data • •

S T Q Q S S D

1)

x_i	f_i	F_i	f_r	F_r	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
0	3	3	15%	15%	0	10,83
1	6	9	30%	45%	6	4,86
2	5	14	25%	70%	10	0,05
3	2	16	10%	80%	6	2,42
4	4	20	20%	100%	16	17,64
	20		100%		38	35,8

MEDIA = 1,9

MODA = 1

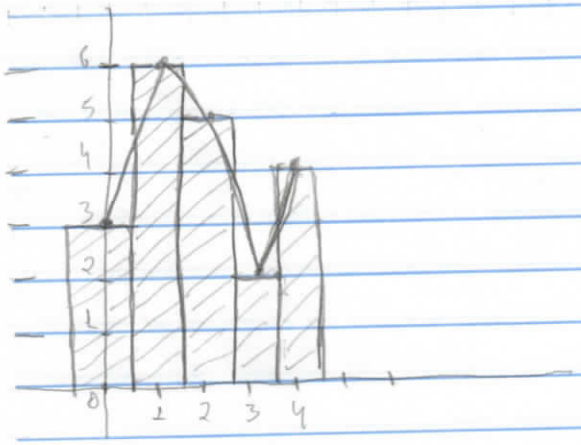
MEDIANA = $\frac{\frac{x_m}{2} + \frac{x_m + 1}{2}}{2} = \frac{\frac{20}{2} + \frac{20+1}{2}}{2} = \frac{x_{10} + x_{11}}{2} = \frac{2+2}{2} = 2$

VARIANCIA

$S_x^2 = \frac{35,8}{19} = 1,88$

DESVIO PADRÃO

$S_x \sqrt{1,88} = 1,37$



data • •

S T Q Q S S D

2)

x_i	f_i	F_i	f_r	F_r	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
160	20	20	25%	25%	3200	55,11
161	17	37	21,25%	46,25%	2737	7,41
162	19	56	23,75%	70%	3078	2,20
163	18	74	22,5%	92,5%	2934	32,32
164	6	80	7,5%	100%	984	32,85
	80		100%		12933	129,89

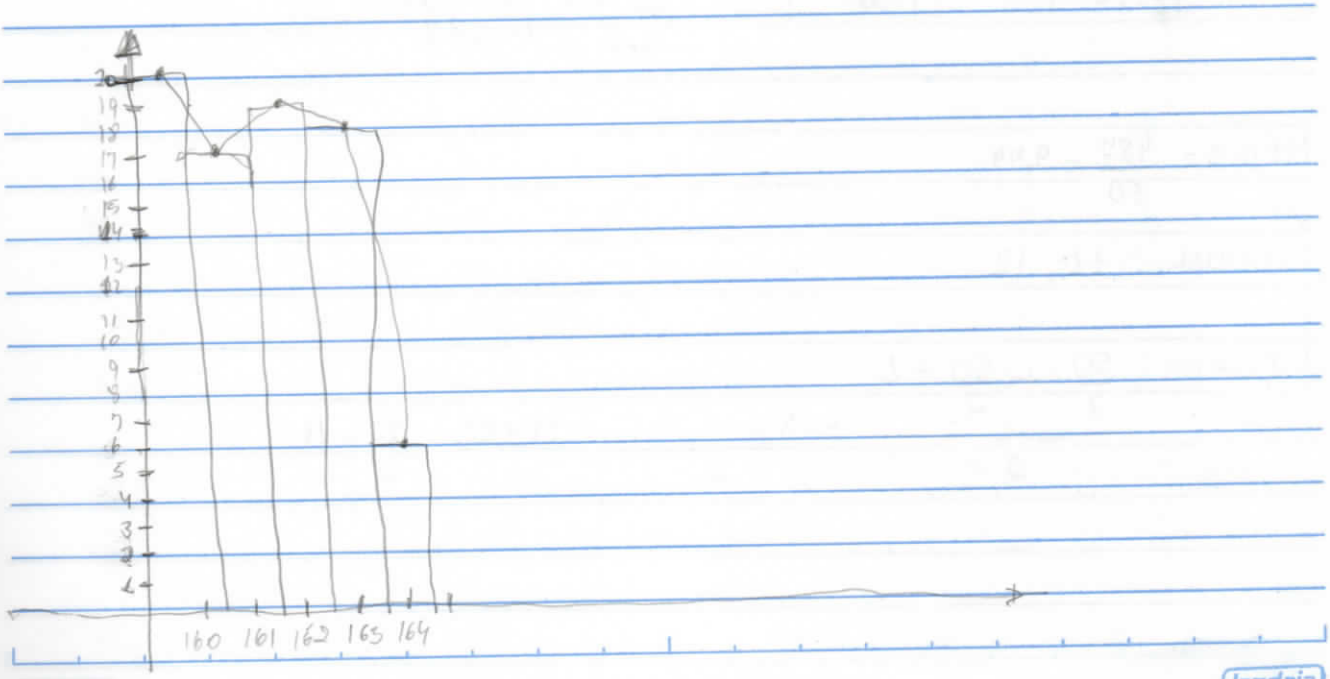
MEDIA = $\frac{12933}{80} = 161,66$

MODA = 160

MEDIANA = $\frac{\frac{X_n}{2} + \frac{X_{n}}{2} + 1}{2} = \frac{X_{40} + X_{41}}{2} = \frac{162 + 162}{2} = 162$

VARIANCIA = $\frac{129,89}{79} = 1,64$

DESVIO PADRÃO = $\sqrt{1,64} = 1,28$



data

S T Q Q S S D

3)

X_i	f_i	F_i	f_r	FR	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
0	3	3	6%	6%	0	284.60
1	3	6	6%	12%	3	229.16
2	3	9	6%	18%	6	179.72
3	2	11	4%	22%	6	90.86
4	3	14	6%	28%	12	98.84
5	2	16	4%	32%	10	44.94
6	2	18	4%	36%	12	27.98
7	1	19	2%	38%	7	7.51
8	2	21	4%	42%	16	6.06
10	1	22	2%	44%	10	0.07
11	6	28	12%	56%	66	9.53
12	6	34	12%	68%	72	30.65
13	2	36	4%	72%	26	21.26
14	3	39	6%	78%	42	54.44
15	1	40	2%	80%	15	27.67
16	1	41	2%	82%	16	39.19
17	3	44	6%	88%	51	158.12
19	3	47	6%	94%	57	257.24
20	3	50	6%	100%	60	315.80
	$\sum f_i = 50$		100%		$\sum x_i \cdot f_i = 487$	$\sum (x_i - \bar{x})^2 \cdot f_i = 1883,62$

MÉDIA = $\frac{487}{50} = 9,74$

BIMODAL : 11, 12

MEDIANA : $\frac{\frac{50}{2} + \frac{50}{2} + 1}{2} = \frac{X_{25} + X_{26}}{2} = \frac{11 + 11}{2} = \frac{22}{2} = 11$

data • •

S T Q Q S S D

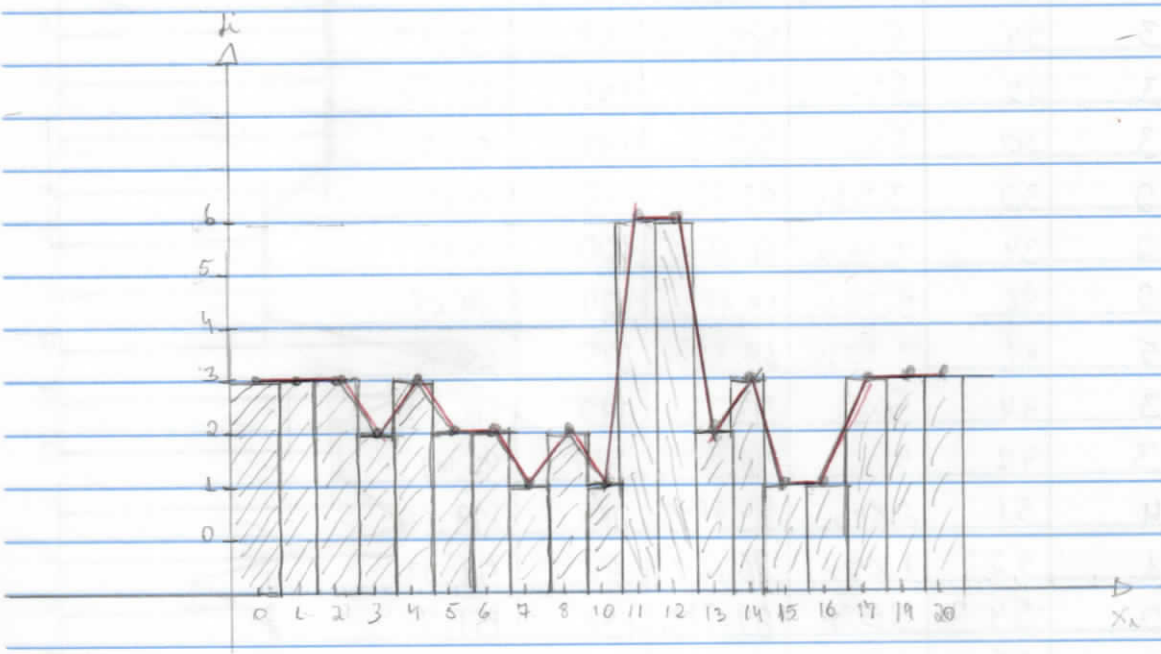
③

VARIÂNCIA

$S_{x^2} = \frac{1883,62}{49} = 38.44$

DESVIO PADRÃO

$S_X = \sqrt{38.44} = 6.20$



data

S T Q Q S S D

4)

x_i	f_i	F_i	f_r	F_r	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
50	3	3	5%	5%	150	259,47
51	7	10	11.67%	16.67%	357	482,23
52	3	13	5%	21.67%	156	159.87
53	2	15	3.33%	25%	106	79.38
54	3	18	5%	30%	162	84.27
55	3	21	5%	35%	165	55.47
56	3	24	5%	40%	168	32.67
57	3	27	5%	45%	171	15.87
58	3	30	5%	50%	174	5.07
59	2	32	3.33%	53.33%	118	0.18
60	2	34	3.33%	56.66%	120	0.98
62	2	36	3.33%	59.99%	124	14.58
63	5	41	8.33%	68.32%	315	68.45
64	3	44	5%	73.32%	192	66.27
65	3	47	5%	78.32%	195	97.47
66	4	51	6.67%	84.99%	264	179.56
67	1	52	1.67%	86.66%	67	59.29
68	2	54	3.33%	89.99%	136	151.38
69	2	56	3.33%	93.32%	138	188.18
70	4	60	6.68%	100%	280	457.96
	$\sum_i = 60$		$\sum_i = 100\%$		$\sum = 3558$	$\sum = 2458,60$
	f_i		f_i			

MEDIA $= \frac{3558}{60} = 59.3$

VARIÂNCIA: $\frac{2458,60}{59} = 41.67$

MODA = 51

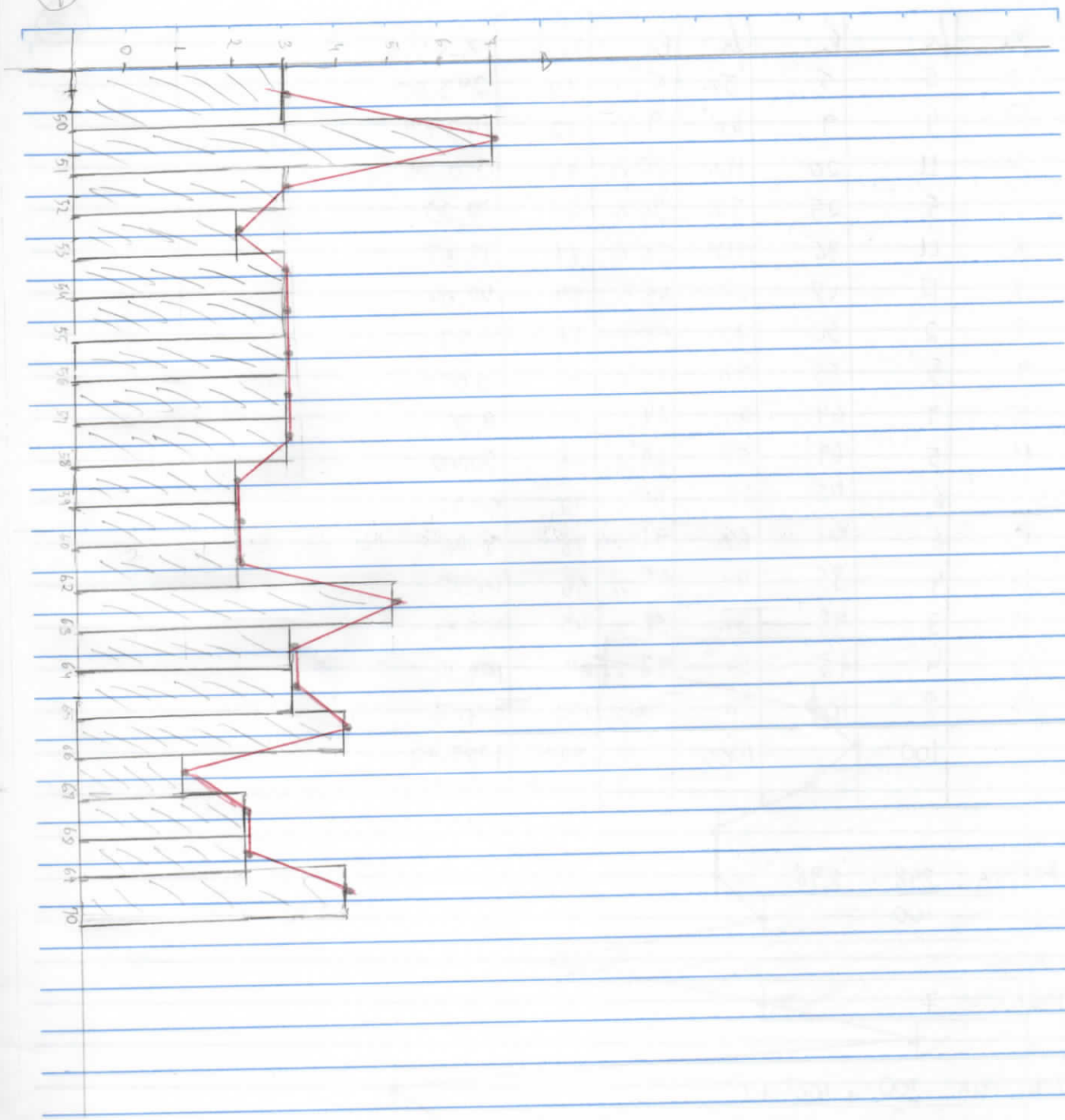
DESVIO PADRÃO: $\sqrt{41.67} = 6.46$

MEDIANA $= \frac{\frac{60}{2} + \frac{60}{2} + 1}{2} = \frac{X_{30} + X_{31}}{2} = \frac{58 + 59}{2} = 58.50$

data

S T Q Q S S D

4



data

5)

x_i	f_i	F_i	f_r	F_r	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
2	5	5	5%	5%	10	243.60
3	4	9	4%	9%	12	143.04
4	11	20	11%	20%	44	272.80
5	5	25	5%	25%	25	79.20
6	11	36	11%	36%	66	97.68
7	12	48	12%	48%	84	47.04
8	2	50	2%	50%	16	1.92
9	5	55	5%	55%	45	0.00
10	9	64	9%	64%	90	9.36
11	5	69	5%	69%	55	20.40
12	6	75	6%	75%	72	54.72
13	6	81	6%	81%	78	96.96
14	4	85	4%	85%	56	100.80
15	3	88	3%	88%	45	108.72
16	4	92	4%	92%	64	197.12
17	8	100	8%	100%	136	514.56
	100		100%		898	1987.92

MEDIA: $\frac{898}{100} = 8,98$

MODA = 7

MEDIANA: $\frac{\frac{100}{2} + \frac{100}{2} + 1}{2} = \frac{X_{50} + X_{51}}{2} = \frac{8+9}{2} = \frac{17}{2} = 8.5$

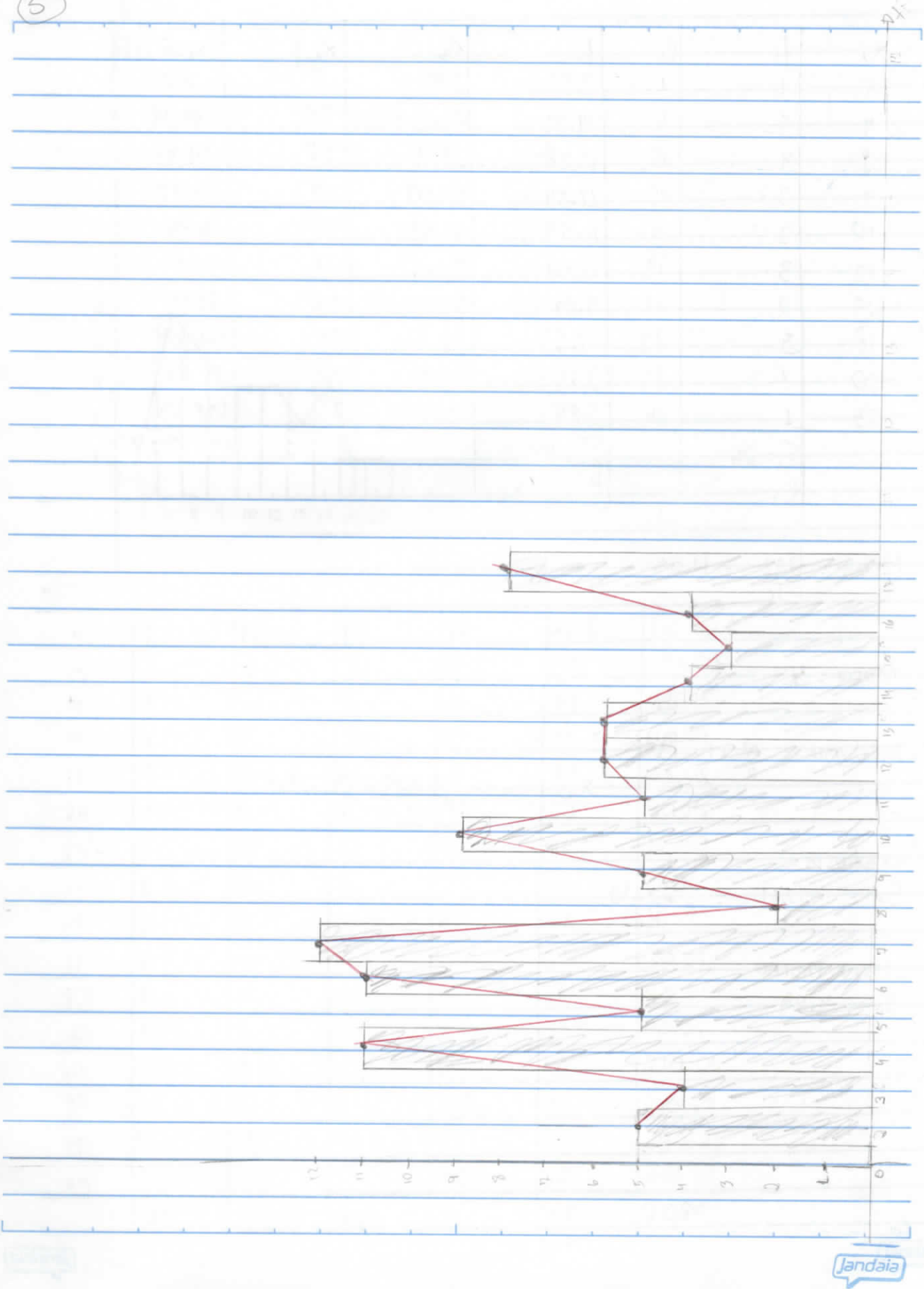
VARIÂNCIA: $S_{x^2} = \frac{1987,92}{99} = 20.08$

DESVIO PADRÃO: $S_x = \sqrt{20.08} = 4.48$

data

S T Q Q S S D

5



data • •

S T Q Q S S D

6)

x_i	f_i	F_i	f_r	F_r	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
5	1	1	3.85 %	3.85 %	5	38.81
7	5	6	19.23 %	23.08 %	35	89.46
8	4	10	15.38 %	38.46 %	32	41,73
9	3	13	11.54 %	50.00 %	27	14.92
10	3	16	11.54 %	61.54 %	30	4.54
12	3	19	11.54 %	73.08 %	36	1.78
15	2	21	7.69 %	80.77 %	30	28,43
18	3	24	11.54 %	92.31 %	54	137.50
20	1	25	3.85 %	96.16 %	20	76.91
23	1	26	3.84 %	100.00 %	23	138.53
	$\sum_i = 26$		$\sum_{f_r} = 100.00$		$\sum = 292$	$\sum = 572.61$
	f_i		f_r			

MEDIA = $\frac{292}{26} = 11.23$

MODA = 7

MEDIANA = $\frac{\frac{N}{2} + \frac{N}{2} + 1}{2} = \frac{x_{13} + x_{14}}{2} = \frac{9 + 10}{2} = \frac{19}{2} = 9.5$

VARIÂNCIA

$S_x^2 = \frac{572.61}{25} = 22.90$

DESVIO PADRÃO

$S_x = 4.79$

data

S T Q Q S S D

7)

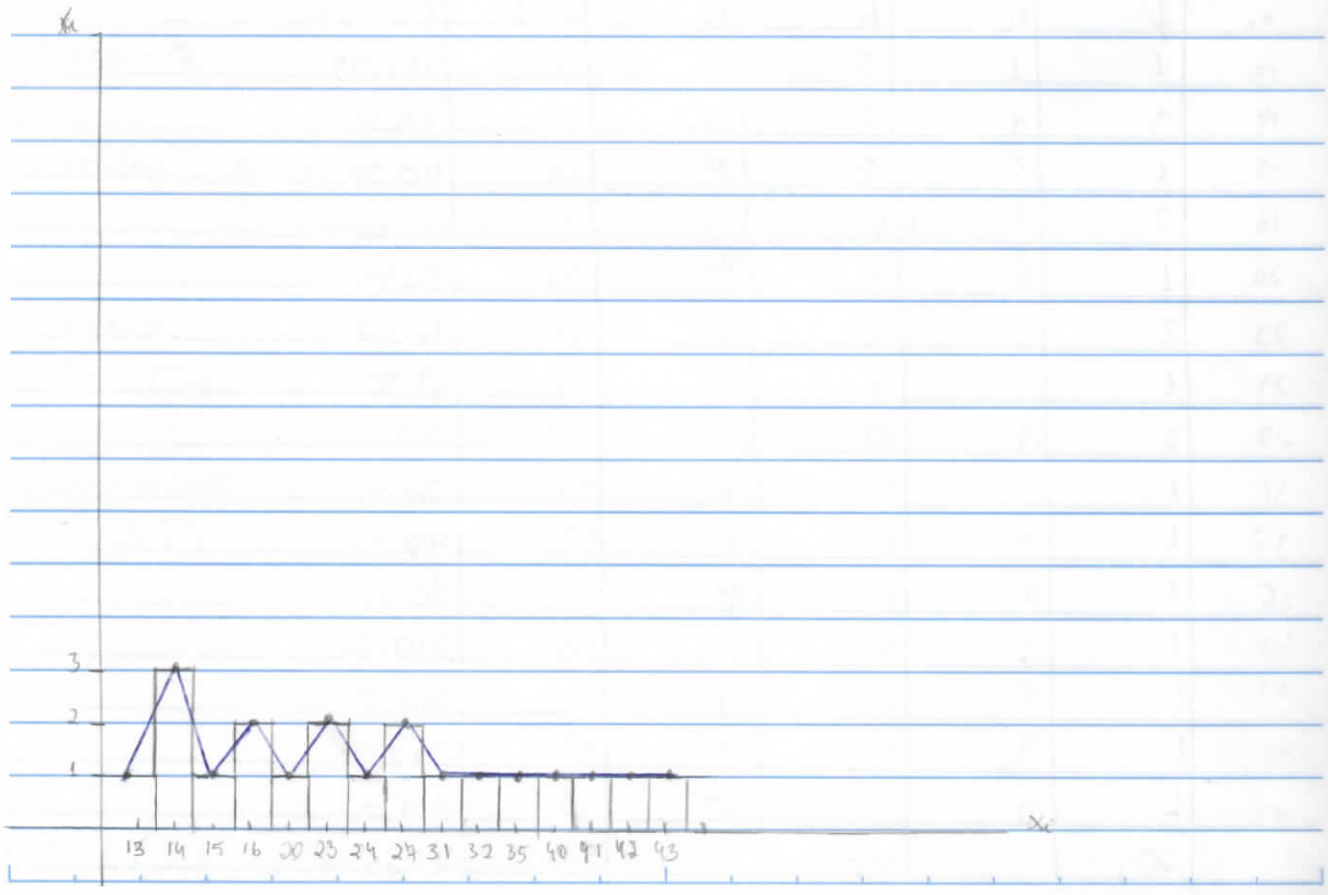
MEDIA = $\frac{510}{20} = 25.50$

MODA = 14

MEDIANA = $\frac{\frac{20}{2} + \frac{20}{2} + 1}{2} = \frac{x_{10} + x_{11}}{2} = \frac{23+24}{2} \quad \frac{47}{2} = 23.50$

VARIANCIA = $\frac{2085}{19} = 109.74$

DESVIO = $\sqrt{2085,08} = 10.48$



data

8

x_i	f_i	F_i	f_r	F_R	$x_i \cdot f_r$	$(x_n - \bar{x})^2 \cdot f_r$
0	10	10	25.00	25.00	0	31.68
1	5	15	12.50	37.50	5	3.04
2	15	30	37.50	75.00	30	0.73
3	5	35	12.50	87.50	15	7.44
4	4	39	10.00	97.50	16	19.71
5	1	40	2.5	100	5	10.37
	40		100%		71	72.97

MÉDIA = $\frac{71}{40} = 1.78$

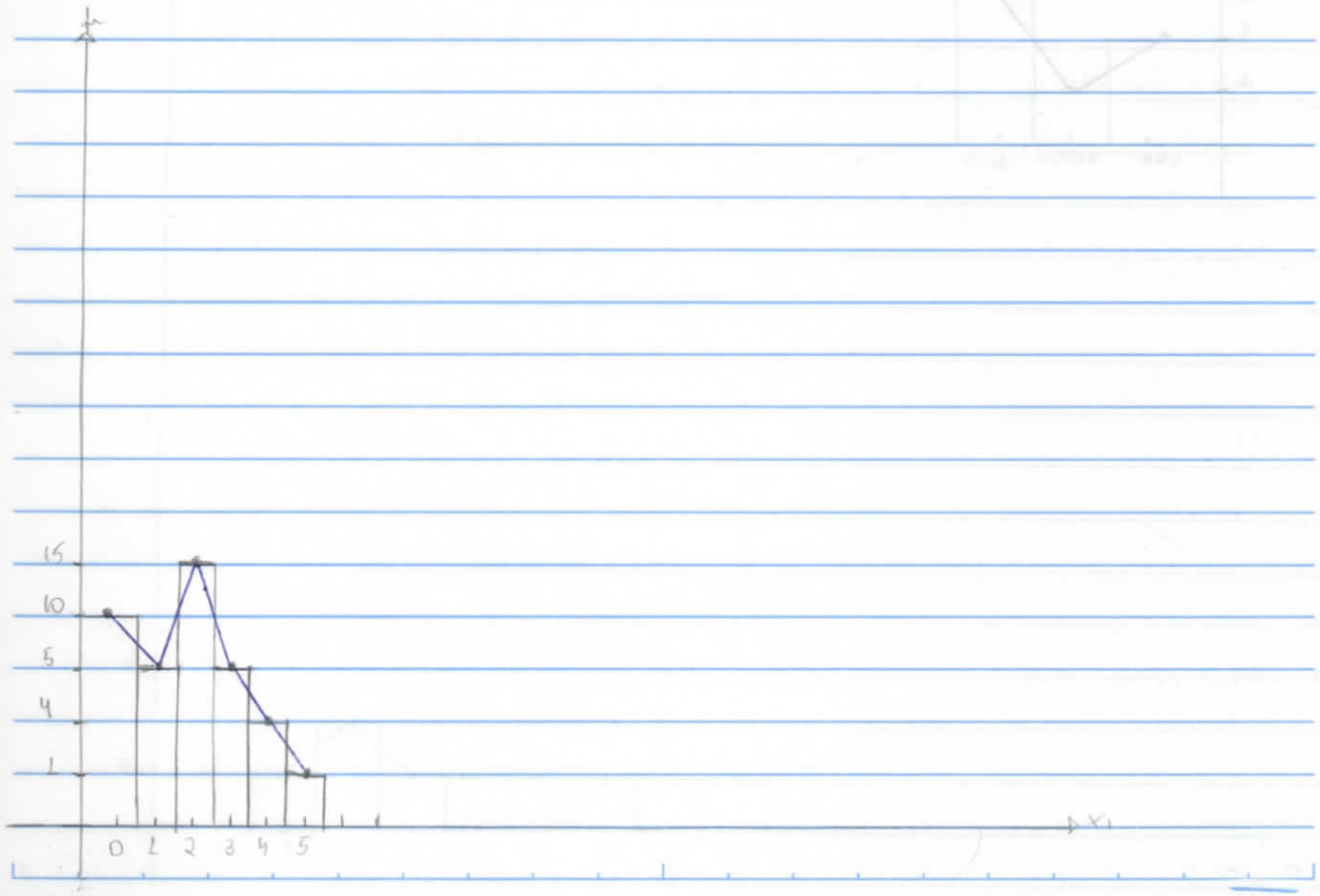
VARIÂNCIA

$\frac{72.97}{39} = 1.87$

MODA = 2

DESVIO : $\sqrt{1.87} = 1.37$

MEDIANA = $\frac{x_{20} + x_{21}}{2} = \frac{2+2}{2} = 2$



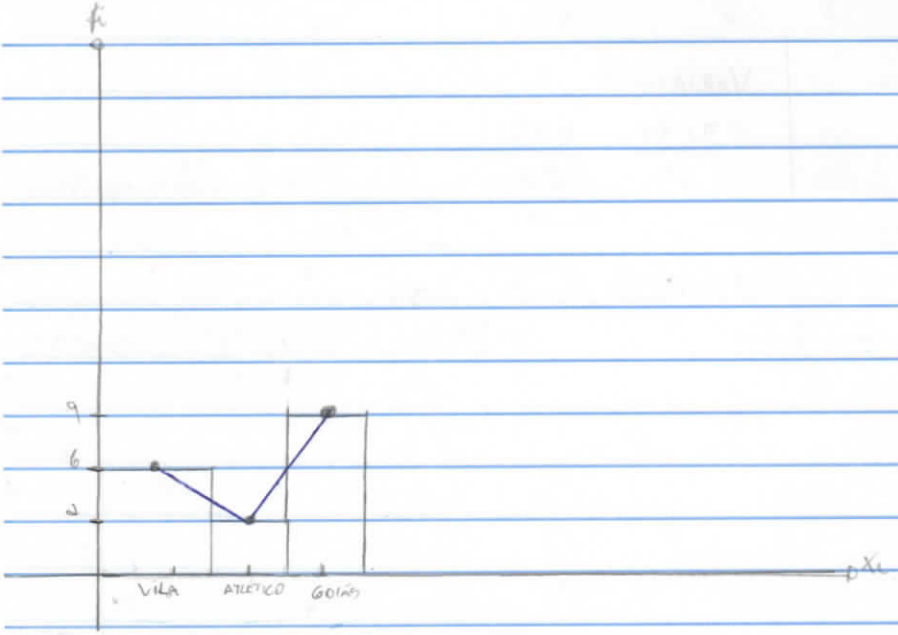
data • •

S T Q Q S S D

9)

x_i	f_i	F_i	f_r	F_r
VILA	6	6	35.29	35.29 %
ATLÉTICO	2	8	11.76	47.05 %
GOIÁS	9	17	52.95	100 %
	17		100%	

MODA = GOIÁS



data • •

S T Q Q S S D

10)

x_i	f_i	F_i	f_r	F_r	$x_i \cdot f_i$	$(x_i - \bar{x})^2 \cdot f_i$
1	1	1	10	10	1	213,16
5	1	2	10	20	5	112,36
7	2	4	20	40	14	147,92
9	1	5	10	50	9	43,56
15	1	6	10	60	15	0,36
17	1	7	10	70	17	1,96
18	1	8	10	80	18	5,76
23	1	9	10	90	23	54,76
54	1	10	10	100	54	1444,56
	10		100		156	2054,40

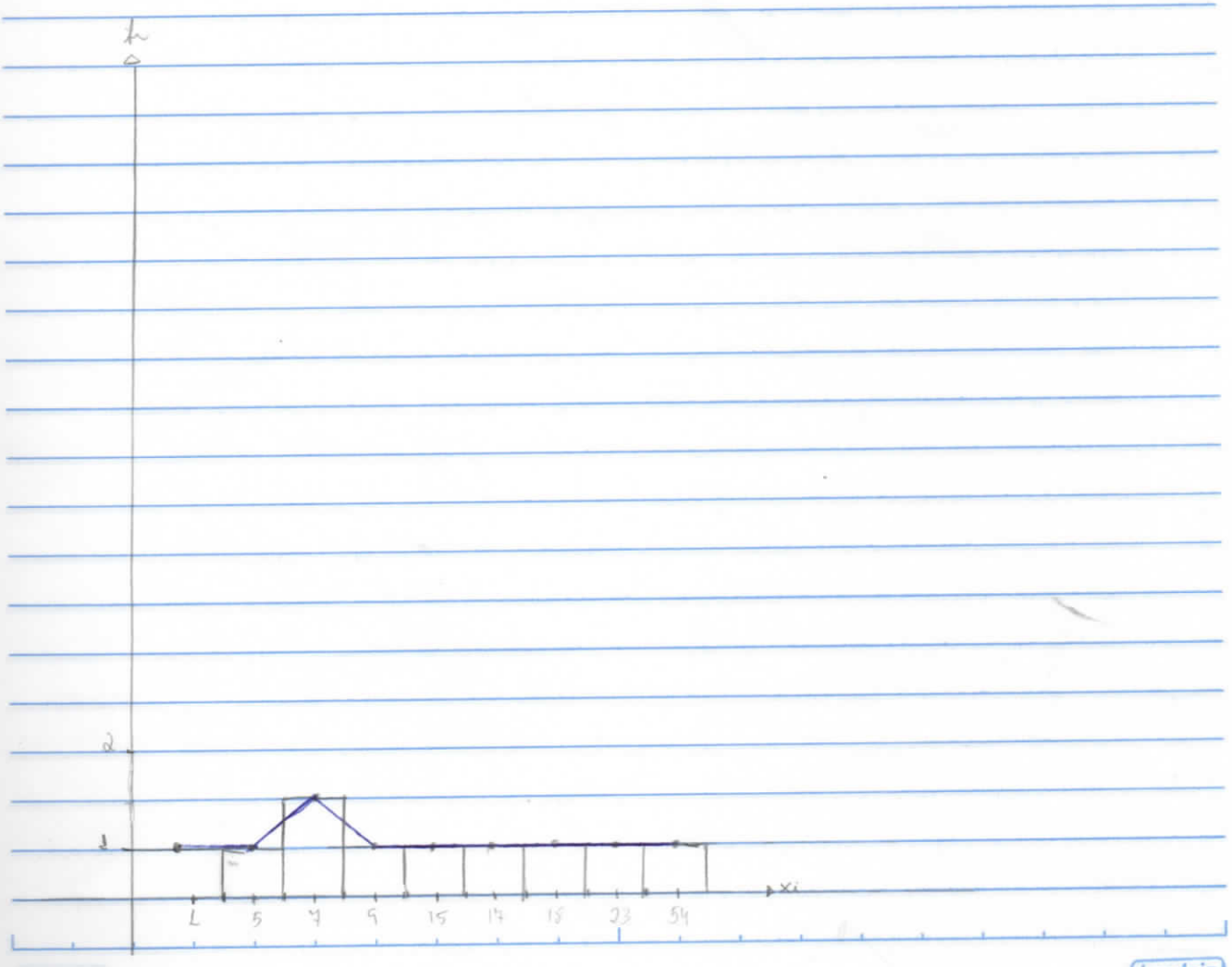
MEDIA = $\frac{156}{10}$ = 15.6

MODA = 7

MEDIANA = $\frac{x_5 + x_6}{2} = \frac{9+15}{2} = 12$

VARIANCIA = $\frac{2054.40}{9} \cong 228.27$

DESVIO PADRÃO = $\sqrt{228.27} = 15.11$



Jandaia