

Solution of Sessional Exam – 1

Solution Q1:

Smallest value = 9.4

Highest Value = 75.2

Range = 65.8

$n = 40$

No. of classes = 8

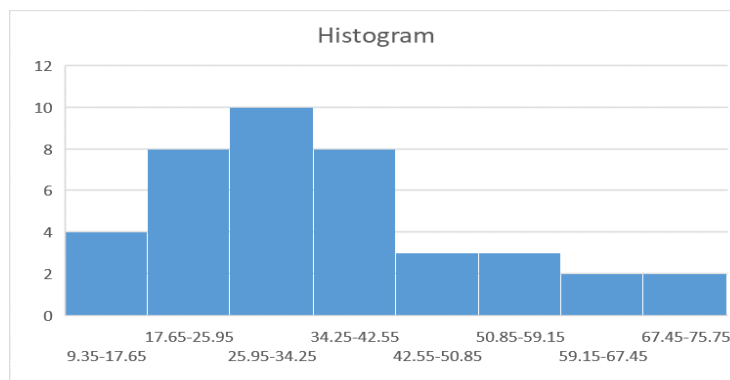
Class Width = 8.3

Class Limits	Class Boundaries	Mid Points	Frequency	Cumulative Frequency	$m * f$	$m^2 * f$
9.4-17.6	9.35-17.65	13.5	4	4	54	729
17.7-25.9	17.65-25.95	21.8	8	12	174.4	3801.9
26.0-34.2	25.95-34.25	30.1	10	22	301	9060.1
34.3-42.5	34.25-42.55	38.4	8	30	307.2	11796.5
42.6-50.8	42.55-50.85	46.7	3	33	140.1	6542.7
50.9-59.1	50.85-59.15	55	3	36	165	9075
59.2-67.4	59.15-67.45	63.3	2	38	126.6	8013.8
67.5-75.7	67.45-75.75	71.6	2	40	143.2	10253.1
Summation			40		1411.5	59272.1

Measures of Spread

Standard deviation = 15.6 *minutes*

Coefficient of variance = 44.2 %



Uni-modal and positive(right) skewed distribution

Mode > Median > Mean

The value of the mean is the largest, that of the mode is the smallest, and the value of the median lies between these two. The value of the mean is the largest in this case because it is sensitive to outliers that occur in the right tail. These outliers pull the mean to the right.

Measures of Position

$$Q_1 = 24.6$$

$$Q_2 = 31.2$$

$$Q_3 = 42.7$$

BOX PLOT

Inter Quartile Range

$$IQR = 18.1$$

Upper and Lower Inner Fences

$$1.5 * IQR = 27.2$$

$$\text{Lower Inner Fence } Q_1 - 1.5 * IQR = -2.6$$

$$\text{Upper Inner Fence } Q_3 + 1.5 * IQR = 69.9$$

Upper and Lower Outer Fences

$$3 * IQR = 54.3$$

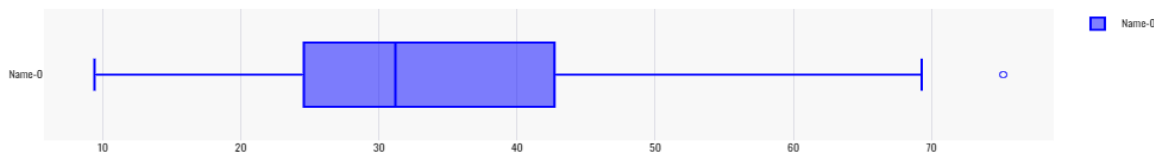
$$\text{Lower Inner Fence } Q_1 - 3 * IQR = -29.7$$

$$\text{Upper Inner Fence } Q_3 + 3 * IQR = 97$$

Outlier

75.2 is an outlier

Boxplot

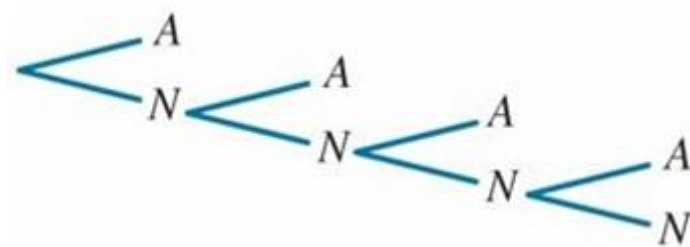


Solution Q2 (a):

Any of the 6 nonzero digits can be chosen for the hundreds position, and of the remaining 6 digits for the tens position, leaving 5 digits for the units position. So, there are $(6)(6)(5) = 180$ three digit numbers.

The units position can be filled using any of the 3 odd digits. Any of the remaining 5 nonzero digits can be chosen for the hundreds position, leaving a choice of 5 digits for the tens position. By Theorem 2.2, there are $(3)(5)(5) = 75$ three digit odd numbers.

Solution Q2 (b):



Solution Q2 (c):

The sample space and event are.

$S = \{F F F, F F N, F N F, N F F, F N N, N F N, N N F, N N N\},$

$E = \{FFF, NFF, FFN, NFN\}$. Consequently

$P(E) = |E|/|S| = 4/8 = 0.5$