

Statistics

Homework 1 – Representation of Data

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1. (a) For the following data set,

1, 8, 1, 5, 8, 6, 3, 3, 3, 7

the mid-range, average, median and mode are as follows.

$$\text{Mid-range} = \frac{1 + 8}{2} = 4.5$$

$$\text{Average} = \frac{1 + 8 + 1 + 5 + 8 + 6 + 3 + 3 + 3 + 7}{10} = 4.5$$

$$\text{Median} = \frac{3 + 5}{2} = 4$$

$$\text{Mode} = 3$$

- (b) For the following data set,

14, 18, 30, 31, 15, 18, 27

the mid-range, average, median and mode are as follows.

$$\text{Mid-range} = \frac{14 + 31}{2} = 22.5$$

$$\text{Average} = \frac{14 + 18 + 30 + 31 + 15 + 18 + 27}{7} \approx 21.86$$

$$\text{Median} = 18$$

$$\text{Mode} = 18$$

3. In the month of August 2010 it was very hot. The Israeli meteorological service recorded the maximum temperature. The results are presented in Table 1.

Number of days	Max. temperature (°C)
2	27-29
6	30-32
12	33-35
5	36-38
4	39-41

Table 1: Maximum daily temperature frequencies for August 2010

Max. temp. (°C)	Frequency	Relative freq.	Cumulative freq.	relative cumulative freq.
27-29	2	0.0690	2	0.0690
30-32	6	0.2069	8	0.2759
33-35	12	0.4138	20	0.6897
36-38	5	0.1724	25	0.8621
39-41	4	0.1379	29	1.0000

Table 2: Many types of frequencies of the data in Table 1

- (a) Table 2 shows the frequency, relative frequency, cumulative frequency, and relative cumulative frequency.
- (b) Figure 1 shows a bar graph of the data in Table 1 as well as a histogram.

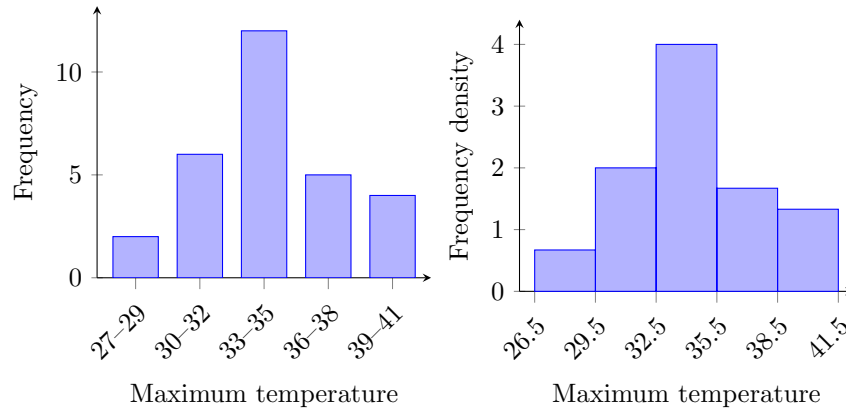


Figure 1: Bar graph of the data in Table 1 (left) and a histogram of the same (right)

- (c) The mid-range, average, median and mode for this data are as follows.

$$\text{Mid-range} = \frac{28 + 40}{2} = 34$$

$$\text{Average} = \frac{2 \times 28 + 6 \times 31 + 12 \times 34 + 5 \times 37 + 4 \times 40}{29} \approx 34.3103$$

$$\text{Median} = \frac{3 \left(\frac{29}{2} - 8 \right)}{12} + 32.5 = 34.125$$

$$\text{Modal class} = [32.5, 35.5)$$

6.