Probability & Statistics Workbook

Analyzing data

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MEASURES OF CENTRAL TENDENCY

■ 1. What is the mean of the data set?

105, 250, 358, 422

■ 2. What is the median of the data set?

62, 64, 69, 70, 70, 71, 73, 74, 75, 77

■ 3. What is the mode of the data set?

1	3 7 8
2	1 4 6
3	5 5
4	
5	2 6

$1|3 = 13$

■ 4. What number could we add to the data set that would give us a median of 15?

1, 2, 8, 13, 20, 30, 31

■ 5. A teacher lost Samantha's test after it was graded, but she knows the statistics for the rest of the class.

Class mean (including Samantha's test): $\mu = 85$

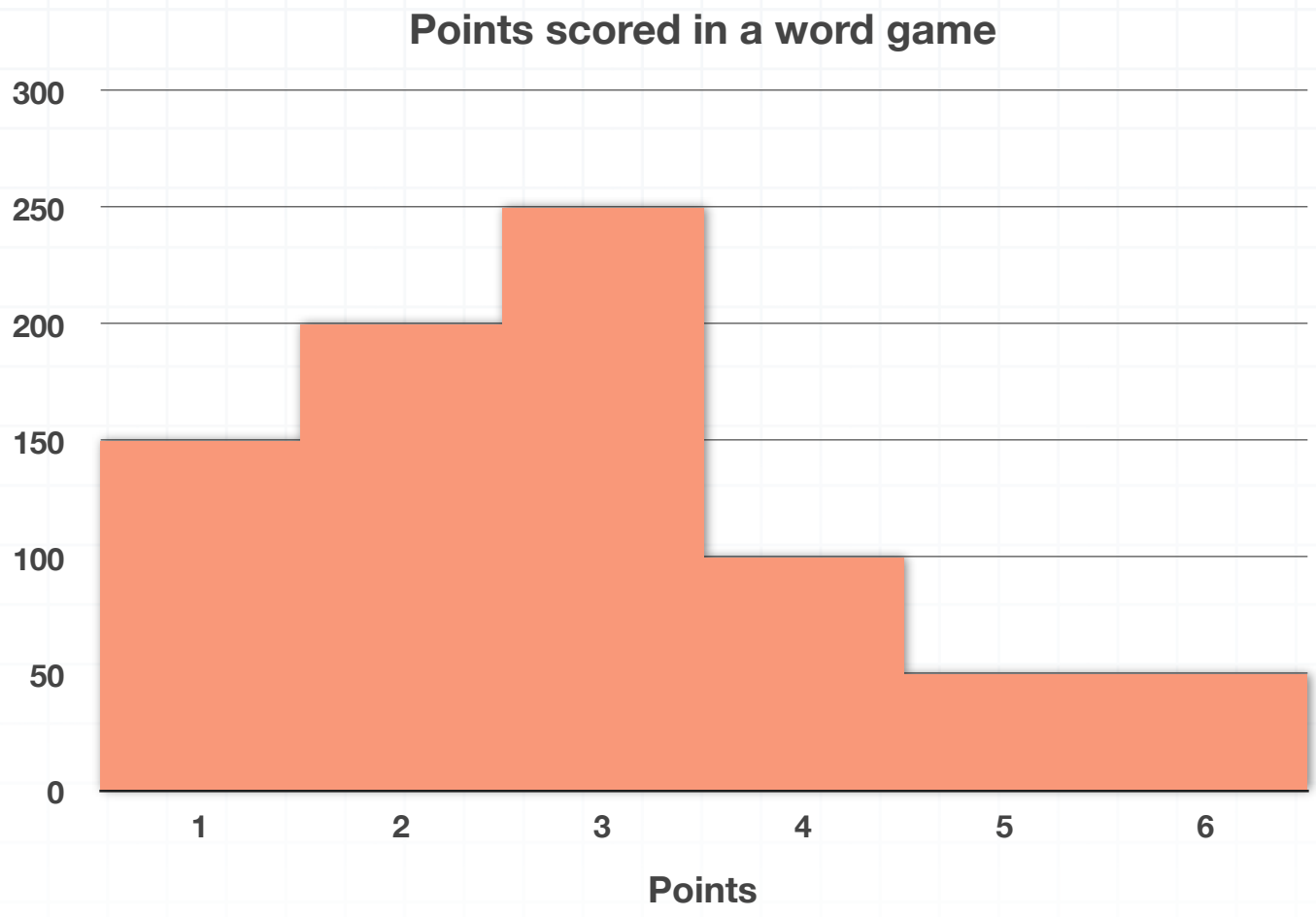
Total number of students who took the test: 18

Class test scores for everyone but Samantha were:

75, 75, 75, 80, 80, 80, 80, 80, 82, 82, 82, 82, 95, 95, 95, 95, 98

What did Samantha score on her test?

■ 6. What is the mode of the data set?



MEASURES OF SPREAD

■ 1. Sarah is visiting dairy farms as part of a research project and counting the number of red cows at each farm she visits. Here is her data:

0, 1, 1, 1, 2, 5, 5, 7, 7, 18, 24, 24

Calculate the IQR and range of the data set.

■ 2. A dog boarding company kept track of the number of dogs staying overnight and the frequency. What is the range of the data?

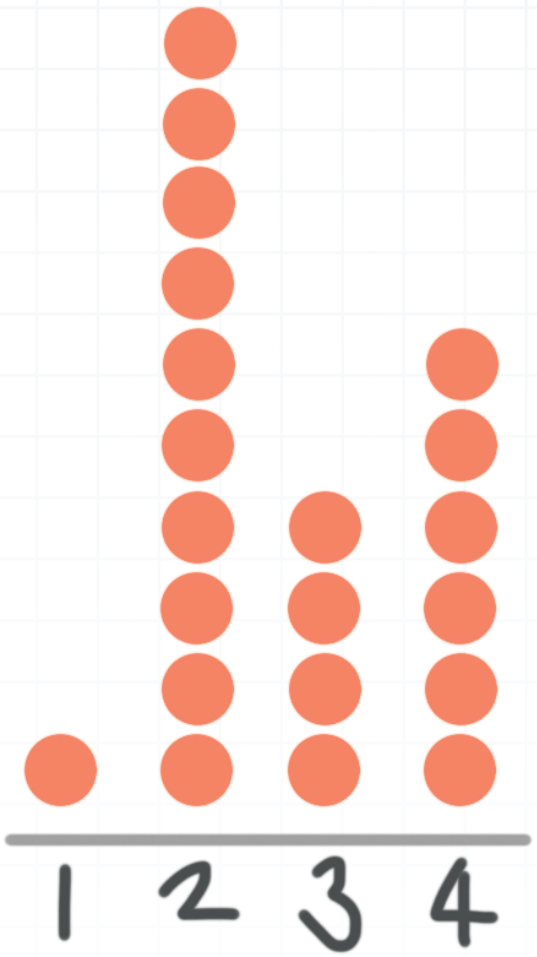
Number of dogs	Frequency
20	2
25	3
32	1
38	1
39	2
40	3
43	2

■ 3. Catherine counted the number of lizards she saw in her garden each week and recorded the data in a table. What is the interquartile range of the data?

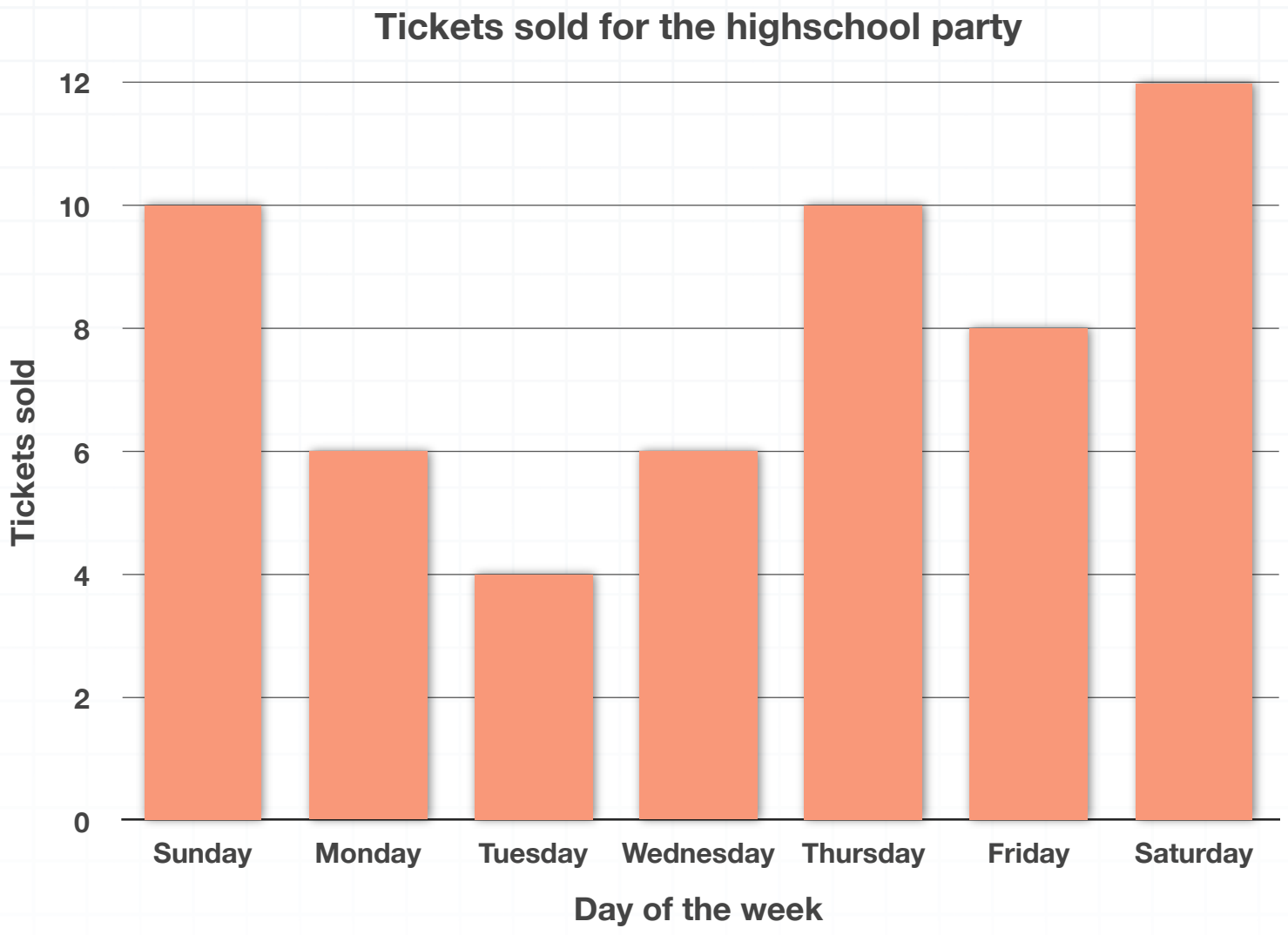
Number of lizards	Frequency
2	5
5	2
8	1
12	2
13	2
15	3
21	1

4. The median of the lower-half of a data set is 98. The interquartile range is 2. If the data set has 9 numbers, what can we say about the median of the entire data set?

5. The dot plot shows the number of trips to the science museum for a class of 4th graders. What is the range of the data set?



6. The bar graph shows the number of tickets sold for the high school party each day. What is the interquartile range of the data set?

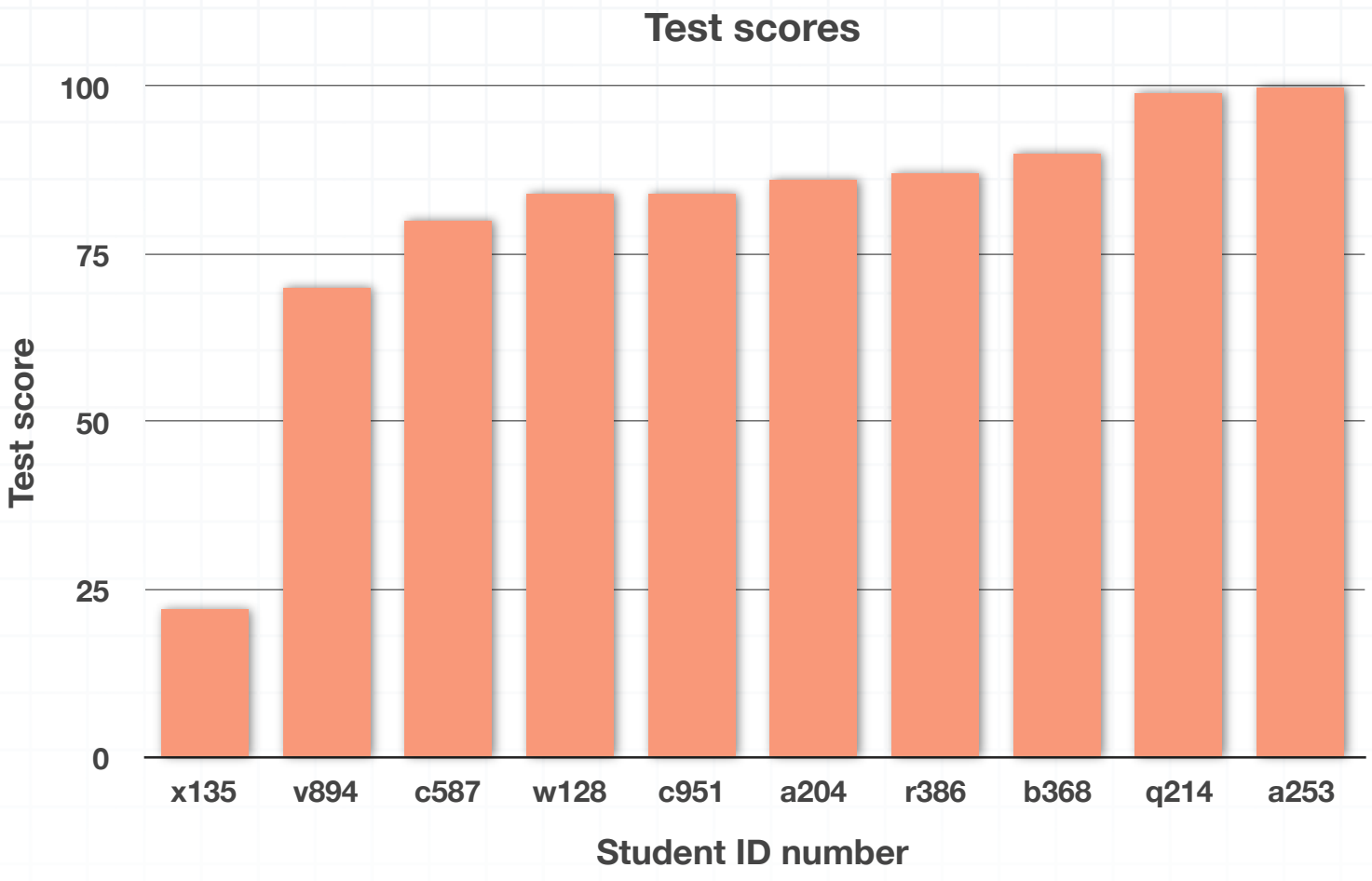


CHANGING THE DATA AND OUTLIERS

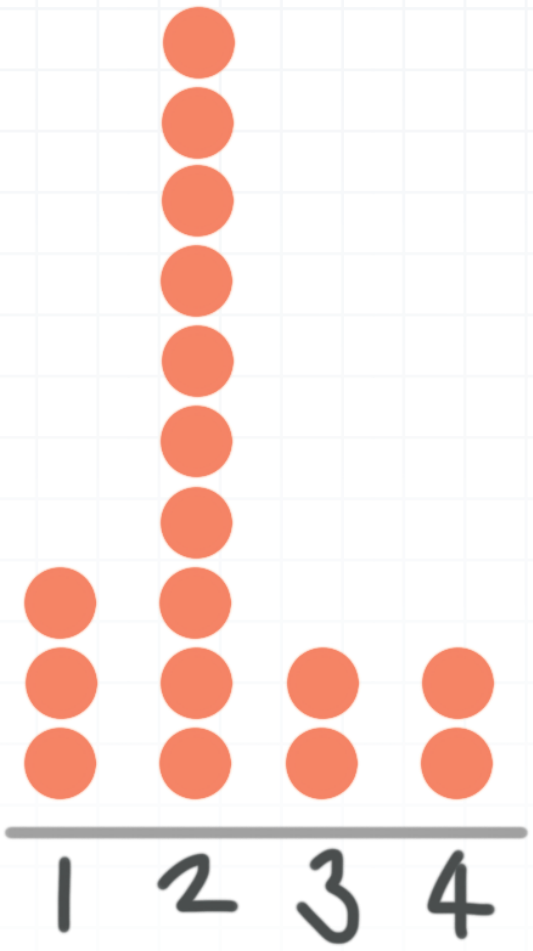
■ 1. The students in an English class ended up with a mean score on their recent exam of 65 points. The range of exam scores was 25 points. If each score is increased by $10\,\%$, what are the new mean and range?

■ 2. Spencer asked students at his high school what percentage of the school budget they thought was spent on extracurricular activities. The mean response was $8\,\%$ and the median response was $5\,\%$. There was one outlier in the responses. What do the mean and median tell us about the outlier?

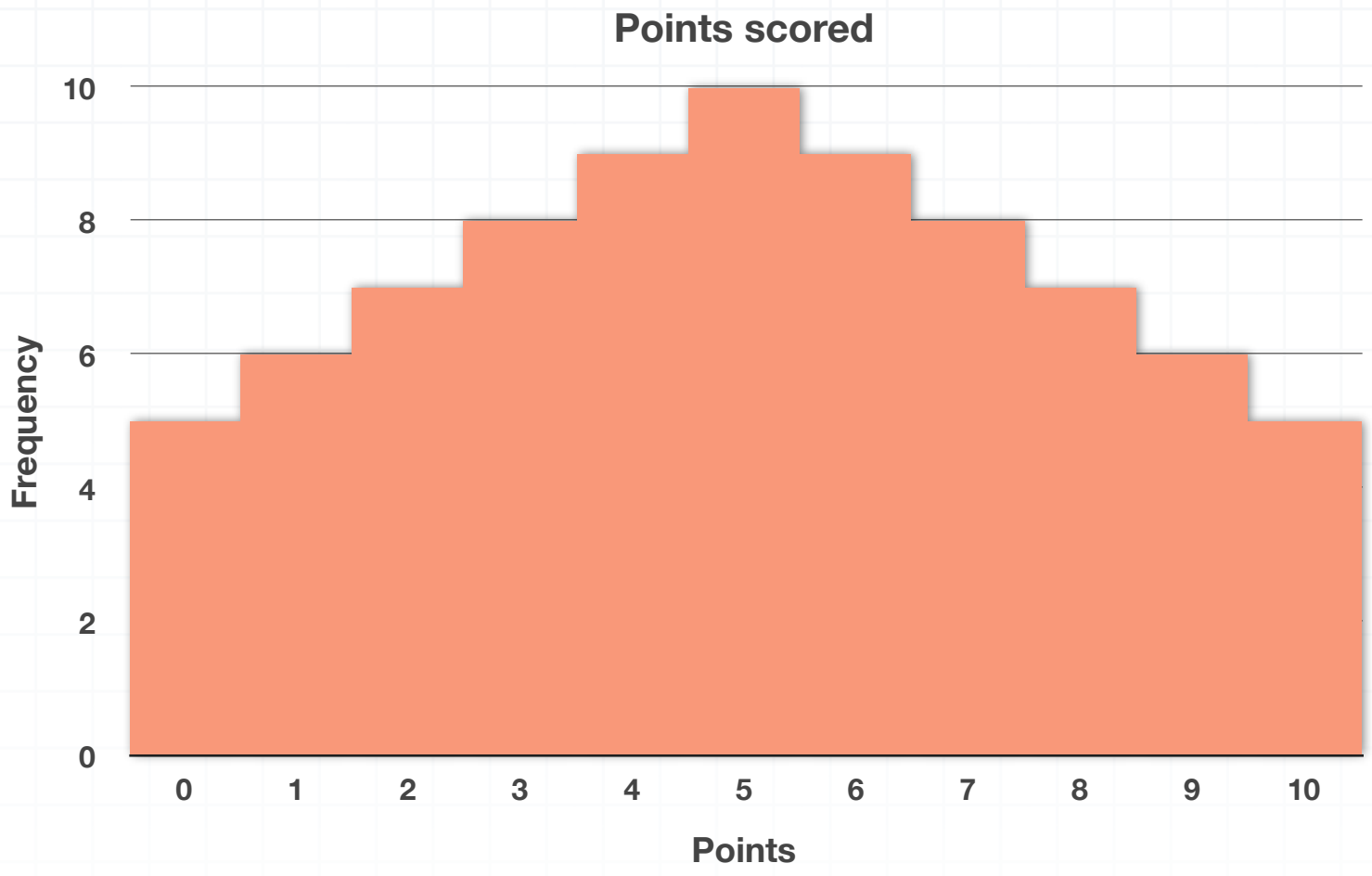
■ 3. How does the mean compare to the median in the data from the bar graph?



4. The dot plot shows the number of trips to the science museum for a class of 4th graders. How does the mean compare to the median in the data set below, and what does it tell us about the potential outliers in the data set?



5. What does the shape of this histogram tell us about the mean and median of the data?



6. An experiment is done in degrees Celsius. The original data had the following:

Mean: 102° Celsius

Median: 101° Celsius

Mode: 99° Celsius

Range: 7° Celsius

IQR: 4° Celsius

The formula to convert to degrees Fahrenheit is $F = (9/5)C + 32$. After the conversion to Fahrenheit, what are the new reported measures of the data set?

BOX-AND-WHISKER PLOTS

1. What is the range and interquartile range of the data set?

Median: 617,594

Minimum: 216,290

Maximum: 845,300

First quartile: 324,528

Third quartile: 790,390

2. These are average lifespans in years of various mammals:

35, 10, 40, 40, 20, 10, 15, 14, 18, 35

Find the five-number summary for the data.

3. Create a box plot based on the following information about a data set.

Mode: 300

Minimum: 100

First Quartile: 300

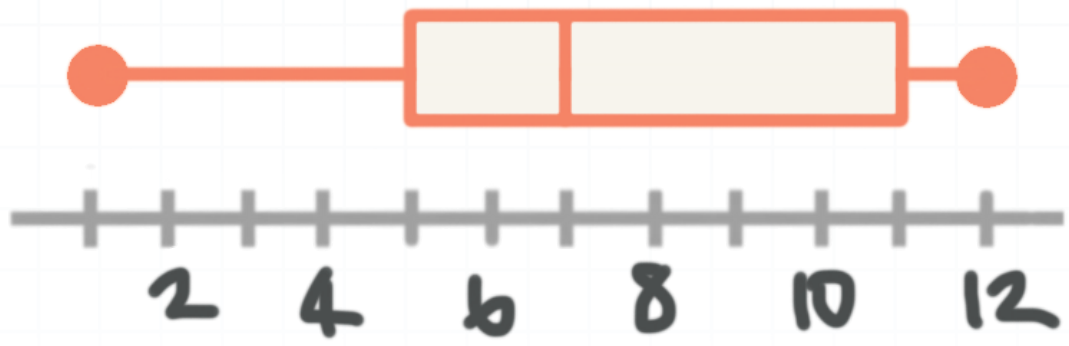
Median: 2,000

Mean: 1,887.5

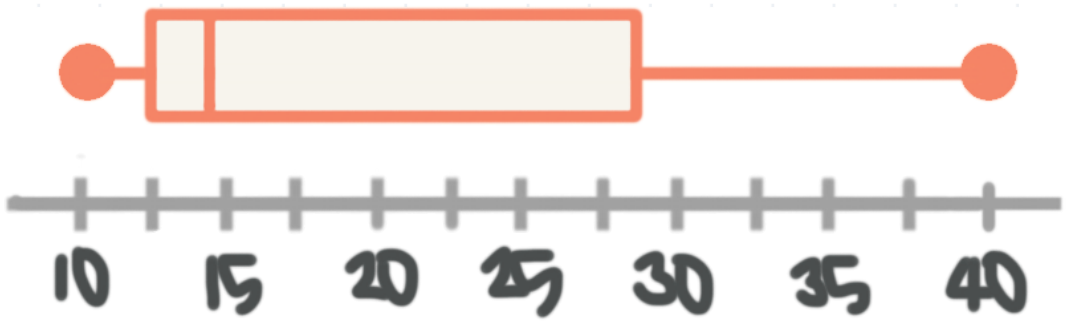
Third Quartile: 3,050

Maximum: 4,800

■ 4. How does the spread of data between 1 and 5 compare to the spread of data between 11 and 12?



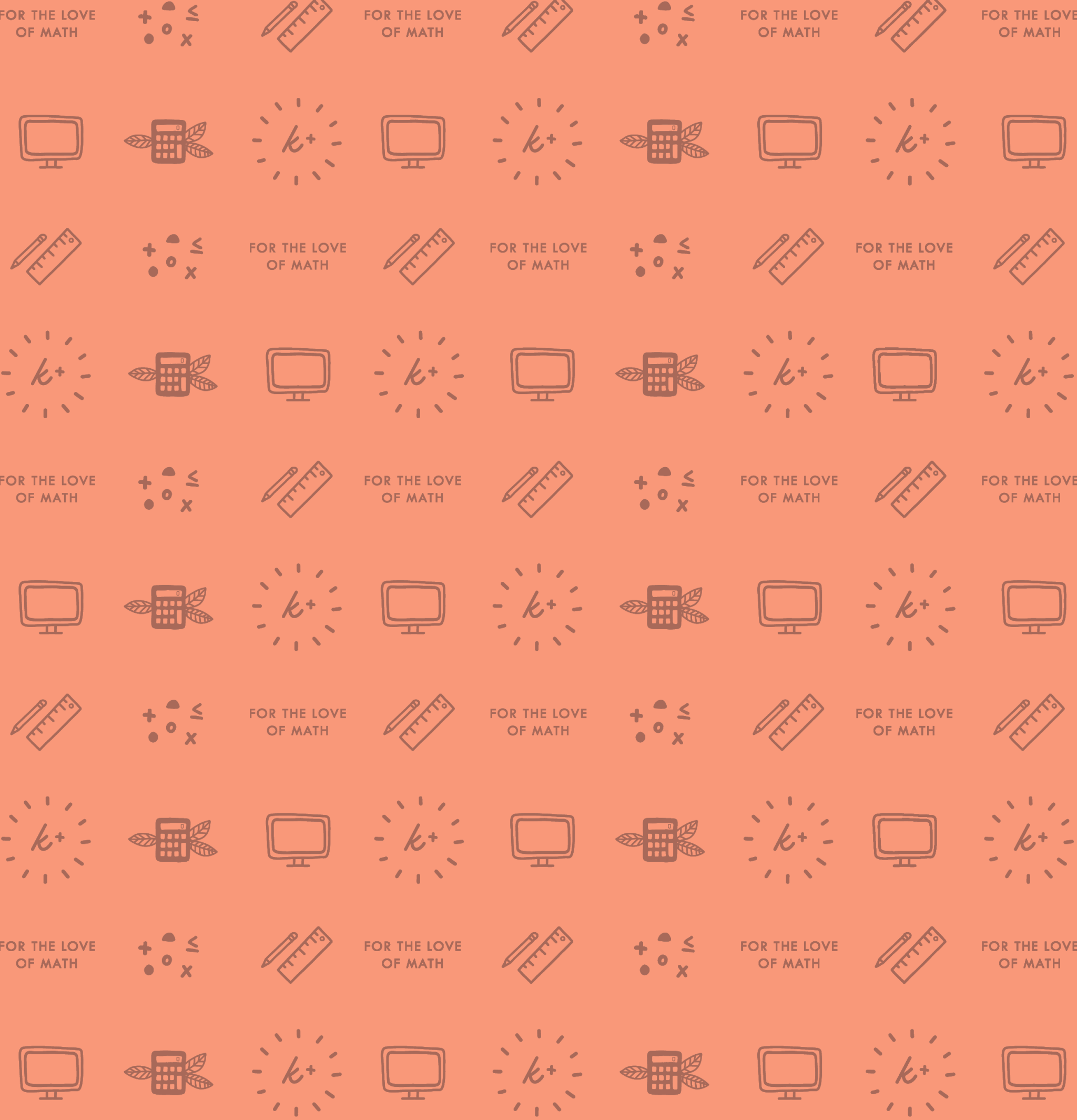
■ 5. In which quarter of the data is the number 23 located?



■ 6. Create the box-and-whisker plot for the book ratings given in the stem and leaf plot.

Stem	Leaf
1	3 7 8
2	1 4 6
3	5 5
4	
5	2 6

Key: $1 \mid 3 = 13$


FOR THE LOVE
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