Session 1 Worksheet

Formulas

$$\overline{x} = \frac{\sum x_i}{n} \qquad s = \sqrt{\frac{\sum x_i^2 - \frac{\left(\sum x_i\right)^2}{n}}{n-1}}$$

TI Cheat Sheet: $stat \rightarrow Calc \rightarrow 1 - varstat$

1) A school district wanted to analyze test performance in a large introductory statistics course taught across five different class sections. Instead of randomly sampling students from all sections (which would be time-consuming), the district randomly selected one entire class section and collected the test scores of all 10 students in that section. The scores from that sampled class are shown in the stem-and-leaf plot below:

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

A. What type of sampling was used to collect this data?

Cluster

B. What is the mean test score for the sample? (2 decimal places)

$1var\ stats \rightarrow \overline{x} = 73.1$ or $\overline{x} = \frac{(52+61+64+70+73+75+78+82+86+90)}{10} = 73.1$

C. What is the median test score for the sample? (2 decimal places)

$$\frac{73+75}{2} = 74$$

D. What is the sample variance of the test scores? (2 decimal places)

$s^2 = \frac{(52^2+61^2+64^2+70^2+73^2+75^2+78^2+82^2+86^2+90^2)-\left(\frac{(731)^2}{10}\right)}{10-1} = 138.06$ or $1var\ stats \rightarrow s = 11.75,\ s^2 = (11.75)^2$

E. What is the sample standard deviation of the test scores? (2 decimal places)

$$s = \sqrt{\frac{(52^2 + 61^2 + 64^2 + 70^2 + 73^2 + 75^2 + 78^2 + 82^2 + 86^2 + 90^2) - \left(\frac{(731)^2}{10}\right)}{10 - 1}}$$

$$= 11.75$$

Or $1var\ stats \rightarrow s = 11.75$

2) A teacher collected the following data on the number of hours 10 students studied for an exam. Instead of listing all the raw data, the teacher provided these summary statistics:

$$n = 5,\ \sum x = 86,\ \sum x^2 = 37282$$

A. Find the mean of the data. (2 decimal places)

$$\overline{x} = \frac{86}{5} = 17.2$$

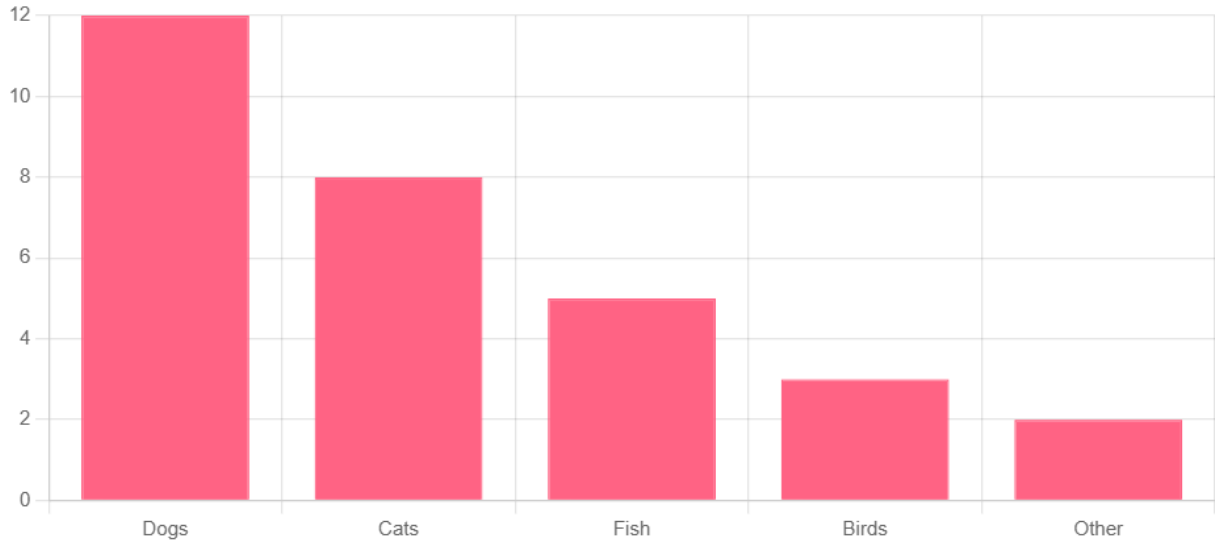
B. What is the sample variance of the hours? (2 decimal places)

$$s^2 = \frac{37282 - \left(\frac{(86)^2}{5}\right)}{5 - 1} = 8950.7$$

C. What is the sample standard deviation of the hours? (2 decimal places)

$$s^2 = \sqrt{\frac{37282 - \left(\frac{(86)^2}{5}\right)}{5 - 1}} = 94.61$$

3) A middle school teacher surveyed her class of 30 students to find out their favorite type of pet. The results are summarized below:



A) Find the mean of the dataset. (2 decimal places)

$\overline{x} = \frac{(12+8+5+3+2)}{5} = 6$ or $\overline{x} = \frac{30}{5} = 6$

$$1var\ stats \rightarrow \overline{x} = 6$$

B) Find the mode of the dataset. (2 decimal places)

The mode is Dogs, as it has the highest number of votes/the largest bar.

C) What is the sample variance of the dataset? (2 decimal places)

$s^2 = \frac{(12^2+8^2+5^2+3^2+2^2)-\frac{(30)^2}{5}}{5-1} = 16.5$ or $1var\ stats \rightarrow Sx = 4.06,\ s^2 = 4.06^2 = 16.5$

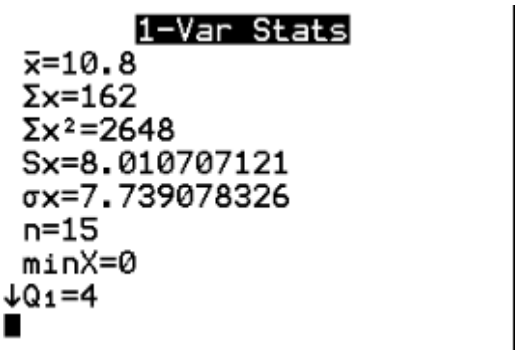
D) What is the standard deviation of the dataset? (2 decimal places)

$s^2 = \sqrt{\frac{(12^2+8^2+5^2+3^2+2^2)-\frac{(30)^2}{5}}{5-1}} = 4.06$ or $1var\ stats \rightarrow Sx = 4.06$

E) What type of graph is this?

Bar Graph

4) This is the given screen from a TI-84



A) What is the mean? (2 decimal places)

$$\overline{x} = 10.8$$

B) What is the sum of all x? (2 decimal places)

$$\sum x = 162$$

C) What is the standard deviation? (2 decimal places)

$$Sx = 8.01$$