

BOXPLOT HOMEWORK

TEXT: 2.3, 2.4

LAST NAME	FIRST NAME	DATE
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Consider the sample:

14, 10, 18, 13, 20

1. Find the z -score of 35.
2. Find the z -score of -1 .
3. If the sample is representative of a normally distributed population, which observation would be more likely (and least surprising), 35 or -1 ?
4. If the population distribution parameters are fairly well estimated by the sample statistics, find a measurement that would have z -score 17.

Consider the following sample of size $n = 80$:

6, 17, 17, 24, 29, 30, 31, 31, 31, 31,
31, 33, 34, 34, 35, 36, 36, 36, 38, 38,
38, 38, 40, 41, 41, 41, 41, 42, 43, 43,
44, 44, 45, 45, 47, 47, 48, 49, 51, 52,
53, 53, 53, 53, 55, 55, 56, 57, 58, 59,
60, 60, 60, 62, 62, 62, 62, 64, 66, 66,
66, 67, 67, 67, 70, 71, 71, 72, 72, 73,
74, 75, 75, 76, 77, 78, 78, 79, 79, 87

5. Find the 30th percentile
6. Find the 60th percentile
7. Find the percentile of the data value 73
8. Find the percentile of the data value 28

Consider the following sample data:

-37, -4, -2, -1, 2, 7, 10, 11, 14, 15, 16, 17, 18, 18, 20

Find the following statistics **by hand**:

9. first quartile

13. lower fence

10. median

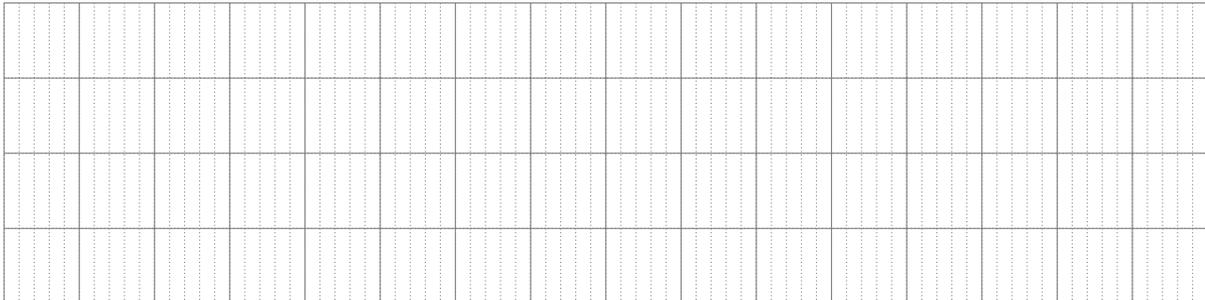
14. upper fence

11. third quartile

12. IQR

15. outliers (if any)

16. Construct a box-and-whisker plot for the sample:



Additionally, **use R** to find

17. sample mean \bar{x}

20. measurement with z -score 3

18. sample standard deviation s

21. 85th percentile of the sample data

19. z -score of the data point -37

22. percentile of the data value -1

23. Find the 10th percentile of the `state.area` dataset. State your answer as an English sentence describing what this percentile represents.

24. What percentile of the `state.area` dataset does the area of Nevada represent, at 110540 square miles?

25. What percentile of the `faithful$waiting` does an 80 minute measurement represent?

26. Find the 95th percentile of the `faithful$waiting` dataset. State your answer as an English sentence describing what this percentile represents.

Consider the dataset `quakes$mag` of earthquake magnitudes.

27. Find the magnitude of an earthquake such that only 3% of all earthquakes in the dataset are more intense.

28. Which percentile is the magnitude in the previous question?

ANSWERS

1. 5
3. -1 would be less surprising, with z -score closer to zero.
5. 41
7. 87.5%
9. -1
11. 17
13. -28
15. -37
17. 6.933333
19. -3.022995
21. 17.9
23. About 10% of all US states have the area of 8214.9 square miles or less.
25. 69th percentile
27. 5.5
29. 4
31. 12
33. -8
35. -20 , -12 , and 40
37. 10, 18, 22.5, 28, 30 (Q_1 and Q_3)
39. lower fence: 3, upper fence: 43
41. 88th percentile