D S T Q Q S S

Coluna 1:

x_i	f_i	F_i	f_r	F_r	$x_i f_i$	$(x_i - \bar{x})^2 . f_i$
0	3	3	15%	15%	0	$(0-1,9)^2 . 3 = 10,83$
1	6	9	30%	45%	6	$(1-1,9)^2 . 9 = 4,86$
2	5	14	25%	70%	10	$(2-1,9)^2 . 5 = 0,05$
3	2	16	10%	80%	6	$(3-1,9)^2 . 2 = 2,42$
4	4	20	20%	100%	16	$(4-1,9)^2 . 4 = 17,64$

$\sum x_i = 5$ $\sum f_i = 20$ $\sum f_r = 100\%$ $\sum (x_i f_i) = 38$ $\sum (x_i - \bar{x})^2 f_i = 35,8$

$\bar{x} = 38/20 = 1,9$

$Mo = 1$

$Md = \frac{x_n + x_{n+1}}{2} \rightarrow \frac{2+2}{2} \rightarrow$

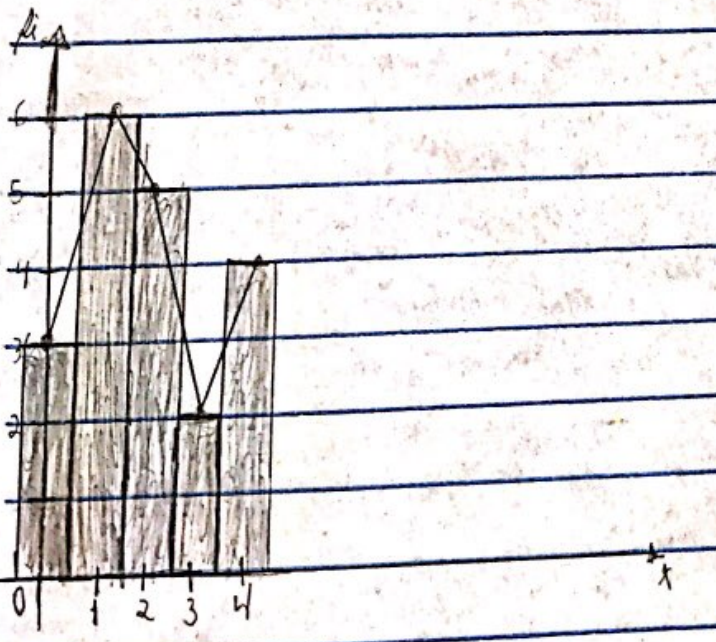
$Md = 2$

$S_x^2 = \frac{\sum f_i (x_i - \bar{x})^2 . f_i}{n-1}$

$\boxed{S_x^2 = 1,88}$

$S_x = \sqrt{\text{Variância}}$

$\boxed{S_x = 1,37}$



D S T Q Q S S

Coluna 2:

X_i	f_i	F_i	f_r	F_r	$x_i f_i$	$(x_i - \bar{x})^2 \cdot f_i$
160	20	20	25%	25%	3.200	$(160 - 161,66)^2 \cdot 20 = 55,11$
161	17	37	21,25%	46,25%	2.737	$(161 - 161,66)^2 \cdot 17 = 7,41$
162	19	56	23,75%	70%	3.078	$(162 - 161,66)^2 \cdot 19 = 2,2$
163	18	74	22,50%	92,5	2.934	$(163 - 161,66)^2 \cdot 18 = 32,32$
164	6	80	7,50%	100%	984	$(164 - 161,66)^2 \cdot 6 = 32,85$

$\sum f_i (80)$ $\quad \sum x_i f_i = 12.933$ $\quad \sum (x_i - \bar{x})^2 \cdot f_i = 129,89$

$\bar{X} = 12.933/80 = 161,66$

$Mo = 160$

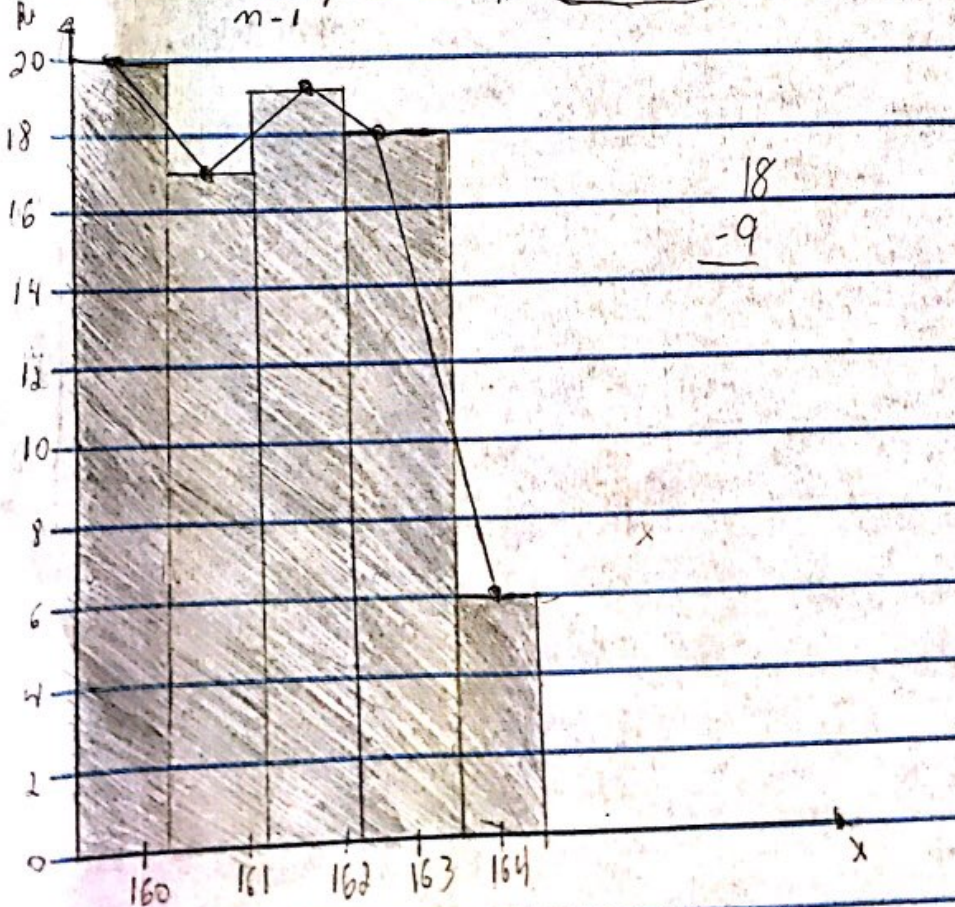
$Md = \frac{X_{40} + X_{41}}{2} \rightarrow \frac{162 + 162}{2} \rightarrow Md = 162$

Variancia Amostral

$S_x = \frac{\sum (x_i - \bar{x})^2 \cdot f_i}{n-1} \rightarrow \boxed{S_x^2 = 1,64}$

Desvio Padrão

$S_x = \sqrt{1,64} \rightarrow \boxed{S_x = 1,28}$



18
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Coluna 3:

x_i	f_i	F_i	f_r	F_r	$x_i f_i$	$(x_i - \bar{x})^2 \cdot f_i$
0	3	3	6%	6%	0	$(0-9,74)^2 \cdot 3 = 284,6$
1	3	6	6%	12%	3	$(1-9,74)^2 \cdot 3 = 229,16$
2	3	9	6%	18%	6	$(2-9,74)^2 \cdot 3 = 179,72$
3	2	11	4%	22%	6	$(3-9,74)^2 \cdot 2 = 90,85$
4	3	14	6%	28%	12	$(4-9,74)^2 \cdot 3 = 98,84$
5	2	16	4%	32%	10	$(5-9,74)^2 \cdot 2 = 44,93$
6	2	18	4%	36%	12	$(6-9,74)^2 \cdot 2 = 27,97$
7	1	19	2%	38%	7	$(7-9,74)^2 \cdot 1 = 7,51$
8	2	21	4%	42%	16	$(8-9,74)^2 \cdot 2 = 6,06$
10	1	22	2%	44%	10	$(10-9,74)^2 \cdot 1 = 0,07$
11	6	28	12%	56%	66	$(11-9,74)^2 \cdot 6 = 9,53$
12	6	34	12%	68%	72	$(12-9,74)^2 \cdot 6 = 30,65$
13	2	36	4%	72%	26	$(13-9,74)^2 \cdot 2 = 21,26$
14	3	39	6%	78%	42	$(14-9,74)^2 \cdot 3 = 54,44$
15	1	40	2%	80%	15	$(15-9,74)^2 \cdot 1 = 27,67$
16	1	41	2%	82%	16	$(16-9,74)^2 \cdot 1 = 39,19$
17	3	44	6%	88%	51	$(17-9,74)^2 \cdot 3 = 158,12$
19	3	47	6%	94%	57	$(19-9,74)^2 \cdot 3 = 257,24$
20	3	50	6%	100%	60	$(20-9,74)^2 \cdot 3 = 315,80$
	$\sum f_i (50)$		$\sum f_r (100\%)$			

$\sum x_i f_i = 487$ $\quad \sum (x_i - \bar{x})^2 \cdot f_i = 1883,64$

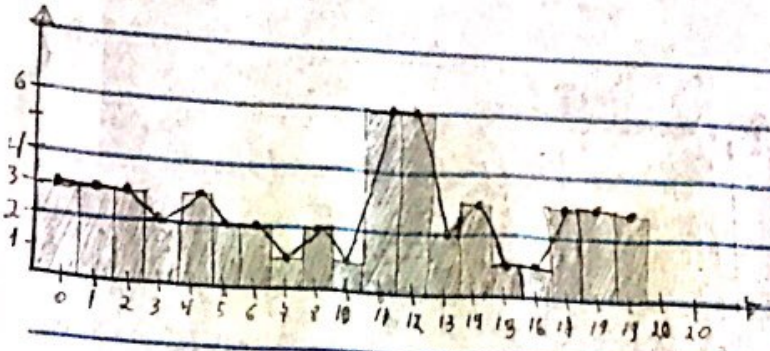
$\bar{X} = 487/50 \rightarrow \bar{X} = 9,74$

$Mo = 11$ e 12

$Md = \frac{X_{25} + X_{26}}{2} \rightarrow Md = \frac{11+11}{2} \rightarrow Md = 11$ e 12

$S_x^2 = \frac{\sum (x_i - \bar{x})^2 f_i}{N-1} = S_x^2 = 38,44$

$S_x = \sqrt{\text{variância}} \rightarrow S_x = 6,20$



D S T Q Q S S

Coluna 4:

X_i	f_i	F_i	f_r	F_a	$X_i f_i$	$(X_i - \bar{X})^2 \cdot f_i$
50	3	3	5%	5 %	150	$(50-59,3)^2 \cdot 3 = 259,47$
51	7	10	11,67%	16,67 %	357	$(51-59,3)^2 \cdot 7 = 482,23$
52	3	13	5 %	21,67 %	156	$(52-59,3)^2 \cdot 3 = 159,87$
53	2	15	3,33 %	25 %	106	$(53-59,3)^2 \cdot 2 = 79,38$
54	3	18	5%	30 %	162	$(54-59,3)^2 \cdot 3 = 84,27$
55	3	21	5%	35 %	165	$(55-59,3)^2 \cdot 3 = 55,47$
56	3	24	5%	40 %	168	$(56-59,3)^2 \cdot 3 = 32,67$
57	3	27	5 %	45 %	171	$(57-59,3)^2 \cdot 3 = 15,87$
58	3	30	5 %	50 %	174	$(58-59,3)^2 \cdot 3 = 5,07$
59	2	32	3,33 %	53,33 %	118	$(59-59,3)^2 \cdot 2 = 0,18$
60	2	34	3,33 %	56,66 %	120	$(60-59,3)^2 \cdot 2 = 0,98$
62	2	36	3,33 %	59,99 %	124	$(62-59,3)^2 \cdot 2 = 14,58$
63	5	41	8,33 %	68,32 %	315	$(63-59,3)^2 \cdot 5 = 68,45$
64	3	44	5 %	73,32 %	192	$(64-59,3)^2 \cdot 3 = 66,27$
65	3	47	5 %	78,32 %	195	$(65-59,3)^2 \cdot 3 = 97,47$
66	4	51	6,67 %	84,99 %	264	$(66-59,3)^2 \cdot 4 = 179,56$
67	1	52	1,67 %	86,66 %	67	$(67-59,3)^2 \cdot 1 = 59,29$
68	2	54	3,33 %	89,99 %	136	$(68-59,3)^2 \cdot 2 = 151,38$
69	2	56	3,33 %	93,32 %	138	$(69-59,3)^2 \cdot 2 = 188,18$
70	4	60	6,68 %	100 %	280	$(70-59,3)^2 \cdot 4 = 457,96$

$\sum f_i = 60$

$\sum f_r = 99,99\% \rightarrow 100\%$

$\sum (X_i f_i) = 3.558$

$\sum (X_i - \bar{X})^2 f_i = 2458,6$

$\bar{X} = \frac{3558}{60} \rightarrow \bar{X} = 59,30$

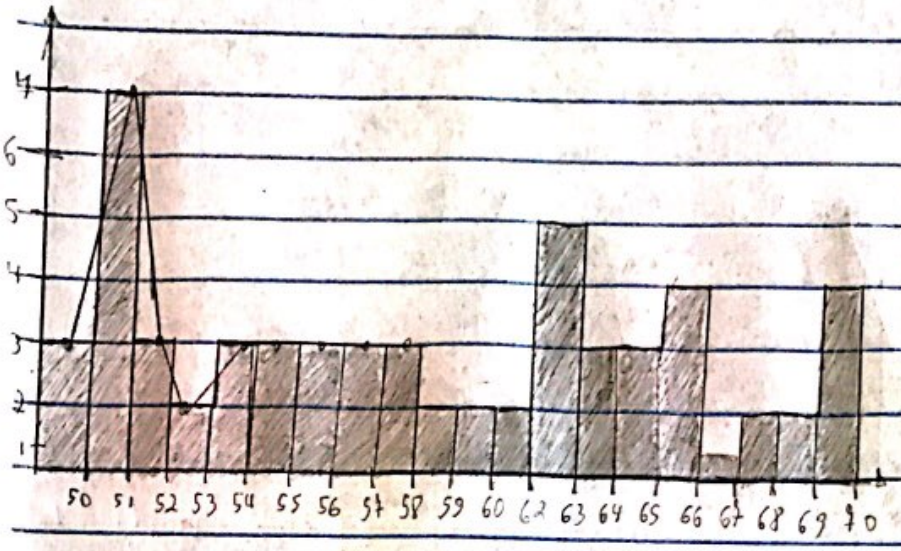
$Mo = 51$

$Md = \frac{X_{30} + X_{31}}{2} \rightarrow Md = 58,5$

$S_x^2 = \frac{2459}{59} \rightarrow S_x^2 = 41,69$

$S_x = 6,46$

MÁXIMA



Coluna 5:

X_i	f_i	F_i	f_r	F_r	$X_i f_i$	$(X_i - \bar{X})^2 \cdot f_i$
2	5	5	5%	5%	10	$(2-8,98)^2 \cdot 5 = 243,6$
3	4	9	4%	9%	12	$(3-8,98)^2 \cdot 4 = 143,04$
4	11	20	11%	20%	44	$(4-8,98)^2 \cdot 11 = 272,8$
5	5	25	5%	25%	25	$(5-8,98)^2 \cdot 5 = 79,2$
6	11	36	11%	36%	66	$(6-8,98)^2 \cdot 11 = 97,68$
7	12	48	12%	48%	84	$(7-8,98)^2 \cdot 12 = 47,04$
8	2	50	2%	50%	16	$(8-8,98)^2 \cdot 2 = 1,92$
9	5	55	5%	55%	45	$(9-8,98)^2 \cdot 5 = 0$
10	9	64	9%	64%	90	$(10-8,98)^2 \cdot 9 = 9,36$
11	5	69	5%	69%	55	$(11-8,98)^2 \cdot 5 = 20,40$
12	6	75	6%	75%	72	$(12-8,98)^2 \cdot 6 = 54$
13	6	81	6%	81%	78	$(13-8,98)^2 \cdot 6 = 96,96$
14	4	85	4%	85%	56	$(14-8,98)^2 \cdot 4 = 100,80$
15	3	88	3%	88%	45	$(15-8,98)^2 \cdot 3 = 103,32$
16	4	92	4%	92%	64	$(16-8,98)^2 \cdot 4 = 198,12$
17	8	100	8%	100%	136	$(17-8,98)^2 \cdot 8 = 514,56$
$\sum f_i = 100$			$\sum f_r = 100\%$		$\sum (X_i f_i) = 898$	$\sum (X_i - \bar{X})^2 \cdot f_i = 1987,92$

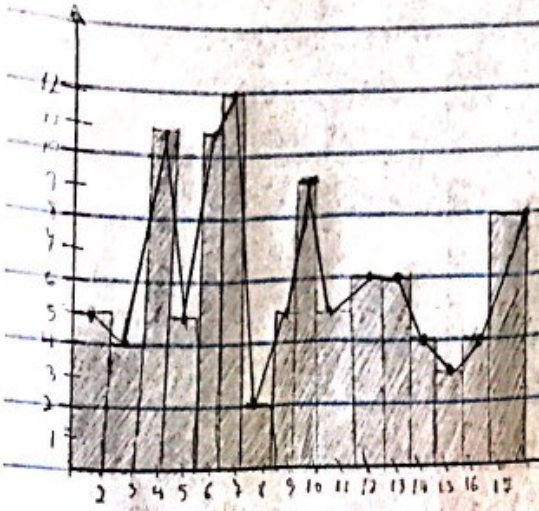
$\bar{X} = \frac{898}{100} \rightarrow \bar{X} = 8,98$

$Me = \$$

$Md = \frac{X_{50} + X_{51}}{2} \rightarrow \frac{8+9}{2} = 8,5$

$S_x^2 = \frac{1987,92}{99} \rightarrow S_x^2 = 20,08$

$S_x = \sqrt{20,08} \rightarrow S_x = 4,48$



Coluna 6:

X_i	f_i	F_i	f_r	F_r	$X_i f_i$	$(X_i - \bar{X})^2 \cdot f_i$
5	1	1	3,85%	3,85%	5	$(5-11,23)^2 \cdot 1 = 38,81$
7	5	6	19,23%	23,08%	35	$(7-11,23)^2 \cdot 5 = 89,46$
8	4	10	15,38%	38,46%	32	$(8-11,23)^2 \cdot 4 = 41,73$
9	3	13	11,54%	50,00%	27	$(9-11,23)^2 \cdot 3 = 14,92$
10	3	16	11,54%	61,54%	30	$(10-11,23)^2 \cdot 3 = 4,54$
12	3	19	11,54%	73,08%	36	$(12-11,23)^2 \cdot 3 = 1,98$
15	2	21	7,69%	80,71%	30	$(15-11,23)^2 \cdot 2 = 28,43$
18	3	24	11,54%	92,31%	54	$(18-11,23)^2 \cdot 3 = 137,50$
20	1	25	3,85%	96,16%	20	$(20-11,23)^2 \cdot 1 = 76,91$
25	1	26	3,85%	100,00%	23	$(25-11,23)^2 \cdot 1 = 138,53$
$\sum f_i = 26$			$\sum f_r = 100\%$		$\sum X_i f_i = 292$	$\sum (X_i - \bar{X})^2 \cdot f_i = 572,61$

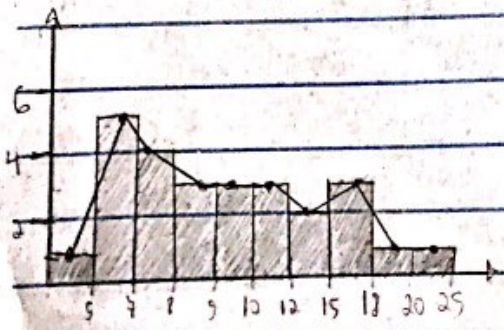
$\bar{X} = \frac{292}{26} = 11,23$

$Me = 4$

$Md = \frac{X_{13} + X_{14}}{2} = 9,5$

$S_x^2 = 22,90$

$S_x = 4,79$



Coluna 4:

X_i	f_i	F_i	f_r	F_r	$X_i f_i$	$(X_i - \bar{X})^2 \cdot f_i$
13	1	1	5%	5%	13	$(13-25,5)^2 \cdot 1 = 156,25$
14	3	4	15%	20%	42	$(14-25,5)^2 \cdot 3 = 396,75$
15	1	5	5%	25%	15	$(15-25,5)^2 \cdot 1 = 110,25$
16	2	7	10%	30%	32	$(16-25,5)^2 \cdot 2 = 180,50$
20	1	8	5%	40%	20	$(20-25,5)^2 \cdot 1 = 30,25$
23	2	10	10%	50%	46	$(23-25,5)^2 \cdot 2 = 12,50$
24	1	11	5%	55%	24	$(24-25,5)^2 \cdot 1 = 2,25$
27	2	13	10%	65%	54	$(27-25,5)^2 \cdot 2 = 4,50$
31	1	14	5%	70%	31	$(31-25,5)^2 \cdot 1 = 30,25$
32	1	15	5%	75%	32	$(32-25,5)^2 \cdot 1 = 42,25$
35	1	16	5%	80%	35	$(35-25,5)^2 \cdot 1 = 90,25$
40	1	17	5%	85%	40	$(40-25,5)^2 \cdot 1 = 210,25$
41	1	18	5%	90%	41	$(41-25,5)^2 \cdot 1 = 240,25$
42	1	19	5%	95%	42	$(42-25,5)^2 \cdot 1 = 272,25$
43	1	20	5%	100%	43	$(43-25,5)^2 \cdot 1 = 306,25$

$\sum f_i = 20$ $\sum f_r = 100\%$ $\sum x_i f_i = 510$; $\sum (x_i - \bar{X})^2 \cdot f_i = 2.085$

$\bar{X} = \frac{510}{20} = 25,5$

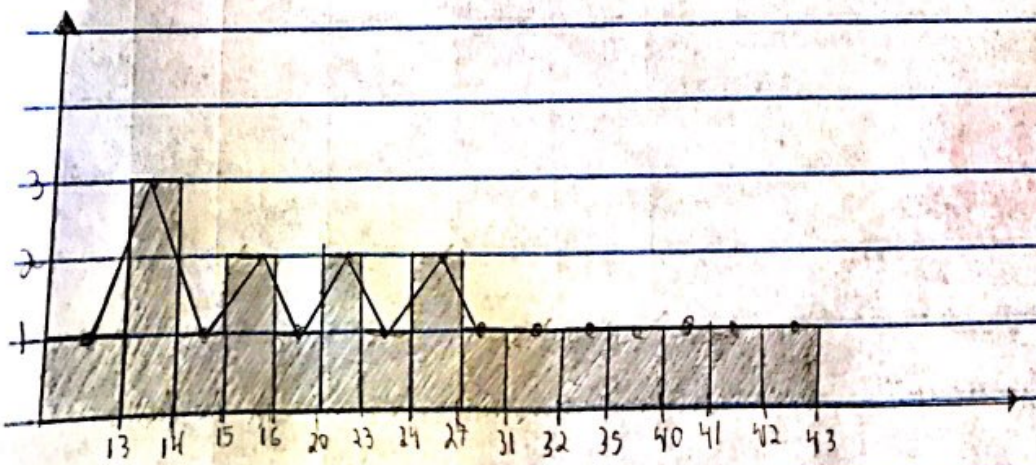
$Mo = 14$

$Md = \frac{X_{10} + X_{11}}{2} = 23,5$

$S_x^2 = \frac{2085}{19} = 109,74$

$S_x = \sqrt{109,74}$

$S_x = 10,84$



D S T Q Q S S

Coluna 2:

x_i	f_i	F_i	f_n	F_n	$x_i f_i$	$(x_i - \bar{x})^2 . f_i$
0	10	10	25%	25%	0	$(0-1,78)^2 . 10 = 31,68$
1	5	15	12,50%	37,5%	5	$(1-1,78)^2 . 5 = 5,04$
2	15	30	37,50%	75%	30	$(2-1,78)^2 . 15 = 0,75$
3	5	35	12,50%	87,5%	15	$(3-1,78)^2 . 5 = 7,44$
4	4	39	10%	97,5%	16	$(4-1,78)^2 . 4 = 19,71$
5	1	40	2,5%	100%	5	$(5-1,78)^2 . 1 = 10,31$

$\bar{x} = \frac{71}{40} = 1,78$

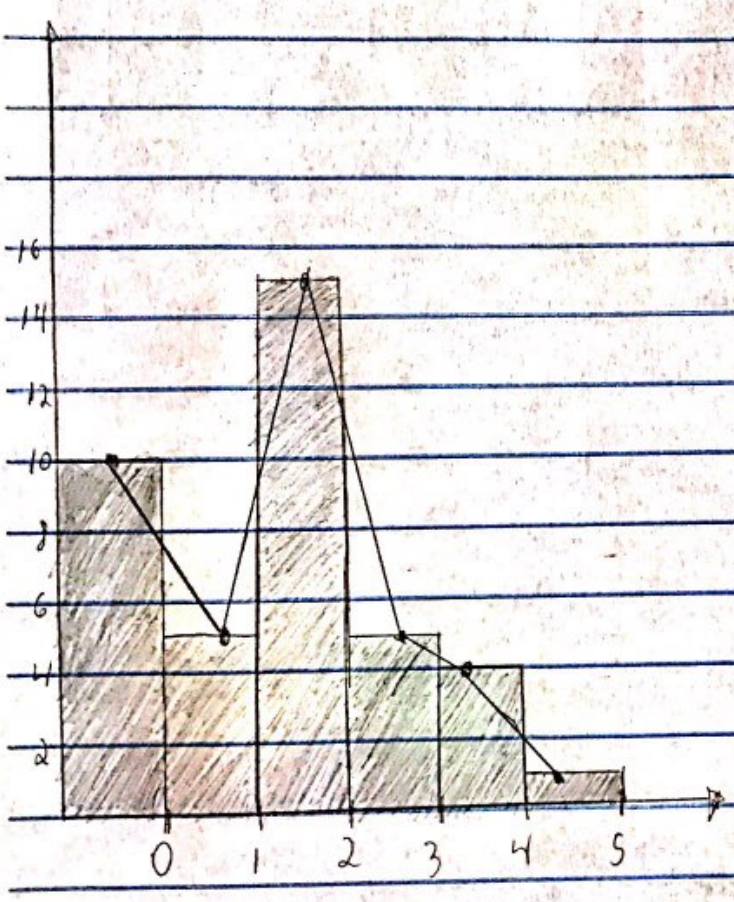
$M_o = 2$

$M_d = \frac{2+2}{2} = 2$

$S_x^2 = 1,92$

$S_x = 1,39$

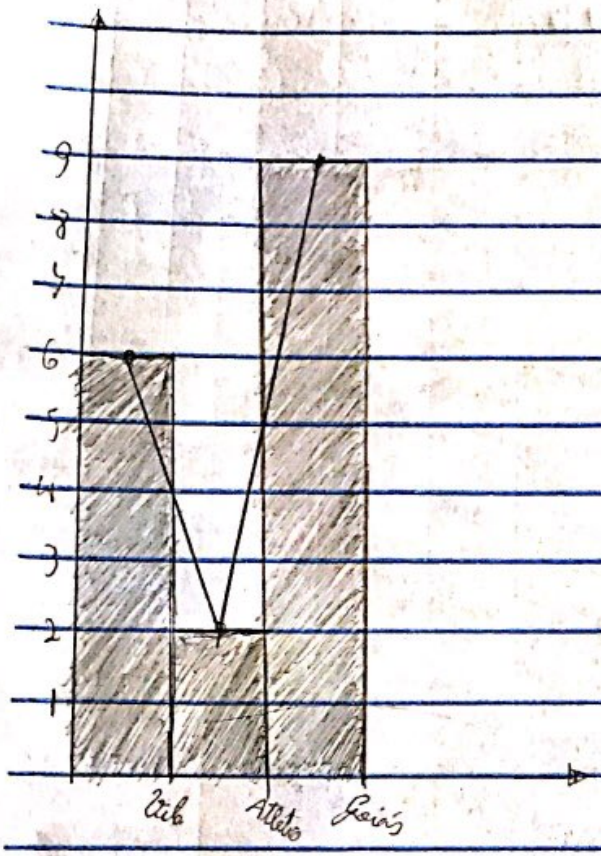
$\sum f_i = 40$; $\sum f_n = 100\%$ $\sum x_i f_i = 71$ $\sum (x_i - \bar{x})^2 . f_i = 74,91$



Coluna 9:

Xi	fi	Fi	fr	Fr
Vila	6	6	35,29%	35,29%
Atlético	2	8	11,76%	47,05%
Goiás	9	17	52,95%	100%

$\sum f_i = 17$ $\sum f_r = 99,99\% \approx 100\%$



Coluna 10:

x_i	f_i	F_i	f_r	F_r	$x_i f_i$	$(x_i - \bar{x})^2 \cdot f_i$	
1	1	1	10%	10%	1	$(1-16)^2 \cdot 1 = 225$	$\bar{x} = 16$
5	1	2	10%	20%	5	$(5-16)^2 \cdot 1 = 121$	$Mo = 7$
7	2	4	20%	40%	14	$(7-16)^2 \cdot 2 = 162$	$Md = \frac{9+15}{2} \Rightarrow Md = 12$
9	1	5	10%	50%	9	$(9-16)^2 \cdot 1 = 49$	
15	1	6	10%	60%	15	$(15-16)^2 \cdot 1 = 1$	$S_x^2 = 236,44$
17	1	7	10%	70%	17	$(17-16)^2 \cdot 1 = 1$	$S_x = 5,38$
18	1	8	10%	80%	18	$(18-16)^2 \cdot 1 = 4$	
27	1	9	10%	90%	27	$(27-16)^2 \cdot 1 = 121$	
54	1	10	10%	100%	54	$(54-16)^2 \cdot 1 = 1444$	

$\sum f_i = 10$ $\sum f_r = 100\%$ $\sum x_i f_i = 160$ $\sum (x_i - \bar{x})^2 \cdot f_i = 2128$