

Stem and Leaf display :

A clear disadvantage of using a frequency table is that the identity of the individual observations is lost in grouping process. To overcome this drawback ;

John Tukey (1977) introduced a technique known as 'stem and leaf display'

This technique offers a quick way for simultaneously sorting and displaying data sets where each number in the data is divided into two parts ; a stem and a leaf

A stem is the leading digits of each number, while a leaf is the rest of the remaining digits.

Example :

The number 243 could be split into two ways

2 | 43
stem | leaf

24 | 3 ✓ (more accepted)

∴ data must be arranged into ascending order in stem.

All possible stems are arranged in order from the smallest to the largest and placed on the left hand side of the line.

Example 8

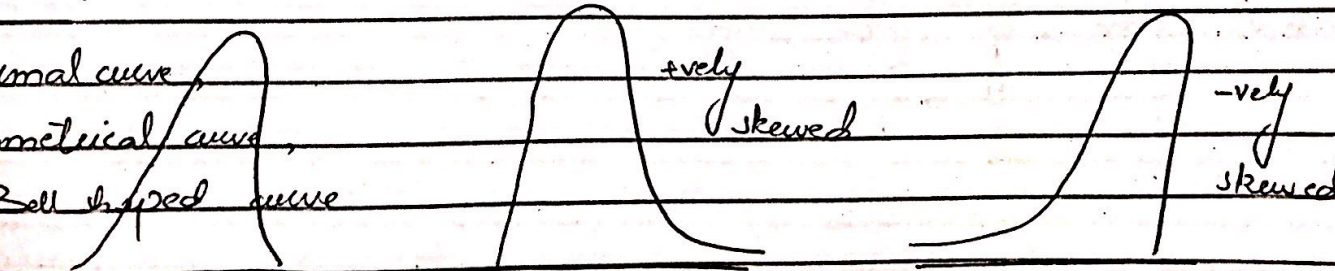
The age of 30 patients admitted to the certain hospital during a particular week were as follows:

48	31	54	37	18	64	61	43
40	71	51	12, smallest	52	65	53	42
39	62, highest	74	48	29	67	30	49
68	35	57	26	27	58		

construct stem and leaf display.

	Stem	Leaf = (values can be in irregular form)
must be in regular form	1	2, 8
	2	6, 7, 9
	3	0, 1, 5, 7, 9
	4	0, 2, 3, 8, 8, 9
	5	1, 2, 3, 4, 7, 8
	6	1, 2, 4, 5, 8, 7
	7	1, 4

Shapes 8



when we increase sample size \rightarrow infinity the curve becomes normal distribution shaped

Normal distribution shaped = mother of distribution

Assumptions :

— Data should be normally distributed

PDF

(Bernoulli) discrete 350 distribution
 continuous 400 distribution

Bernoulli
 Binomial $nC_x p^x q^{n-x}$

probability math function (PMF) \rightarrow Discrete \Rightarrow 'S'
 Peirson $\frac{n!}{x!(n-x)!} p^x q^{n-x}$

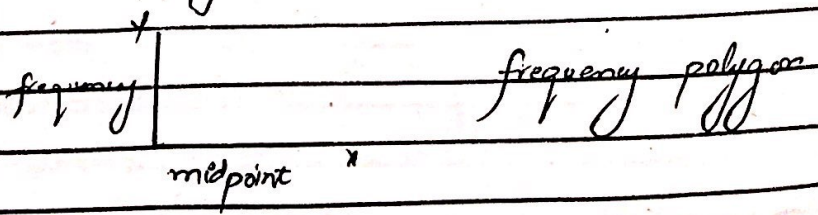
probability density function (PDF) - continuous = 'f'

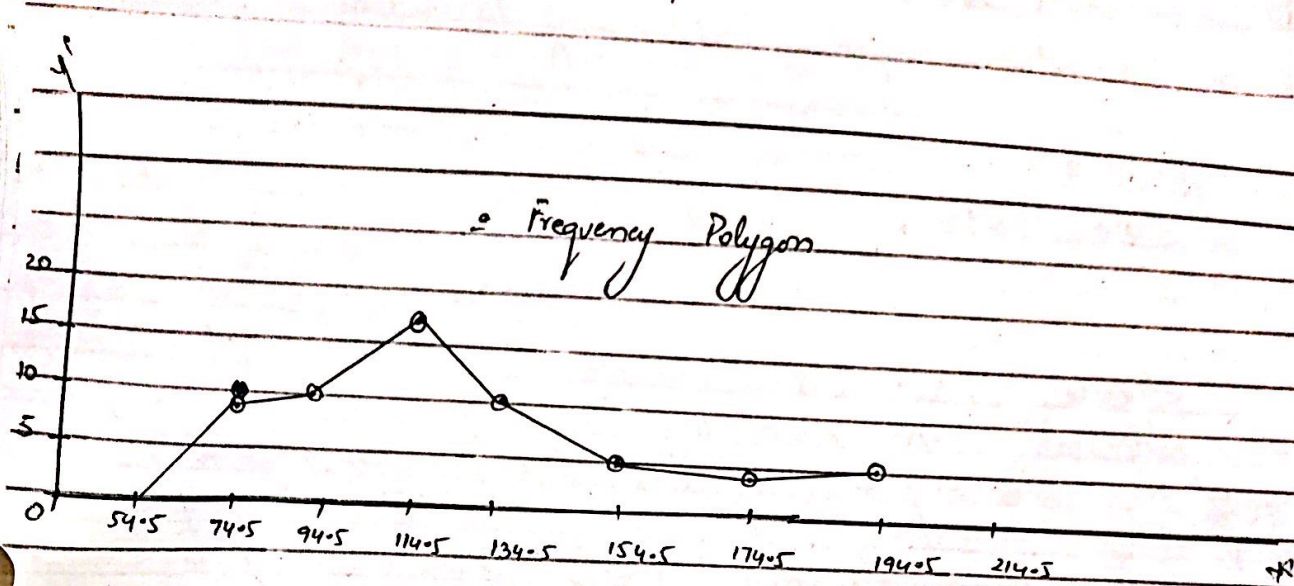
$$f(x; \mu, \sigma^2) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left[-\frac{(x-\mu)^2}{2\sigma^2}\right]$$

pdf 'f'

Frequency Polygon

A frequency polygon is a graphic form of frequency distribution which is constructed by plotting the points (x, f) where 'x' is the mid point and 'f' is the corresponding frequency. And then connecting them by straight line segments provided the class intervals are equal.





Stem Leaf (data 106, ..., 82)

6	8
7	6, 0, 8, 5
8	2, 6, 4, 0, 2
9	3, 5, 2, 0, 8, 0, 9
10	6, 7, 9, 7, 0, 7, 4
11	5, 1, 9, 5, 3, 1, 5, 0, 0, 8
12	3, 5, 6, 9, 8, 3
13	0, 9, 6, 1
14	0, 8, 1, 6
15	8, 2
16	2
17	8, 3
18	7, 6, 5, 1, 4
19	4
20	4