CHAPTER TEN
MISCELLANEOUS TOPICS

Introduction to basic stem and leaf plots:

A stem and leaf plot is a special table, in which each data value is split into a stem (which is the first digit), and a leaf (which is usually the last digit).

- For example considering 32, 3 is the stem while 2 is the leaf.

- Considering 67, 6 becomes the stem while 7 becomes the leaf.

- Lastly considering 48, while 4 is the stem, 8 becomes the leaf.

- Example 1: You are given this data:15, 16, 21, 23, 23, 26, 26, 30, 32, 41. Make a stem and leaf plot of it.

Hint:

(1) Ensure that the numbers have been arranged in the ascending order.

(2) Construct a table as shown next:

Stem	Leaf

(3) Consider all the numbers beginning with 1, i.e 15 and 16 in this case.

(4) Since they all have 1 as a common term, it is brought outside the bracket, while the numbers attached to the 1 are placed inside the bracket i.e 1(5 6)

(5) Next considering all the numbers beginning with 2, i.e 21, 23, 23, 26, 26, while the 2 is brought outside the bracket, all the other numbers attached to it are placed inside the bracket i.e 2(1 3 3 6 6).

(6) Now considering the numbers beginning with 3 i.e 30 and 32, while the 3 is brought outside the bracket, the 0 and the 2 are placed inside the bracket i.e 3(0 2).

(7) Lastly considering the numbers or number beginning with 4 i.e 41 in this case, the 4 is brought outside the bracket while the 1 is placed within it i.e 4(1).

(8) Finally while all the numbers outside the brackets are placed under the stem column of the table, those within the brackets are placed under the leaf column as shown next:

Stem	Leaf
1	5 6
2	1 3 3 6 6
3	0 2
4	1

Example 2: Create a stem and leaf plot for this data: 50, 55, 38, 39, 20, 28, 17, 25, 38, 33, 49, 46, 19
Hint: Arranging the numbers in order gives us the next data: 17, 19, 20, 25, 28, 33, 38, 38, 39, 46, 49, 50, 55.
- We then make a stem and leaf plot of the data i.e:

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

Example 3: The data shows the distribution of marks in a class work:

27	**19**	**65**	**69**
11	**13**	**17**	**64**
56	**49**	**42**	**38**
28	**28**	**39**	**39**

(i) Make a stem and leaf plot of the data.

(ii) Find the number of students who scored more than 11 marks but less than 20 marrks.

(iii) Find the probability that a student selected scored less than 15 marks.

Hint: Arranging the numbers in order gives us the next data:

11	**13**	**17**	**19**
27	**28**	**28**	**38**
39	**39**	**42**	**49**
56	**64**	**65**	**69**

Then make or construct the stem and leaf plot of the data.

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

(ii) Since the marks more than 11 but less than 20 = 13, 17, and 19, then the number of those who scored more than 11 marks but less than 20 marks = 3.

(iii) Total number of students = 16 (i.e the total number of separate marks).

Number of marks less than 15 = 11 and 13 = 2.

Probability that a student scored less than 15 marks

$= \frac{Number\ of\ marks\ less\ than\ 15}{Total\ number\ of\ separate\ marksx}, = \frac{2}{16} = \frac{1}{8}$

N/B:

- In solving stem and leaf problems which involve single numbers, one may choose to bring a zero before these numbers.
- For example 8 can be represented by 08 and 3 by 03.
- Assuming the 8 and 2 found in the data have been represented by 08 and 02, then as we have done in the previous cases, the zero must be brought outside the bracket, while the 8 and the 2 are placed within the bracket i.e 0(8 2).
- For this reason, the zero must be placed under the stem column, while the 8 and the 2 are placed under the leaf column.

Example 4: The number of books read by 10 students last year is as follows: 12, 23, 19, 6, 10, 15, 25, 21, 12, 7. Prepare a stem and leaf plot for this given data.

Hint: Arranging the numbers in order => 06, 07, 10, 12, 12, 15, 19, 21, 23, 25.

- Finally construct the stem and leaf plot.

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

Stem and leaf plot associated with decimals:

Example 5: Sam got his friends to a long jump and got these results: 2.3, 2.5, 2,5, 2.7, 2.8, 3.2, 3.6, 3.6 4.5, 5.0. Create a stem and leaf plot for this data.

Hint: First ensure that these decimals are arranged in order, but if not, then do that your self.

Finally create the stem and leaf plot as shown next:

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

N/B: (1) In this case stem 2 leaf 3 means 2.3 and stem 3 leaf 6 means 3.6.
(2) in other words, each leaf is a decimal.