= 88.4

14 (a) $95+92+94+87+89+80 = \frac{537}{6}$

$= 90.2$

b $95+89+94+80+84+90+87+92$

$\frac{711}{8}$

$= 88.9$

(c) Student doing engineering course must be good in science and maths which have a great weight

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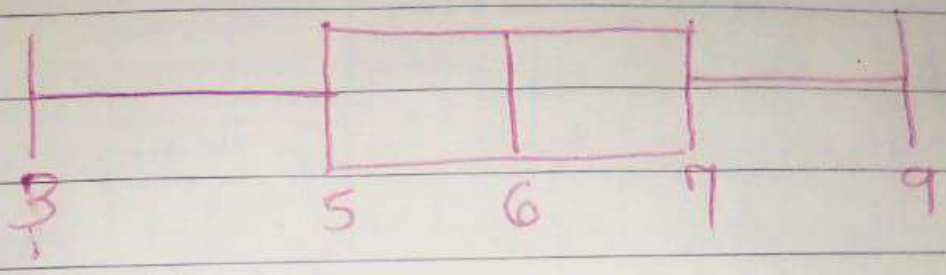
16b

(b)



(c) No

All the data is close to the middle.

DAY 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
MONTH JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
YEAR 2019 2020 2021 2022 2023 2024 2025 2026

Q16.

Monthly Sales	f	$(x-\bar{x})$	$f(x-\bar{x})^2$
3	2	-2.9	8.41
4	1	-1.9	3.61
5	4	-0.9	3.24
6	5	0.1	0.05
7	3	1.1	3.63
8	1	2.1	4.41
9	1	3.1	9.61

$= 51.3001$

15

$S = \sqrt{\frac{32.96}{15}}$

$\sqrt{2.20}$

$= 1.5$

Interquartile range.

$Q_3 = \frac{3}{4} * 15 = \frac{45}{4} = 11.25$

$= 7$

$Q_1 = \frac{1}{4} \times 15 = \frac{15}{4} = 3.75$

$= 5$

$Q_3 - Q_1 = 7 - 5$

$= 2$

Semi interquatile range

$2 \div 2 = 1$

KAZUKO

2.7

1. (a)

Monthly sales	Tally	Frequency	Cummulative frequency
3	I	1	1
4	I	1	2
5	IIII	4	6
6	~~IIII~~	5	11
7	III	3	14
8	I	1	15
9	I	1	16

b & c

2. (a)

mass (kg)	Frequency	Tally	mid points	Relative frequency	
231 - 240	2	II	235	2/25	0.08
241 - 250	1	I	245	1/25	0.04
251 - 260	1	I	255	1/25	0.04
261 - 270	3	III	265	3/25	0.12
271 - 280	5	~~IIII~~	275	5/25	0.2
281 - 290	2	II	285	2/25	0.08
291 - 300	3	III	295	3/25	0.12
301 - 310	2	II	305	2/25	0.08
311 - 320	3	III	315	3/25	0.12
321 - 330	1	I	325	1/25	0.04
331 - 340	1	I	335	1/25	0.04
341 - 350	1	I	345	1/25	0.04

3 (a) Categorical data

This is because the data is present for the whole category.

(b)

(c) It represents every category in the data

12 Mass	f	x	fx
231 - 240	2	235	470
241 - 250	1	245	245
251 - 260	1	255	255
261 - 270	3	265	795
271 - 280	5	275	1375
281 - 290	2	285	570
291 - 300	3	295	885
301 - 310	2	305	610
311 - 320	3	315	945
321 - 330	1	325	325
331 - 340	1	335	335
341 - 350	1	345	345
		Efx	7155

12 (a)

Mean = Assumed mean is the average number

= 285

Median = 285

12 (b) Mean $\frac{\Sigma fx}{\Sigma f} = \frac{7155}{25} = 286.2$

Median = 285

(c) The results in (a) are asumed while that in b is calculated.

11

Monthly Sale	frequency	fx
3	1	3
4	1	4
5	4	20
6	5	30
7	3	21
8	1	8
9	1	9
	16	$\Sigma fx = 95$

$$\text{Mean} \quad \frac{\Sigma fx}{\Sigma f} = \frac{95}{16}$$

$$5.9$$

Meddan = 6.

Mode = 6.

(b) Each of the above measure describes the data in equal measures.

13 (a) Median.

(b) ~~The~~ No

This is because the vibration of ages is either Positively or negatively Skewed.

15. The mode is very important particulary when determing avarage size

c The 25th and 75th percentiles coincides with first and 3rd quartile

19

(a) (i) 85

$$Z = \frac{x - \mu}{\sigma} = \frac{85 - 100}{15}$$

$$-1$$

(ii) $\frac{135 - 100}{15}$

$$2.33$$

(iii) $\frac{100 - 100}{15}$

$$= 0$$

(iv) $\frac{62 - 100}{15}$

$$= -2.53$$

b

(i) $Z = \frac{x - \mu}{\sigma}$

$$z\sigma + \mu = x$$

$$x = 15 \times 1 + 100$$

$$15 + 100$$

$$= 115$$

(ii) $x = (-2 \times 15) + 100$

$$= 70$$

(iii) $x = (1.5 \times 15) + 100$

$$= 122.5$$

(iv) $= (-1.2 \times 15) + 100$

$$= 82$$

17

(a) The interquartile range does not always relate with the median of a data.

(b) Subtract Q_1 and Median, Median from Q_3. Add the difference and devide by two.

18

$\frac{8}{100} \times 25 = 2.5$

19

(a) $Q_1 = \frac{1}{4} \times 26 = 6.25$

$Q_3 = \frac{3}{4} \times 26 = 18.75$ ~~19.5~~

$260.5 + \left(\frac{2.25}{3} \times 10\right)$

$= 267.5$

$300.5 + \left(\frac{1.5}{2} \times 10\right)$

$= 310$

(b) $\frac{10}{100} \times 25 = 2.5$

$240 + 2.5$

$= 242.5$

25th = First quartile

$= 267.5$

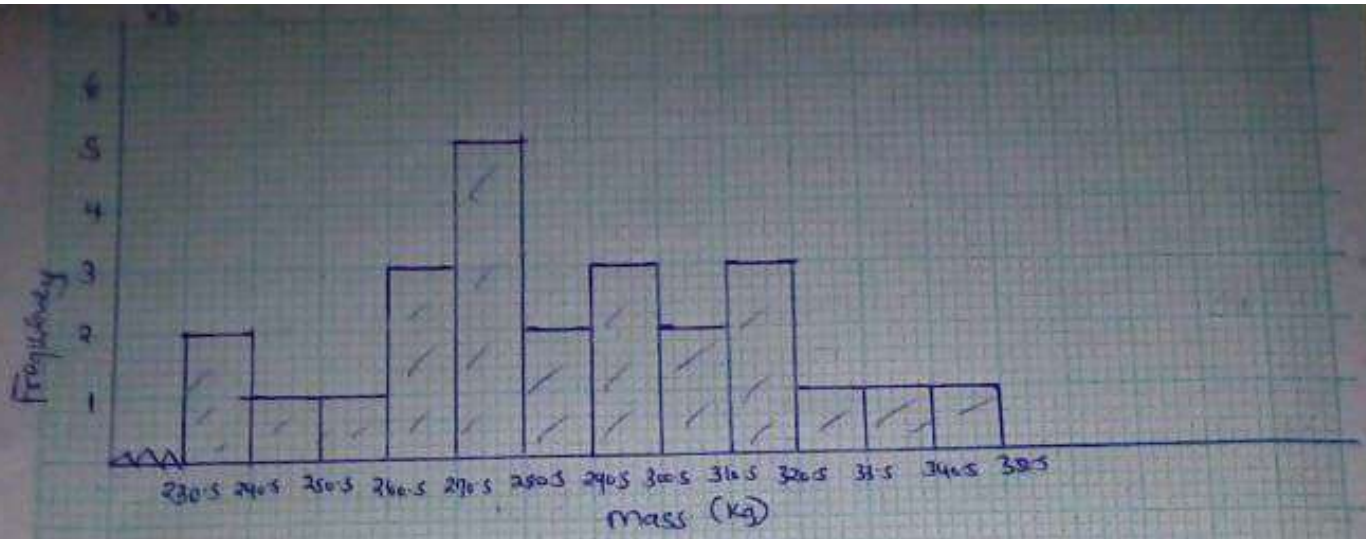
75th = 3rd quartile

$= 310$

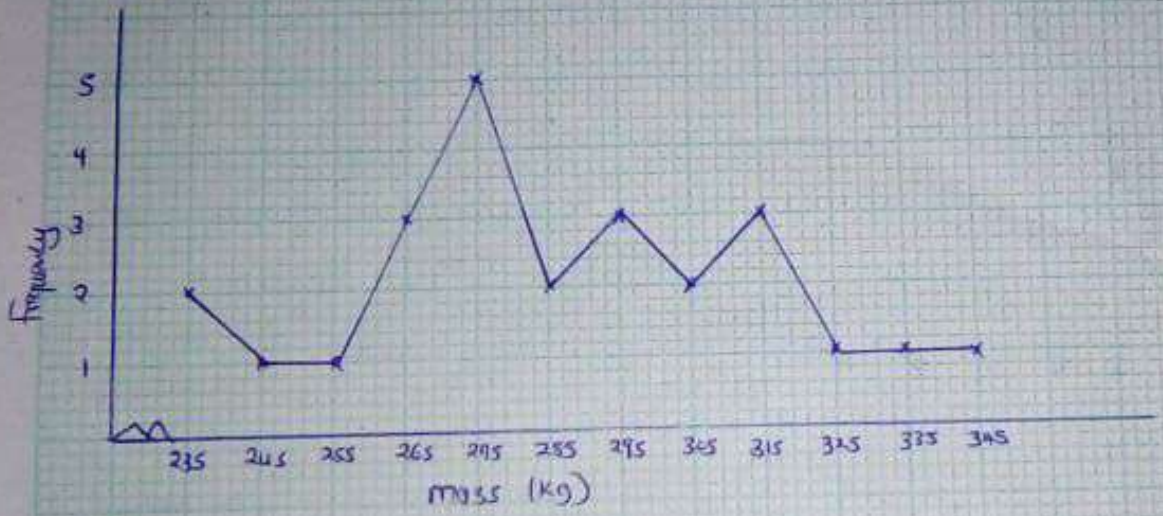
90th = $\frac{90}{100} \times 25 = 22.5$

$310.5 + 22.5$

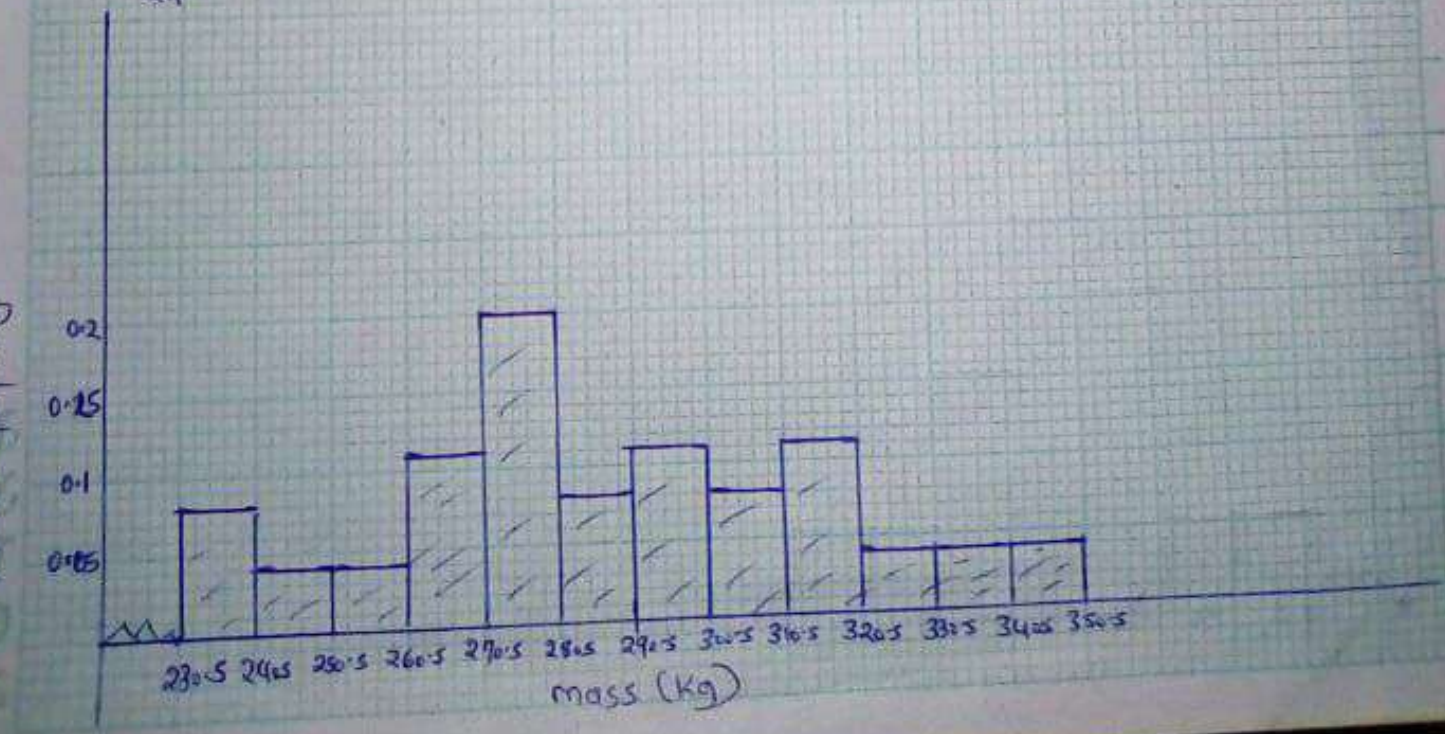
$= 332.5$


Frequency
6
5
4
3
2
1
230·5 240·5 250·5 260·5 270·5 280·5 290·5 300·5 310·5 320·5 330·5 340·5 350·5
mass (kg)

2c


Frequency
5
4
3
2
1
235 245 255 265 275 285 295 305 315 325 335 345
mass (kg)

2d


Relative frequency
0·2
0·15
0·1
0·05
230·5 240·5 250·5 260·5 270·5 280·5 290·5 300·5 310·5 320·5 330·5 340·5 350·5
mass (kg)

20

(a) mean

50, 52, 52, 54, 65, 67, 69, 71, 82, 84, 85, 86

Mean $\frac{50+52+52+54+65+67+69+71+82+84+85+86}{12} = 68.1$

Median $= \frac{67+69}{2} = 68$

(b) $50 - 68.1 = 327.61$

$(52 - 68.1) = 518.42$

$54 - 68.1 = 198.81$

$65 - 68.1 = 9.61$

$67 - 68.1 = 1.21$

$69 - 68.1 = 0.81$

$71 - 68.1 = 8.41$

$82 - 68.1 = 193.21$

$84 - 68.1 = 252.81$

$85 - 68.1 = 285.61$

$86 - 68.1 = 320.41$

2116.92

$\sqrt{\frac{2116.92}{12}} = 13.9$

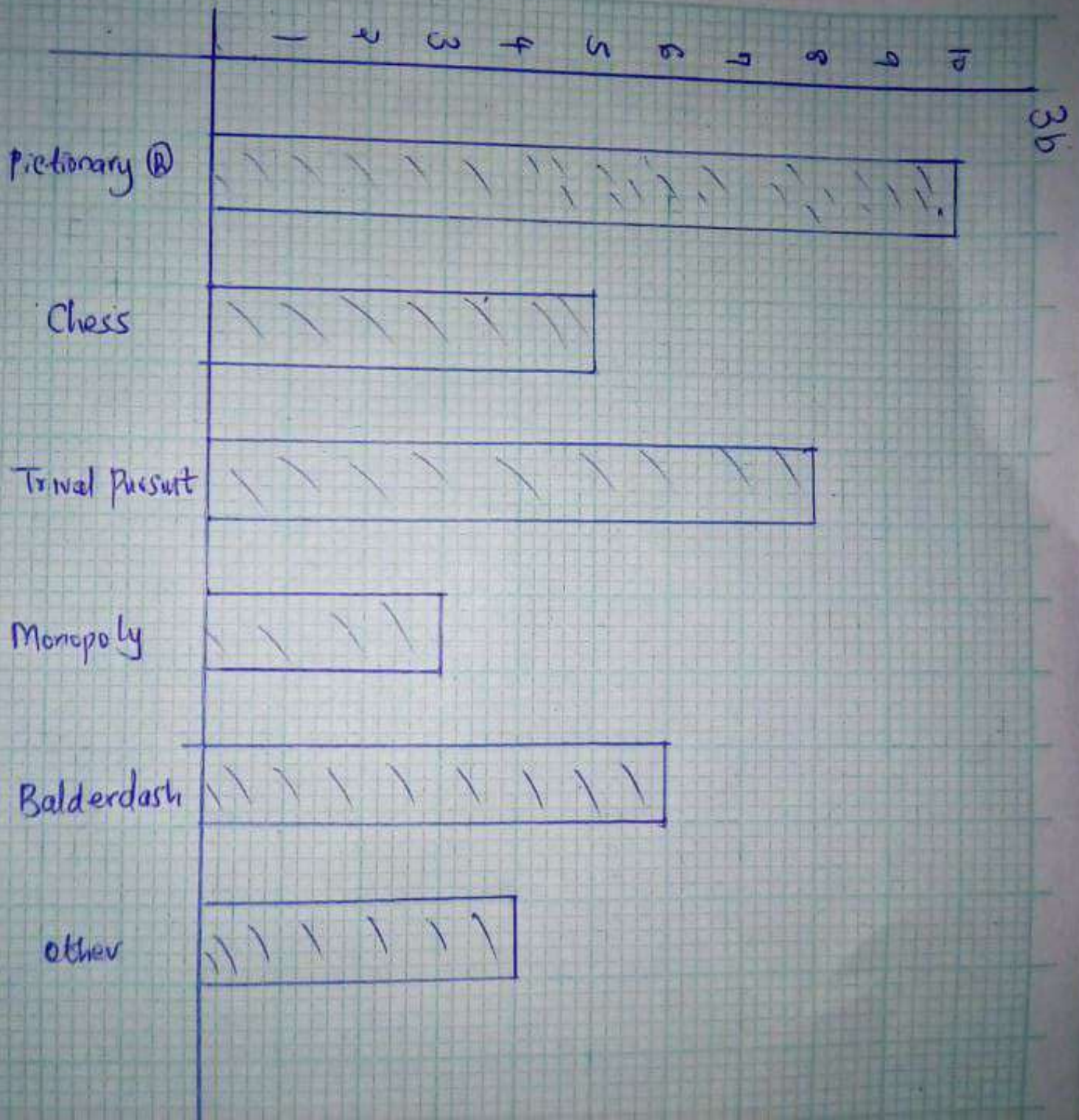
$Q_1 = 52$

$Q_3 = 82$

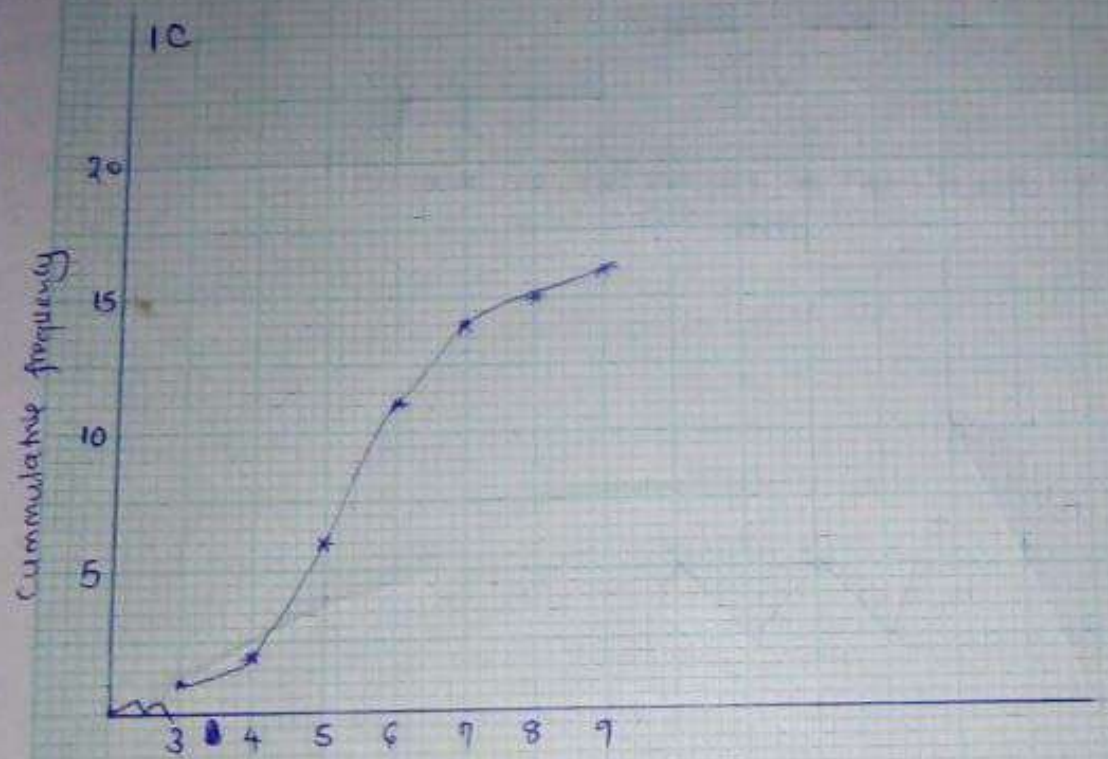
Interquatile range $= 82 - 52 = 30$

(c) Standard deviation

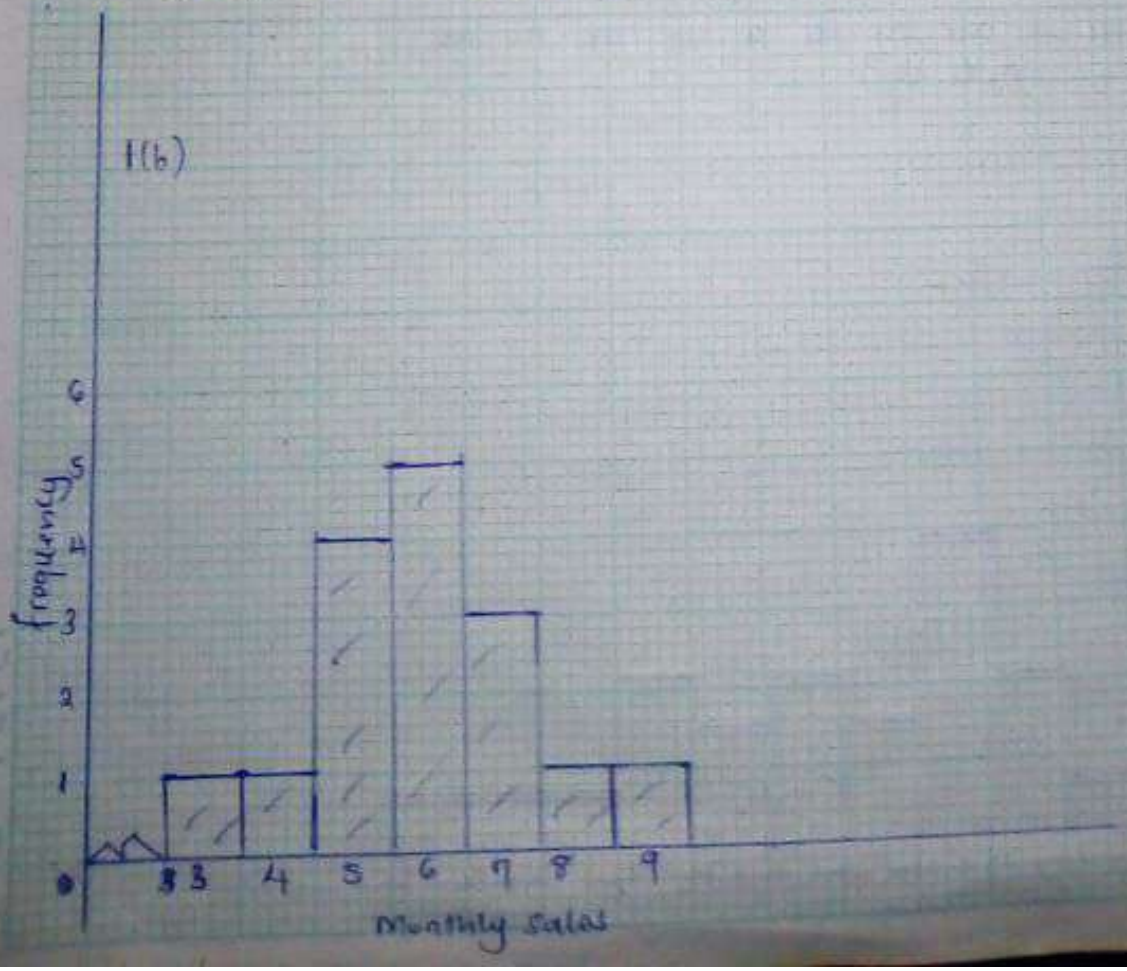
Because it caters for all the values in the data as it is centrally placed


1 2 3 4 5 6 7 8 9 10
3b
Pictionary ®
Chess
Trivial Pursuit
Monopoly
Balderdash
other

1c


Cumulative frequency
20
15
10
5
3
4
5
6
7
8
9

1(b)


frequency
6
5
4
3
2
1
0
3
4
5
6
7
8
9
Monthly Sales