Quartiles

Mana Maths

Te reo Māori terms

hauwhā
quartile/quarter
Open in Te Aka

takawaenga
median
Open in Te Aka

awhe
range
Open in Te Aka

Quartiles — Foundation

1. Find Q_1, Q_2, and Q_3 for: 4, 6, 8, 10, 12, 14, 16.

2. Find Q_1, Q_2, and Q_3 for: 3, 5, 7, 9, 11, 13, 15.

3. Find Q_1, Q_2, and Q_3 for: 2, 4, 6, 8, 10, 12, 14, 16.

4. Find Q_1, Q_2, and Q_3 for: 6, 7, 9, 11, 13, 15, 18, 20.

5. Find Q_1, Q_2, and Q_3 for: 5, 6, 8, 10, 13, 14, 17.

6. Find Q_1, Q_2, and Q_3 for: 9, 11, 12, 15, 18, 21, 24, 27.

7. Find the IQR for: 5, 8, 10, 12, 14, 17, 20.

8. Find the IQR for: 12, 14, 16, 18, 20, 22, 24, 26.

9. If $Q_1 = 9$ and $Q_3 = 21$, find the IQR.

10. If $Q_1 = 14$ and $Q_3 = 32$, find the IQR.

11. What part of the data lies between Q_1 and Q_3?

12. What part of the data lies below Q_1?

13. Box plot: min 4, $Q_1 = 8$, median 11, $Q_3 = 15$, max 19. Find the IQR.

14. Box plot: min 10, $Q_1 = 14$, median 18, $Q_3 = 23$, max 30. State Q_1 and Q_3.

15. Box plot: min 6, $Q_1 = 9$, median 13, $Q_3 = 18$, max 22. State the median.

16. Box plot: min 2, $Q_1 = 7$, median 10, $Q_3 = 16$, max 20. State the maximum.

17. Which quartile is the median?

18. Which quartiles make the box?

Quartiles — Proficient

1. Find Q_1, Q_2, Q_3, and the IQR for: 8, 10, 13, 15, 18, 21, 24.

2. Find Q_1, Q_2, Q_3, and the IQR for: 5, 7, 9, 12, 14, 16, 19, 22.

3. Find Q_1, Q_2, Q_3, and the IQR for: 12, 14, 17, 19, 21, 24, 27, 30, 32.

4. Find Q_1, Q_2, Q_3, and the IQR for: 6, 9, 11, 14, 18, 20, 23, 27.

5. Find Q_1, Q_2, Q_3, and the IQR for: 4, 8, 10, 13, 17, 19, 21, 25.

6. Find Q_1, Q_2, Q_3, and the IQR for: 9, 12, 14, 16, 18, 20, 24, 28.

7. Box plot: min 3, $Q_1 = 9$, median 12, $Q_3 = 18$, max 25. Find the IQR.

8. Box plot: min 10, $Q_1 = 16$, median 20, $Q_3 = 29$, max 35. Find the IQR and the range.

9. Which set has the larger IQR? A: $Q_1 = 12, Q_3 = 20$. B: $Q_1 = 15, Q_3 = 28$.

10. Which set is more spread out in the middle half? A: IQR 8. B: IQR 13.

11. One quarter of the data is below 18. Which quartile is 18?

12. Three quarters of the data is below 42. Which quartile is 42?

13. If $Q_1 = 9$ and $Q_3 = 18$, state the middle half interval.

14. If $Q_1 = 16$ and $Q_3 = 29$, state the middle half interval.

15. Five-number summary: 4, 10, 13, 17, 24. Find the IQR.

16. Five-number summary: 12, 15, 19, 26, 31. Find the IQR and the range.

17. What does the IQR measure?

18. Which set is more consistent? A: IQR 6. B: IQR 12.

Quartiles — Excellence

1. For 4, 6, 8, 10, 12, 14, 30, find Q_1, Q_2, Q_3, and the IQR.

2. For 4, 6, 8, 10, 12, 14, 30, is the IQR or the range a better measure of spread? Why?

3. Set A: $Q_1 = 14, Q_3 = 26$. Set B: $Q_1 = 18, Q_3 = 22$. Both have median 20. Which set is more consistent?

4. Create 7 ordered numbers with $Q_1 = 8$, median 12, and $Q_3 = 18$.

5. Create 8 ordered numbers with $Q_1 = 15$ and $Q_3 = 27$. Then find the IQR.

6. A student says, "IQR 12 means 12 of the data is in the middle." What is wrong?

7. Box plot: min 5, $Q_1 = 11$, median 16, $Q_3 = 24$, max 40. Find the IQR and the range.

8. For min 5, $Q_1 = 11$, median 16, $Q_3 = 24$, max 40, which measure is affected most by the maximum?

9. Set A summary: 2, 8, 12, 20, 22. Set B summary: 2, 10, 12, 14, 22. Which set has the larger IQR?

10. If $Q_1 = 14$ and the IQR is 9, find Q_3.

11. If $Q_1 = 18$ and $Q_3 = 30$, what part of the data lies in the box?

12. If $Q_1 = 18$ and $Q_3 = 30$, what part lies between the median and Q_3?

13. For 7, 9, 10, 12, 15, 18, 21, 24, 30, find Q_1, Q_2, and Q_3.

14. For 7, 9, 10, 12, 15, 18, 21, 24, 30, which quarter has the greatest spread?

15. Two sets both have IQR 10. Set A has range 18. Set B has range 35. Compare them.

16. Write a rule for finding the IQR from a box plot.

17. Use your rule on: min 6, $Q_1 = 13$, median 17, $Q_3 = 21$, max 28.

18. Can the median lie outside the box? Explain.