Problem # 01

The following data are the blood types of 50 volunteers at a blood plasma donation clinic:

O A O AB A A O O B A O A AB B O O O A B A A O A A O

B A O AB A O O A B A A A O B O O A O A B O AB A O B

(a) Represent these data in a frequency table.

(b) Represent them in a relative frequency table.

(c) Represent them in a pie chart.

Solution

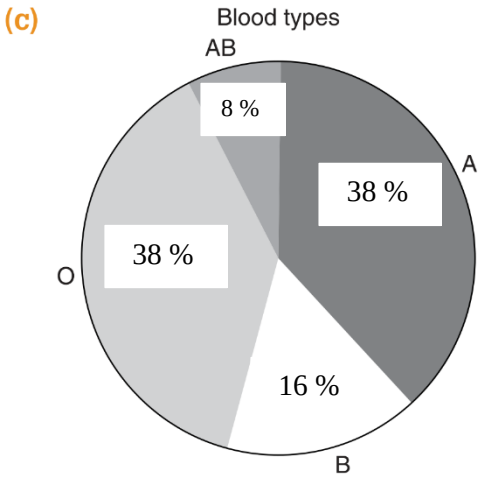
(a)

Blood type	Frequency
A	19
B	8
O	19
AB	4

(b)

Blood type	Relative frequency
A	0.38
B	0.16
O	0.38
AB	0.08

(c)



Problem # 02

The following table gives information about the age of the population in both the United States and Mexico.

	Proportion of population (percent)	
Age, years	Mexico	United States
0–9	32.5	17.5
10–19	24	20
20–29	14.5	14.5
30–39	11	12
40–49	7.5	12.5
50–59	4.5	10.5
60–69	3.5	7
70–79	1.5	4
Over 80	1	2

(a) What percentage of the Mexican population is less than 30 years old? **(b)** What percentage of the U.S. population is less than 30 years old? **(c)** Draw two relative frequency polygons on the same graph. Use different colors for Mexican and for U.S. data.

Solution

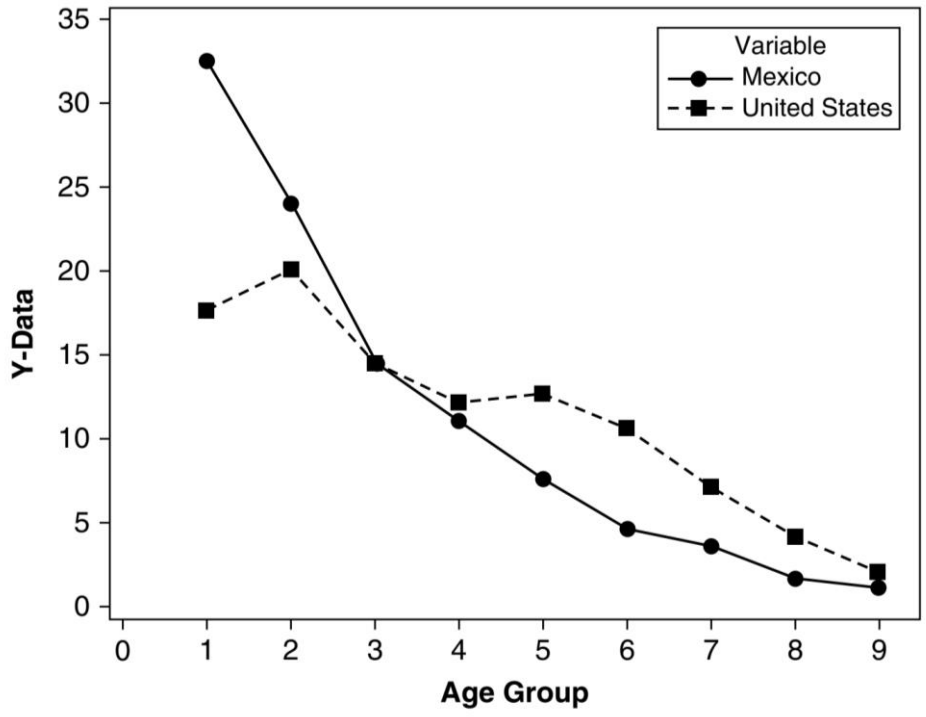
(a) Percentage of the Mexican population whose age is less than 30 years

$$= 32.5 + 24 + 14.5 = 71.$$

(b) Percentage of the U.S. population whose age is less than 30 years

$$= 17.5 + 20 + 14.5 = 52.$$

(c) The relative frequency (in %) polygons for Mexico and the U.S. populations are shown below.



Other sketches may also be possible.

Problem # 03

For the following data, draw stem-and-leaf plots having **(a)** 4 stems and **(b)** 8 stems.

124, 129, 118, 135, 114, 139, 127, 141, 111, 144, 133, 127,
122, 119, 132, 137, 146, 122, 119, 115, 125, 132, 118, 126,
134, 147, 122, 119, 116, 125, 128, 130, 127, 135, 122, 141

Solution

(a)

11	1, 4, 5, 6, 8, 8, 9, 9, 9
12	2, 2, 2, 2, 4, 5, 5, 6, 7, 7, 7, 8, 9
13	0, 2, 2, 3, 4, 5, 5, 7, 9
14	1, 1, 4, 6, 7

(b)

11	1, 4
11	5, 6, 8, 8, 9, 9, 9
12	2, 2, 2, 2, 4
12	5, 5, 6, 7, 7, 7, 8, 9
13	0, 2, 2, 3, 4
13	5, 5, 7, 9
14	1, 1, 4
14	6, 7

Problem # 04

Find the sample standard deviation of the data set given by the following frequency table:

Value	Frequency	Value	Frequency
3	1	5	3
4	2	6	2

Solution

$\bar{x} = 4.75$, $\sum_{i=1}^{8} x_i^2 = 188$, $n\bar{x}^2 = 180.5$, $n = 8$, so the sample variance

$s^2 = (188 - 180.5)/(8 - 1) = 1.0714 \Rightarrow$ the sample standard deviation $s = 1.0351$.

The End