

$= \frac{0,999964}{8,71} = \pm 0,114$