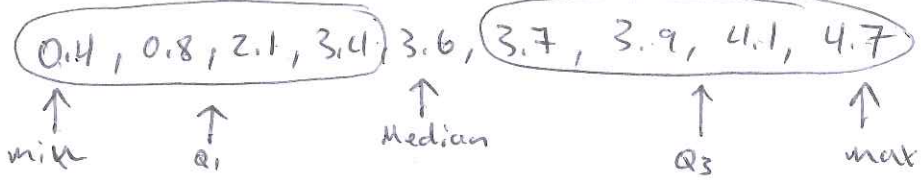


Warm up:

1. Consider the data set:

0.4 2.1 3.4 3.9 4.7 3.7 0.8 3.6 4.1

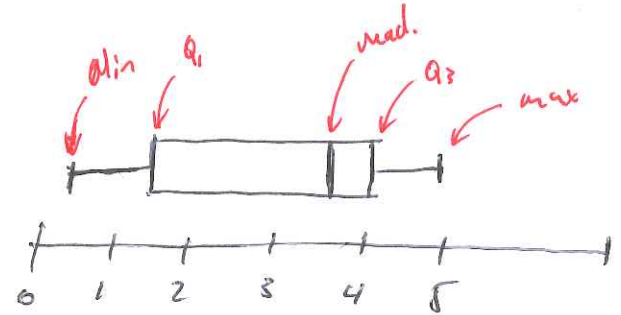
a.) Find the mean, median and mode. Confirm your answers using technology.



$$\text{Mean} = \bar{x} = \frac{\sum x}{n} = \frac{26.7}{9} \approx 2.97 \text{ (3SF)} \quad (2.96 \text{ (exact)}) \quad (2.97 \text{ or } 2.9\bar{6})$$

b.) Find the "five figure summary" and sketch a box and whisker plot.

$$\begin{aligned} \text{Min} &= 0.4 \\ Q_1 &= \frac{0.8 + 2.1}{2} = 1.45 \\ \text{Med} &= 3.6 \\ Q_3 &= \frac{3.9 + 4.1}{2} = 4 \\ \text{Max} &= 4.7 \end{aligned}$$



2. a.) The data below is discrete data.

b.) Find the mean.

c.) Determine the median.

d.) Calculate the standard deviation. Use your graphics calculator to check your work. *Note: Always use σ_x from GDC for standard deviation!*

X	Number of bolts	33	34	35	36	37	38	39	40
F	Frequency	1	5	7	13	12	8	0	1

x	f	f·x	(x- \bar{x})	(x- \bar{x}) ²	f(x- \bar{x}) ²
33	1	33	-3.3	10.89	10.89
34	5	170	-2.3	5.29	26.45
35	7	245	-1.3	1.69	11.83
36	13	468	-0.3	0.09	1.17
37	12	444	0.7	0.49	5.88
38	8	304	1.7	2.89	23.12
39	0	0	2.7	7.29	0
40	1	40	3.7	13.69	13.69

$\sum f = 47$ $\sum (f \cdot x) = 1704$ $\sum f(x-\bar{x})^2 = 92.95$

$$\therefore \bar{x} = \frac{\sum (f \cdot x)}{\sum f} = \frac{1704}{47} \approx 36.25 \approx 36.3$$

c) $\left(\frac{n+1}{2}\right)^{\text{th}}$ spot
 $\therefore \frac{47+1}{2} = \frac{48}{2} = 24^{\text{th}}$ spot.
 $\therefore 36 = \text{median}$

d) $S_n = \sqrt{\frac{\sum (f \cdot (x-\bar{x})^2)}{\sum f}}$
 $= \sqrt{\frac{92.95}{47}} \approx 1.41$



3. The data below is continuous data.

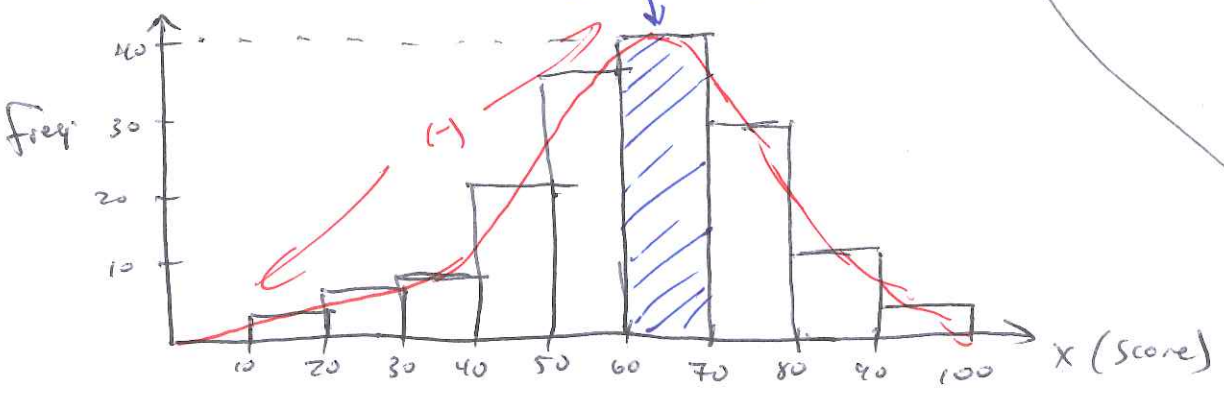
a.) Find an estimate for the mean. Why can you only find an estimate for this data?

Because for example you only know 2 data points lie between 10 and 20 but you don't know the actual #'s

Score	Frequency	mid	f · x	cumm. f.
$10 \leq x < 20$	2	15	2 · 15	2
$20 \leq x < 30$	5	25	5 · 25	7
$30 \leq x < 40$	7	35	7 · 35	12
$40 \leq x < 50$	21	45	21 · 45	33
$50 \leq x < 60$	36	55	36 · 55	69
$60 \leq x < 70$	40	65	40 · 65	109
$70 \leq x < 80$	27	75	27 · 75	138
$80 \leq x < 90$	9	85	9 · 85	147
$90 \leq x < 100$	3	95	3 · 95	150

b.) Circle one: A bar graph/histogram is used to plot this data:
 discrete (continuous)

c.) Sketch one and determine the modal class. → $60 \leq x < 70$



d.) Describe the distribution of the data.

Slightly negative distribution

e.) Build a cumulative frequency column.

Using the graph paper provided and a scale of 1cm = 10 units, plot a CUMULATIVE frequency chart and estimate the IQR and median.

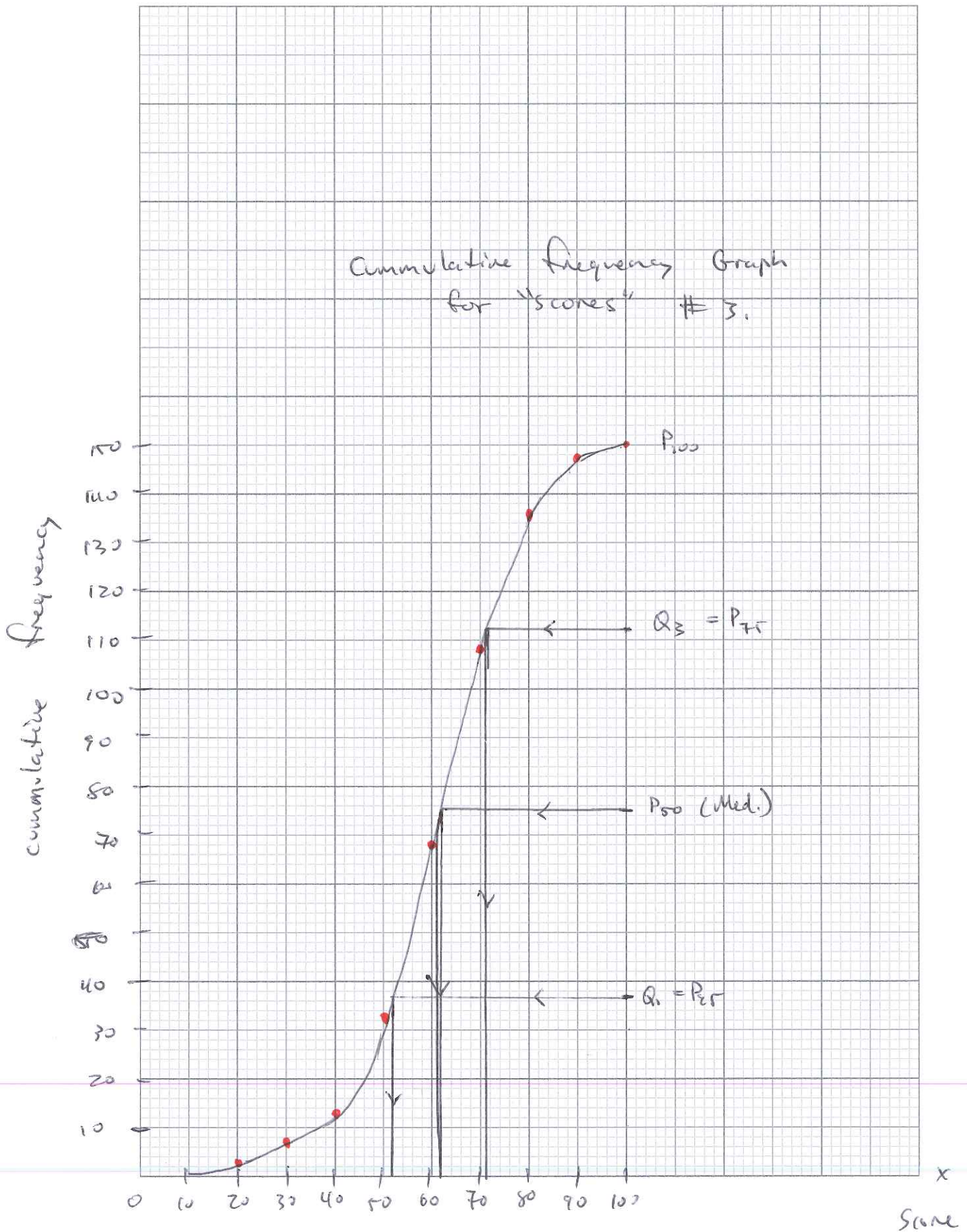
(See graph paper)

$\therefore IQR \approx 71 - 52 = 19$

Median ≈ 62

(answers may vary)

Cumulative Frequency Graph for "scores" # 3.

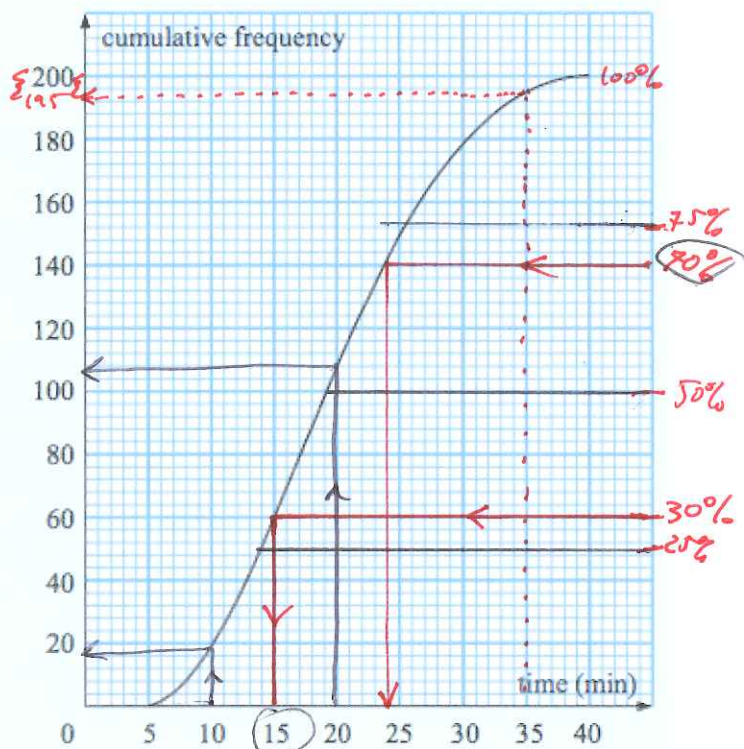


$Q_1 \approx 52$ Med ≈ 62 $Q_3 \approx 71$

4.) Use the cumulative frequency graph to estimate how many students scored above 75%?

This cumulative frequency curve shows the times taken for 200 students to travel to school by bus.

- Estimate how many of the students spent between 10 and 20 minutes travelling to school.
- If 30% of the students spent more than m minutes travelling to school, estimate the value of m .



d) add here:

a) $\approx 105 < 20$ minutes
 $\approx 18 < 10$ minutes
 $\therefore 105 - 18 \approx 87$ students between 10 + 20 min.

b) about 30% spend less than 15 minutes.

(Be careful here!)

30% MORE THAN m minutes means

70% less than m minutes.

\therefore about 24 minutes.

c) 200 total \therefore maybe $200 - 195 = 5$ spend more than 35 minutes