Answer on Question #63438 – Math – Statistics and Probability

Question

A long straight road in a small town of New York is being used to monitor driving speeds. The first 50 cars gave the results shown in Table 1 below. The figures are in km/h to the nearest whole number.

Table 1

45 60 71 57 67 78 90 81 78 91
65 88 67 66 50 68 67 73 63 94
48 90 79 95 65 70 75 61 54 67
57 59 85 84 70 81 40 59 76 59
77 78 97 75 72 77 54 68 67 74

Answer the following questions:
(a) Find the range.
(b) Construct a frequency distribution for these data.
(c) Represent the data by a histogram and draw a frequency polygon on the same graph. Hence, estimate the mode.

Solution

(a) The range.

$R = X_{max} – X_{min}$

$X_{max} = 40$

$X_{min} = 97$

$R = 97 – 40 = 57$

The range is 57.

(b) Frequency distribution

Speed	Frequency
40	1
45	1
48	1
50	1
54	2
57	2
59	3
60	1
61	1
63	1
65	2
66	1
67	5
68	2

70	2
71	1
72	1
73	1
74	1
75	2
76	1
77	2
78	3
79	1
81	2
84	1
85	1
88	1
90	2
91	1
94	1
95	1
97	1

It is also possible to group the values. Here they are grouped in 3s:

The class width will be 57/3 = 19. Our classes will be 40–58, 59–77, and 78–97. Then, counting the number of entries in each class, we get
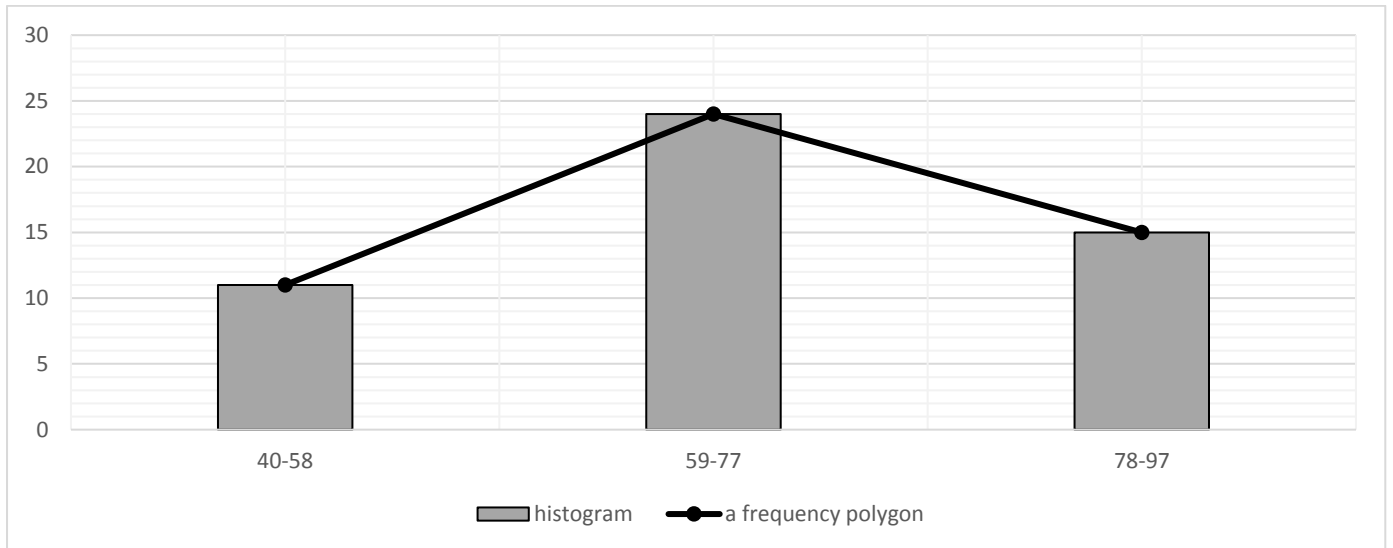
Class	Frequency
40-58	11
59-77	24
78-97	15

(c) Histogram and a frequency polygon:
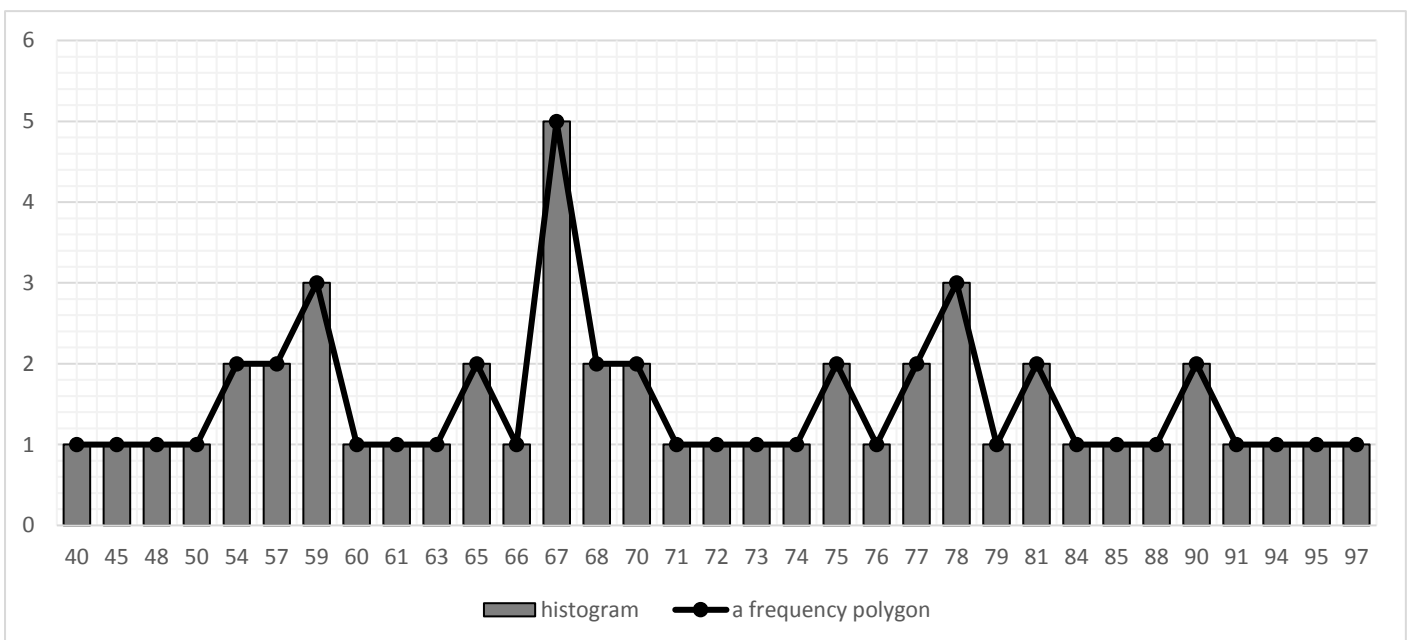
The mode is 67 km/h.

Histogram and a frequency polygon for intervals:

The mode is 59-77 km/h.