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GCSE Mathematics

Cumulative Frequency & Box Plots

Questions

Pearson Edexcel GCSE & iGCSE Mathematics



Section A — Foundation



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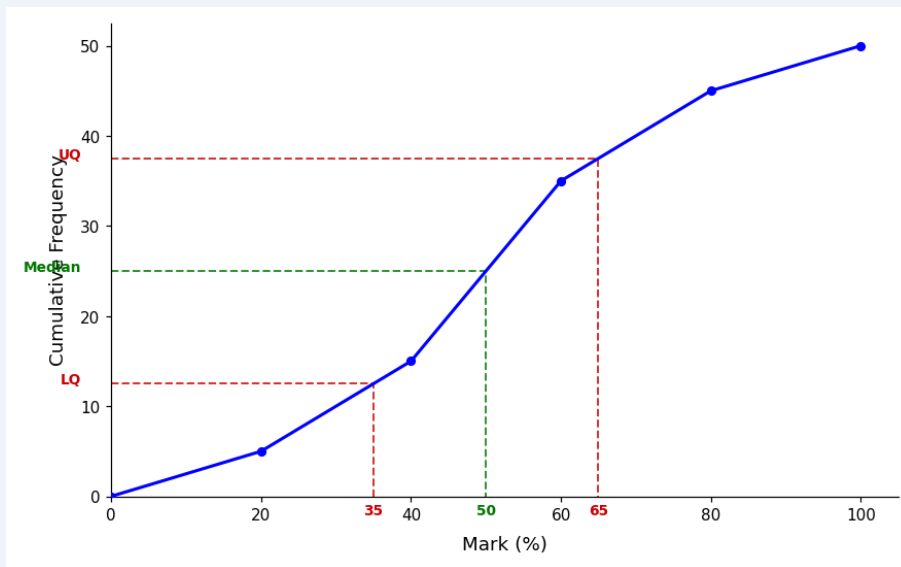


Worked Examples

[Fluency]

Complete the cumulative frequency table and draw the curve.

Mark	0–20	20–40	40–60	60–80	80–100
Frequency	5	10	20	10	5
Cum. Freq.	5	15	35	45	50



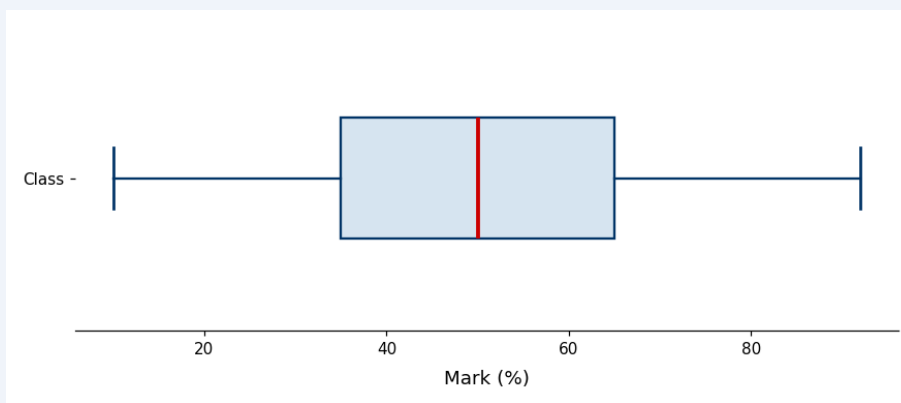
[Reasoning]

Find the median and IQR from the graph.

Median \approx 50, $LQ \approx$ 35, $UQ \approx$ 65, $IQR = 30$

[Problem Solving]

Draw the box plot using: Min=10, $LQ=35$, Median=50, $UQ=65$, Max=92.

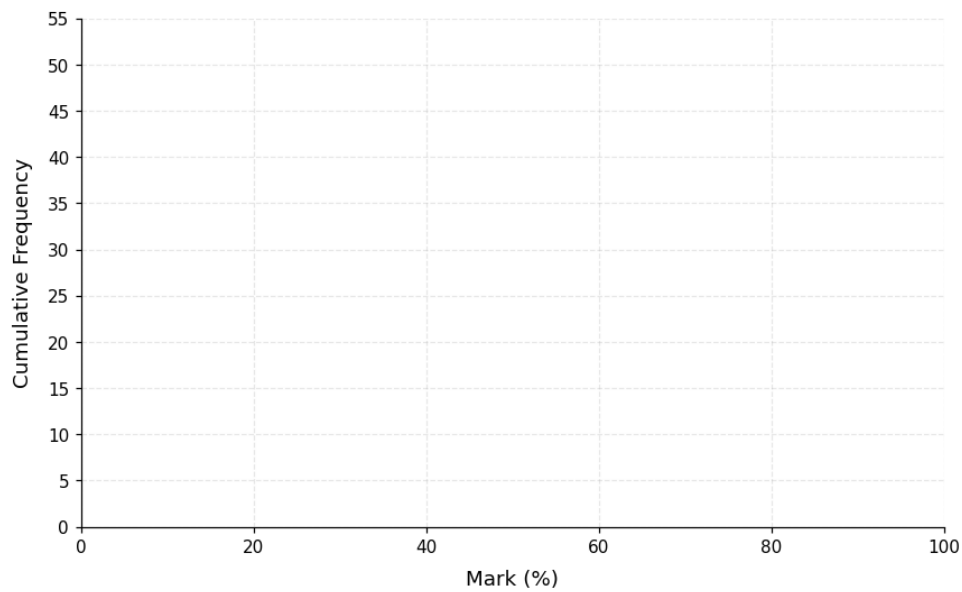


[Fluency]

1.

Mark (%)	0–20	20–40	40–60	60–80	80–100
Frequency	5	10	20	10	5
Cumulative Freq.					

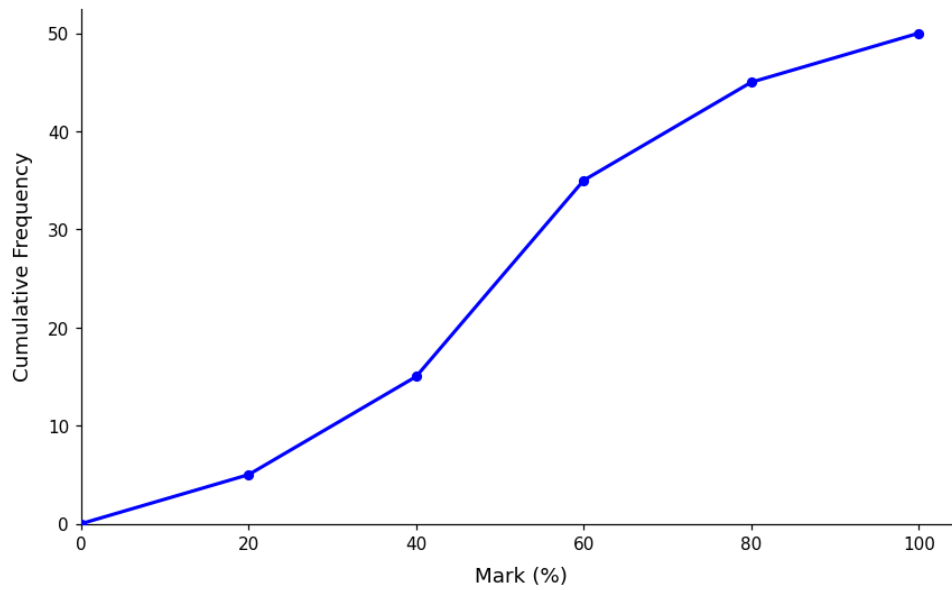
- (a) Complete the cumulative frequency column. (2)
(b) Draw the cumulative frequency curve on the axes below. (2)

**(4 marks)**



[Fluency]

2.



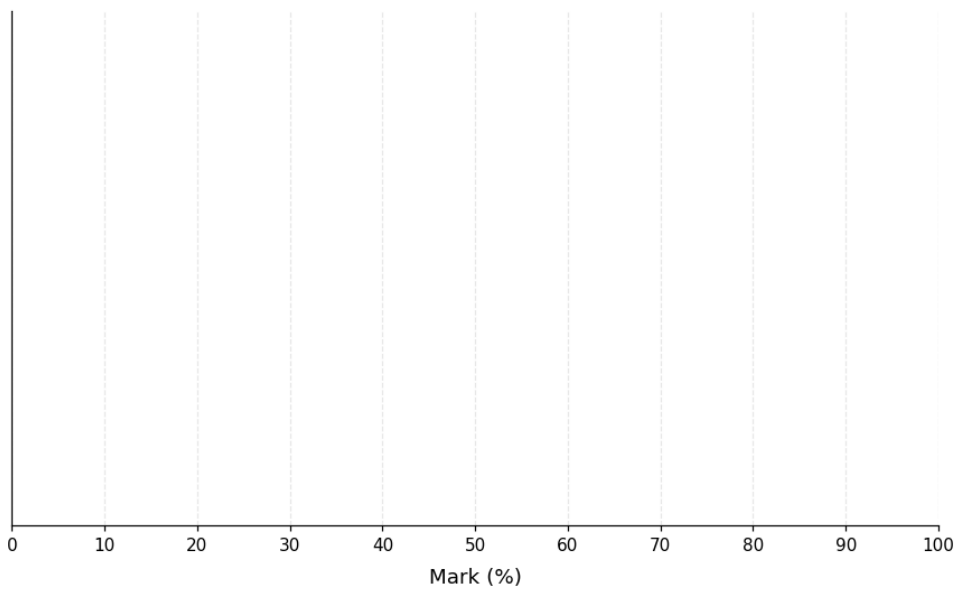
Use the graph to find: (a) Median (b) LQ (c) UQ (d) IQR

(4 marks)

[Fluency]

3.

Use the values Min=10, LQ=35, Median=50, UQ=65, Max=92 to draw a box plot.



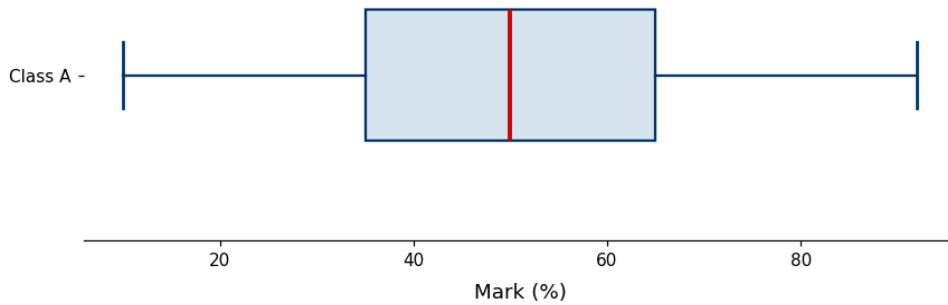
(3 marks)





[Reasoning]

4.



(a) Median (b) IQR (c) % scoring more than 65%

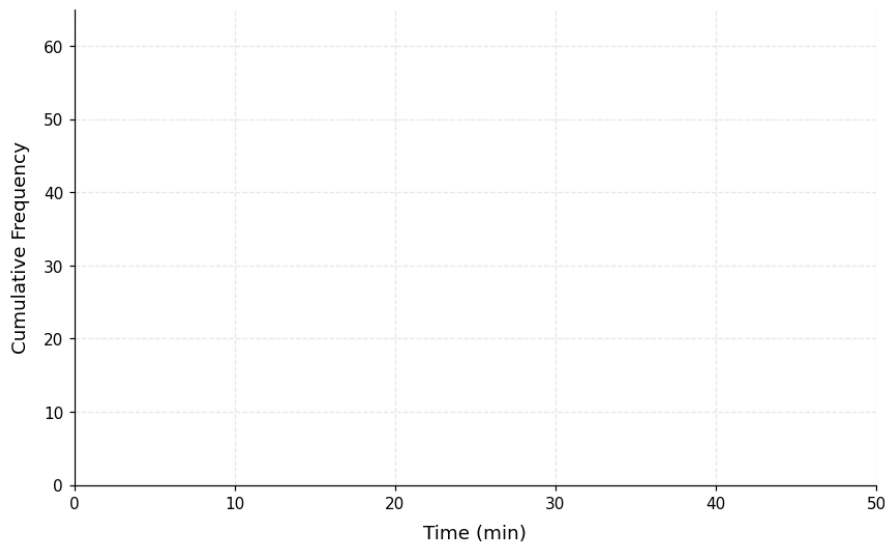
(3 marks)

[Reasoning]

5.

Time (min)	0–10	10–20	20–30	30–40	40–50
Frequency	8	14	20	10	8

(a) Draw CF curve (b) Estimate median (c) Estimate IQR



(6 marks)

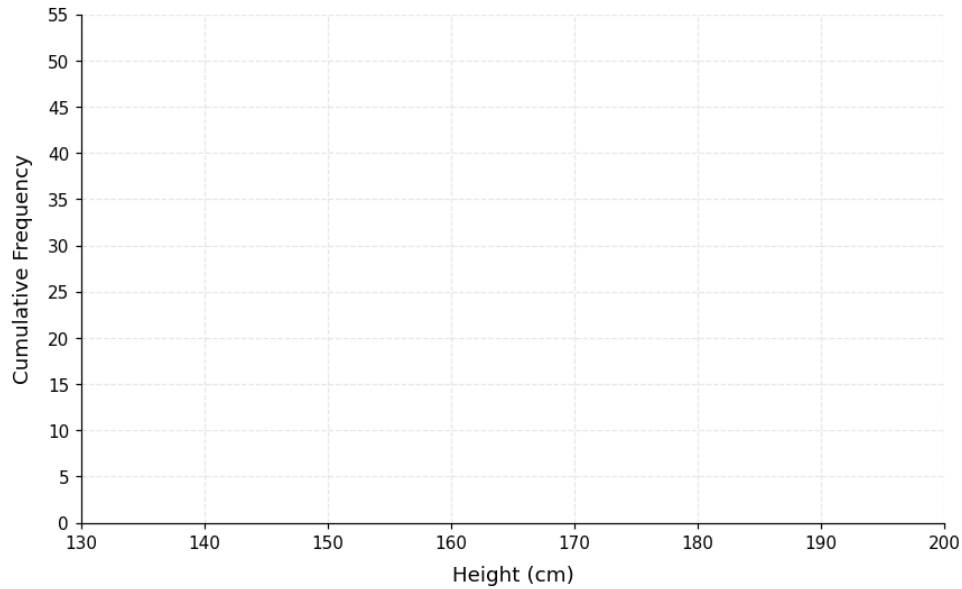


[Problem Solving]

6.

Height (cm)	140–150	150–160	160–170	170–180	180–190
Frequency	4	12	18	10	6

(a) Draw CF curve (b) Estimate median and IQR (c) Draw box plot



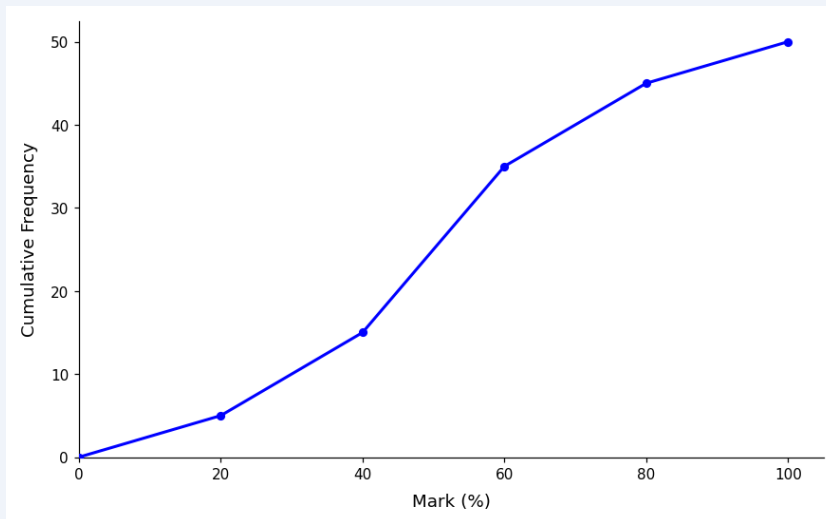
(9 marks)

Section B — Higher

Worked Examples

[Fluency]

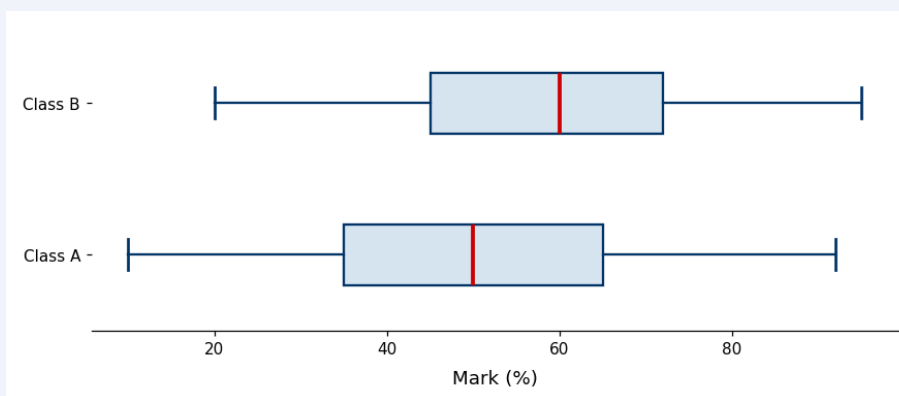
Estimate the number of students scoring more than 70%.



At $x = 70$: $CF \approx 41 \Rightarrow$ above 70 = $50 - 41 = 9$

[Reasoning]

Compare two box plots.



Class B has higher median and UQ.

[Problem Solving]

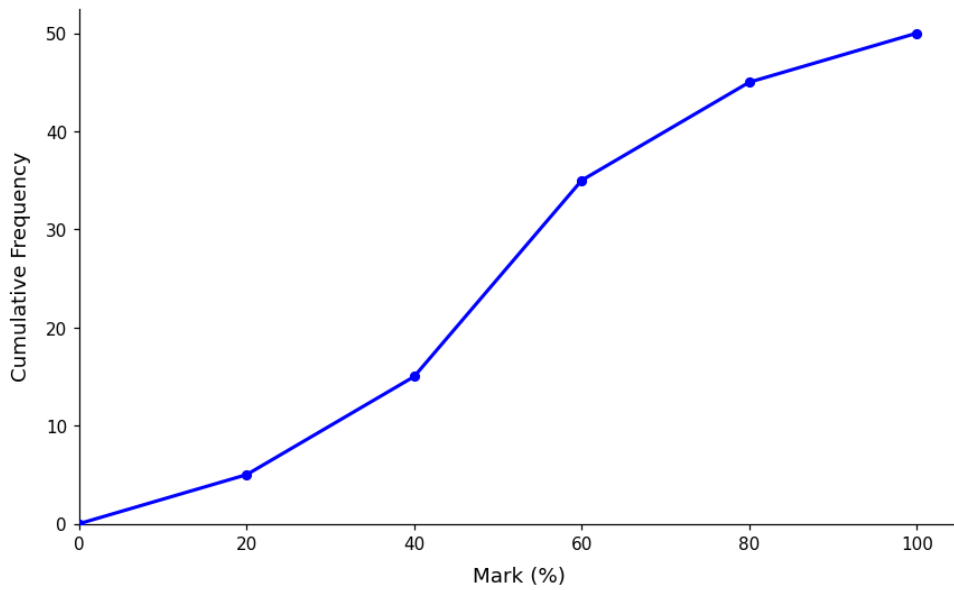
Interpret a long upper whisker.

Top 25% of values are more spread out — suggests positive skew.



[Fluency]

1.

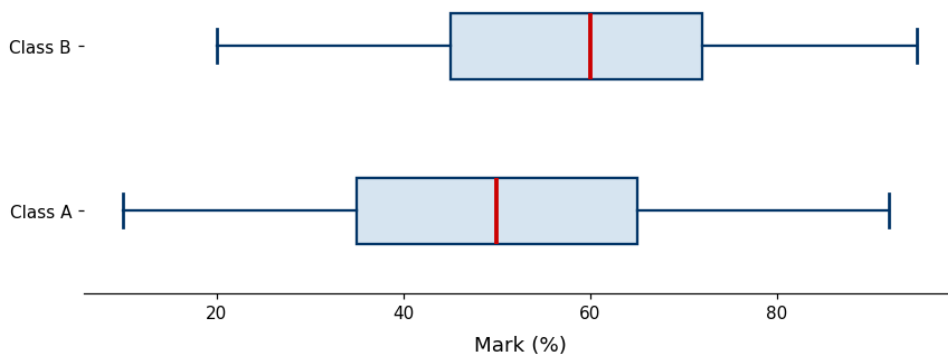


(a) Estimate number scoring more than 70%. (b) Estimate 10th percentile.

(4 marks)

[Fluency]

2.



Compare the two distributions.

(4 marks)



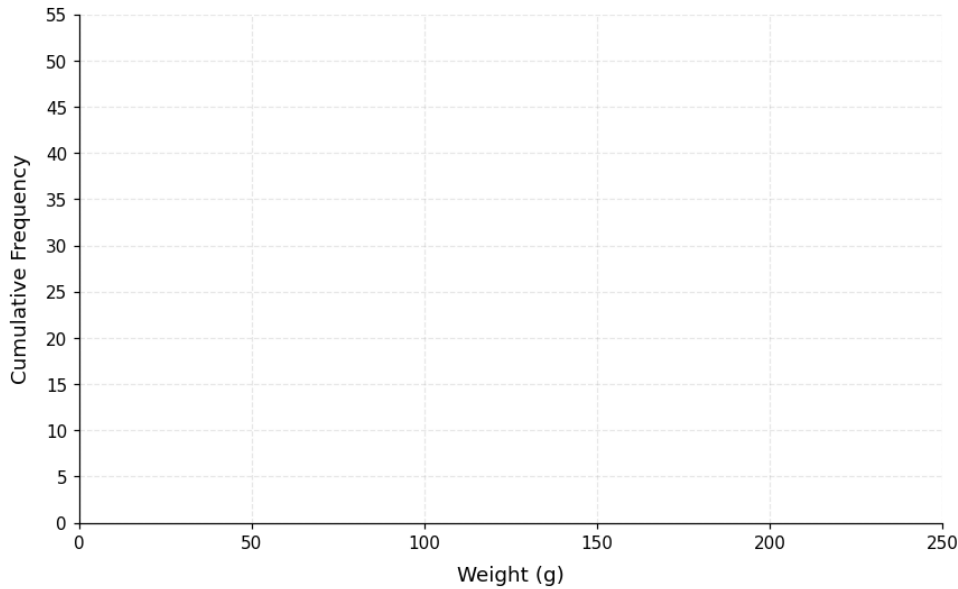


[Reasoning]

3.

Weight (g)	0–50	50–100	100–150	150–200	200–250
Freq	6	14	20	8	2

(a) Draw CF curve (b) Median and IQR (c) Box plot (d) % above 130g



(11 marks)

[Reasoning]

4.

From CF curve $n=80$: $LQ=42$, Median= 58 , $UQ=71$, Min= 20 , Max= 95 .

(a) Draw box plot (b) Test if 95 is an outlier using $UQ+1.5 \times IQR$.

(5 marks)

[Problem Solving]

5.

Time (s)	0–30	30–60	60–90	90–120
Group A	4	16	12	8
Group B	2	8	18	12

(a) CF curves for both groups on same axes (b) Compare medians and IQRs

(8 marks)

