Cumulative Frequency and Box Plots

GCSE Mathematics • **Higher Tier** • Grades 6–7 • Non-calculator

Name: _____ Class: _____ Total: _____ / 49

Show all your working. Marks are given for correct method as well as the final answer.

1. The table shows the masses of 80 parcels. Work out the cumulative frequency for $m \leq 30$. **[2 marks]**

Mass m (g)	$0 < m \leq 10$	$10 < m \leq 20$	$20 < m \leq 30$	$30 < m \leq 40$	$40 < m \leq 50$	$50 < m \leq 60$
Frequency	6	16	24	20	10	4

Answer: _____

2. Using the same table, work out the cumulative frequency for $m \leq 50$. **[2 marks]**

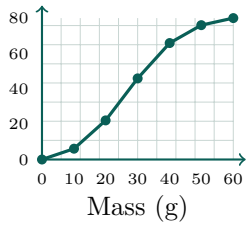
Mass m (g)	$0 < m \leq 10$	$10 < m \leq 20$	$20 < m \leq 30$	$30 < m \leq 40$	$40 < m \leq 50$	$50 < m \leq 60$
Frequency	6	16	24	20	10	4

Answer: _____

3. Explain why a cumulative frequency graph is plotted at the UPPER bound of each class. **[2 marks]**

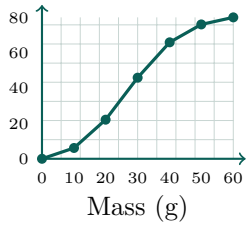
Answer: _____

4. Use the curve to estimate the median mass. **[2 marks]**



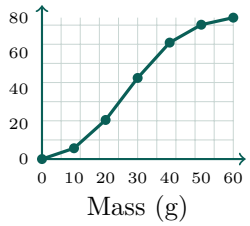
Answer: _____ **g**

5. Use the curve to estimate the lower quartile. **[2 marks]**



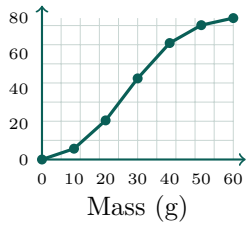
Answer: _____ **g**

6. Use the curve to estimate the upper quartile. **[2 marks]**



Answer: _____ **g**

7. Use your quartiles to work out the interquartile range. **[2 marks]**

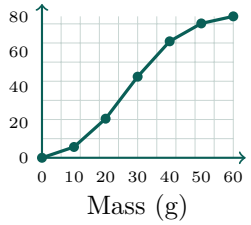


Answer: _____ **g**

8. Explain why the interquartile range is often preferred to the range. **[2 marks]**

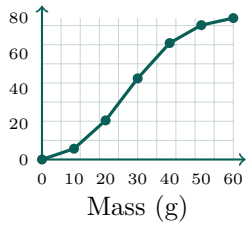
Answer: _____

9. Use the curve to estimate how many parcels weigh more than 45 g. **[3 marks]**



Answer: _____

10. Use the curve to estimate how many parcels weigh between 25 g and 45 g. **[3 marks]**

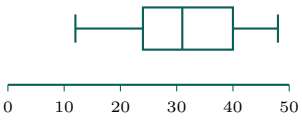


Answer: _____

11. Write down the five values a box plot shows. **[2 marks]**

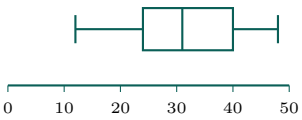
Answer: _____

12. Write down the median shown by this box plot. **[1 mark]**



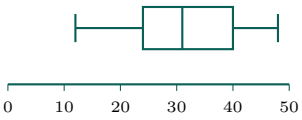
Answer: _____

13. Using the same box plot, work out the interquartile range. **[2 marks]**



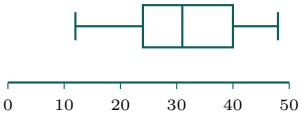
Answer: _____

14. Using the same box plot, work out the range. **[2 marks]**



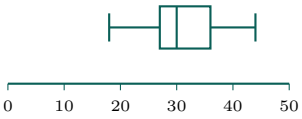
Answer: _____

15. Using the same box plot, write down the percentage of the data below 24. **[1 mark]**



Answer: _____

16. Write down the median and the IQR of this box plot. **[2 marks]**



Answer: _____

17. Compare the two sets of data shown by box plots A (median 31, IQR 16) and B (median 30, IQR 9). **[3 marks]**

Answer: _____

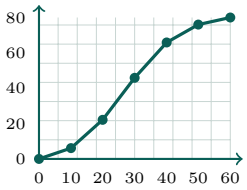
18. A box plot has minimum 5, LQ 12, median 15, UQ 26, maximum 40.

(a) Work out the interquartile range. **[2 marks]**

(b) Explain what the position of the median inside the box tells you. **[2 marks]**

Answer: _____

19. The curve shows the masses of 80 parcels.



(a) Estimate the median and the quartiles. **[4 marks]**

(b) Use them to describe the shape of the distribution. **[2 marks]**

Answer: _____

20. Two classes sat the same test. Class X had median 58 and IQR 20. Class Y had median 64 and IQR 8.

(a) Write down which class did better on average, with a reason. **[2 marks]**

(b) Write down which class was more consistent, with a reason. **[2 marks]**

Answer: _____

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