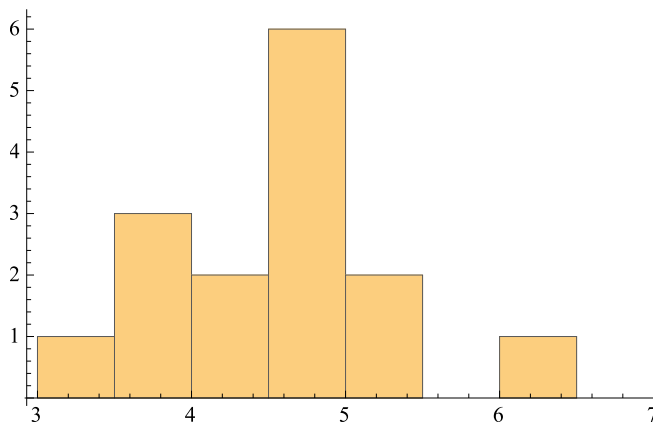# 7.SP.2: Worksheet
Solutions

What is the average length of the words in a book? A sample of ten words was randomly selected from a 304-page book and the average length (measured in letters) of the ten words was calculated. This process was repeated 15 times. The average word length of each of these fifteen samples is shown in the table below and in the histogram below. Use this information to answer the following questions.

1	3.7
2	4.4
3	4.1
4	3.6
5	4.5
6	5.3
7	4.9
8	4.8
9	5
10	4.6
11	3.4
12	4.8
13	6
14	3.6
15	4.8

1. What is the population in this study? The words in the entire book.

2. Why was a sample taken instead of studying the entire population? The book has 304 pages. It would have taken too long to count the letters in every word of the book.

3. Since the words for each sample were selected using random sampling, does this mean that the samples are more or less likely to be representative of the words in the entire book. Since random sampling was used, the data is more likely to be representative of the words in the entire book.

4. Was the average word length the same in each of the fifteen samples? No.

5. What possible word counts could have been in the first random sample collected? That is, what are 10 word lengths that could have been measured for the first sample? Answers may vary. The important thing is that the sample should contain 10 whole numbers that average to 3.7. For instance, 2, 3, 3, 3, 3, 4, 4, 4, 5, and 6 could have been letter counts collected in the first sample.

6. According to the histogram, where is the distribution of average word lengths centered? Between 4.5 and 5.0 words.

7. Using the information given, how can we come up with the best estimate for the average word length in the entire book? Find the mean of the fifteen sample means.

8. What is the mean word length of the fifteen sample means? 4.5 words

9. What is the interquartile range of the average word lengths in the fifteen samples? 1.2 words

10. If the sample size were twenty words instead of ten words, is the interquartile range more likely to be more than or less than the answer to the previous question? If the sample size were greater, then there would be less variation. The interquartile range is more likely to be less than 1.2 words.

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