

Quartiles



Order the data, then find the quartiles and the interquartile range (IQR).

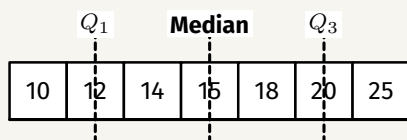
Name _____

Date _____

Finding quartiles

Sort the data first. The median (Q_2) splits it in half. Q_1 is the median of the lower half and Q_3 is the median of the upper half – leave the overall median out of both halves when the count is odd. $IQR = Q_3 - Q_1$.

Worked example Find Q_1 , Q_2 , Q_3 , and the IQR for: 10, 12, 14, 15, 18, 20, 25.



Median (Q_2) = 15 (the middle value)

Lower half 10, 12, 14 $\Rightarrow Q_1 = 12$ Upper half 18, 20, 25 $\Rightarrow Q_3 = 20$

$IQR = Q_3 - Q_1 = 20 - 12 = 8$

1. Find Q_1 , the median, and Q_3 .

5	8	11	14	17	20	23
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2. Find Q_1 , the median, and Q_3 .

6	9	12	15	18	21	24	27
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3. Find Q_1 , the median, and Q_3 .

2	5	7	10	13	16	19
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4. Find Q_1 , the median, and Q_3 .

4	7	9	12	15	18	21	24
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5. Find Q_1 , the median, and Q_3 .

3	6	8	11	14	17	20
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6. Find Q_1 , the median, and Q_3 .

10	13	16	19	22	25	28	31
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7. If $Q_1 = 11$ and $Q_3 = 29$, find the IQR.

8. The IQR of a dataset is 14 and $Q_1 = 9$. Find Q_3 .

9. $Q_1 = 15$, $Q_3 = 24$. Find the IQR and state what it measures.

10. What fraction of the data lies between Q_1 and Q_3 ?

11. What fraction of the data lies below Q_1 ?

12. Which two quartiles form the edges of the box in a box-and-whisker graph?

Quartiles (continued)

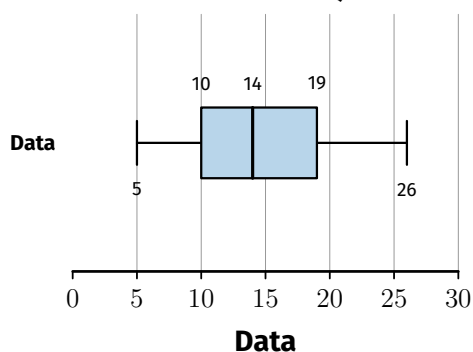


Read the five-number summary from a box-and-whisker graph.

Name _____

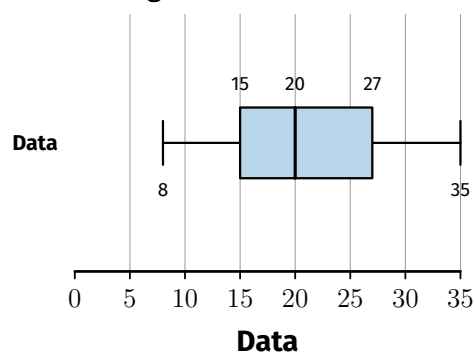
Date _____

13. State the median and the IQR.



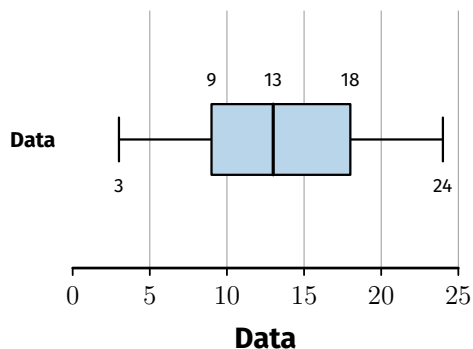
Working

14. State the range and the IQR.



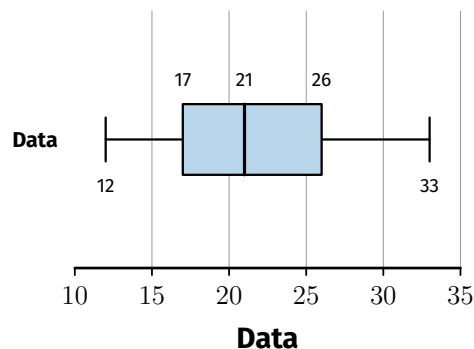
Working

15. Which value is Q_3 ? What does it tell you about the data?



Working

16. State the interquartile range and describe what it measures.



Working

17. Five-number summaries – Class A: 6, 12, 16, 22, 30. Class B: 8, 14, 18, 29, 36. Which class has the larger IQR?

18. Five-number summaries – Team A: 5, 11, 15, 19, 24. Team B: 5, 9, 15, 23, 30. Which team is more consistent (smaller IQR)?

19. A dataset has $Q_1 = 20$ and $Q_3 = 35$. A student says the IQR is 55. Explain the mistake.
