Math 123-02
Fall 2024
Dr. Lily Yen

Quiz 6

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Problem 1: Below is a stem-and-leaf plot of a sample data set of ages of volunteers in a food bank. Answer the following questions. Remember to include units when applicable.

1	5 7 7 9
2	0 4 4 4
3	0 2 2 5
4	3 6 8
5	2 5 5 8
6	0 5 9
7	0 4 6
8	2 3 5 7

a. What is the sample size? That is, how many volunteers were sampled?

b. Find the median.

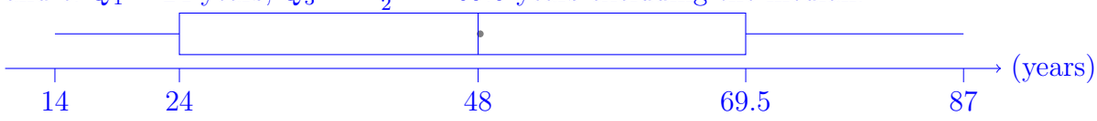
c. Find the mode.

d. Find the range.

e. Find the first quartile and the third quartile.

f. Draw a boxplot for the data.

a. $n = 29$ volunteers; b. the median is 48 years; c. the mode is 24 years; d. 15–87 years, and e. $Q_1 = 24$ years; $Q_3 = \frac{69+70}{2} = 69.5$ years excluding the median.



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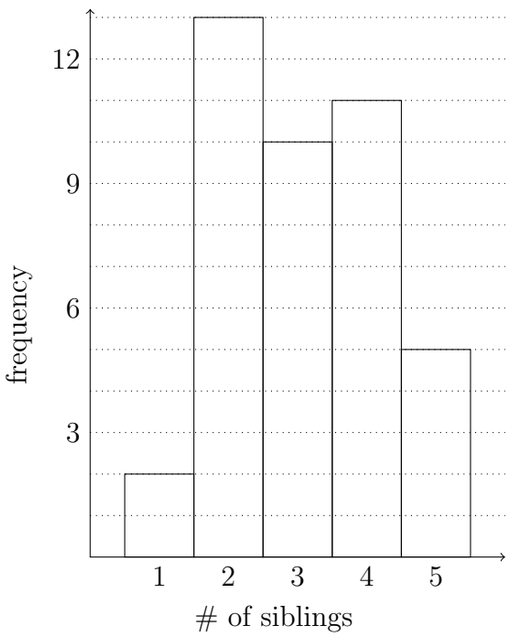
Problem 2: The histogram shown is a summary of a survey of the number of siblings (on the horizontal axis) a sample of students have in the budget travel club at Capilano University. Answer the following questions. Remember to include units when applicable.



a. Find the number (n) of students surveyed.

b. Find the average number of siblings per student in the sample.

c. Find the mode for the number of siblings per student in the sample.

d. Find the median for the number of siblings per student in the sample.

e. Find the variance and the standard deviation of the sample data.

a. The number of students surveyed is $n = 2 + 13 + 10 + 11 + 5 = 41$ students.

b. The average number of siblings is
$(2 \times 1 + 13 \times 2 + 10 \times 3 + 11 \times 4 + 5 \times 5)/41 = 127/41 \approx 3.1$ siblings per student.

c. The mode is 2 siblings.

d. The median for 41 values is the 21st, so 3 siblings.

e. The variance is

$$\frac{2 \times (1 - \frac{127}{41})^2 + 13 \times (2 - \frac{127}{41})^2 + 10 \times (3 - \frac{127}{41})^2 + 11 \times (4 - \frac{127}{41})^2 + 5 \times (5 - \frac{127}{41})^2}{41 - 1} \approx 1.290,$$

so the standard deviation is $\sqrt{1.290} \approx 1.136$.

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