Math 123-02
Fall 2024
Dr. Lily Yen

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

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

b. Find the median.

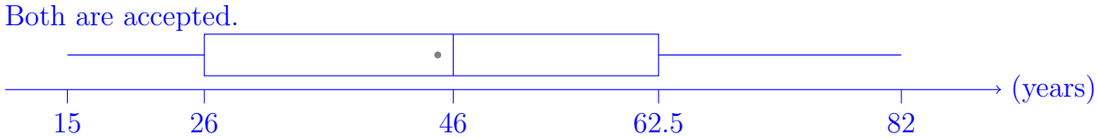
c. Find the mode.

d. Find the range.

e. Find the first quartile and the third quartile.

f. Draw a boxplot for the data.

a. $n = 25$ volunteers; b. the median is 46 years; c. the mode is 55 years; d. 15–82 years, or $82 - 15 = 67$ years., and e. $Q_1 = \frac{24+28}{2} = 26$ years; $Q_3 = \frac{60+65}{2} = 62.5$ years if one excludes the median. If median is included in both, then $Q_1 = 28$ and $Q_3 = 60$ years old. Both are accepted.



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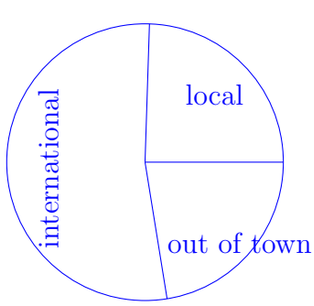
Problem 2: In Lily's Fall 2024 courses, 12 students are locals, 26 are international, and 11 are from out of town. Draw a pie chart for the above data. Include your steps for the calculation of each sector angle and percentage in the pie chart.

	Freq.	Rel. freq.	Angle
local	12	0.245	88
international	26	0.531	191
out of town	11	0.224	81
Total	49	1.000	360



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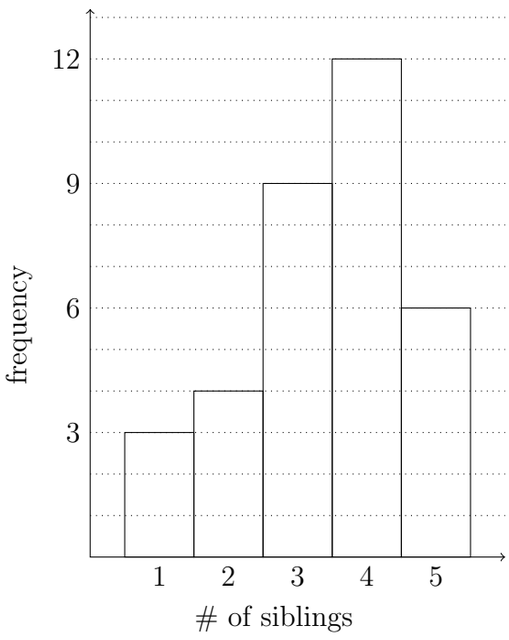
Problem 3: The histogram shown is a summary of a survey of the number of siblings (on the horizontal axis) a sample of students have in the budget travel club at Capilano University. Answer the following questions. Remember to include units when applicable.



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 $n = 3 + 4 + 9 + 12 + 6 = 34$.

b. The average number of siblings is
$(3 \times 1 + 4 \times 2 + 9 \times 3 + 12 \times 4 + 6 \times 5)/34 = 58/17 \approx 3.41$

c. The mode is 4 siblings.

d. The median for 34 values is the average of the 17th and 18th, so $\frac{4+4}{2} = 4$ siblings.

e. The variance is

$$\frac{3 \times (1 - \frac{58}{17})^2 + 4 \times (2 - \frac{58}{17})^2 + 9 \times (3 - \frac{58}{17})^2 + 12 \times (4 - \frac{58}{17})^2 + 6 \times (5 - \frac{58}{17})^2}{34 - 1} \approx 1.400,$$

so the standard deviation is $\sqrt{1.400} \approx 1.200$.

Score: /6

/6