7.1 Relative frequency and percentage frequency

1- Frequency: It determines the number of observations falling into each category.

2- Relative frequency: It determines the proportion of observation in the particular class relative to the total observations.

This **relative frequency** of a particular observation or class limit is found by dividing the frequency (**F**) by the number of observations (**N**): that is, (**F ÷ N**).

Relative frequency = frequency ÷ number of observations

3- Relative frequency distribution: is a tabular summary of a set of data showing the relative frequency for each class.

4- Percent frequency is the relative frequency multiplied by 100

The percentage frequency is found by multiplying each relative frequency value by 100. Thus:

Percentage frequency = relative frequency x 100 = f ÷ n x100

Example1: Construct the Percentage frequency and relative frequency distribution for the following data:

62	58	58	52	48	53	54	63	69	63
57	56	46	48	53	56	57	59	58	53
52	56	57	52	52	53	54	58	61	63

Sol:

1.Largest value (XL) = 69, Lowest value (XS) =46

2.Total Range (TR) = (69- 46) +1= 24

3.K=1+3.322log(30) = 5.9~6(Rounded off)

4.Class width (L) = 24/6 = 4

Use 46 (minimum value) as first lower limit. Add the class width of 4 to get the lower limit of the next class.

Upper limit = 46 + 4 -1 = 50 -1= 49

Class Interval	Frequency (Fi)	Relative Frequency	Percentage Frequency	Midpoint (X)
46 – 49	3	3/30 = 0.1	3/30x100=10	47.5
50 – 53	8	8/30 = 0.27	8/30x100=27	51.5
54 – 57	8	8/30 = 0.27	8/30x100=27	55.5
58 – 61	6	6/30 = 0.2	6/30x100=20	59.5
62 – 65	4	4/30 = 0.13	4/30x100=13	63.5
66 – 69	1	1/30 = 0.03	1/30x100=3	67.5
Total	$\sum$ = 30	1	$\sum$ = 100	

Cumulative frequency distribution table

A cumulative frequency distribution table is a more detailed table. It looks almost the same as a frequency distribution table but it has added columns that give the cumulative frequency and the cumulative percentage of the results, as well.

Example 1: Construct the Cumulative frequency distribution table for the following data:

62	58	58	52	48	53	54	63	69	63
57	56	46	48	53	56	57	59	58	53
52	56	57	52	52	53	54	58	61	63

Sol:

1.Largest value (XL) = 69, Lowest value (XS) =46

2.Total Range (TR) = (69- 46) +1= 24

3.K=1+3.322log(30) = 5.9~6(Rounded off)

4.Class width (L) = 24/6 = 4

Use 46 (minimum value) as first lower limit. Add the class width of 4 to get the lower limit of the next class.

Upper limit = 46 + 4 -1 = 50 -1= 49

Class Interval	Frequency (Fi)	Cumulative frequency	Cumulative percentage(%)
46 – 49	3	3	3/30x100=10
50 – 53	8	8+3 = 11	11/30x100= 37
54 – 57	8	11+8=19	19/30x100= 63
58 – 61	6	19+6=25	25/30x100= 83
62 – 65	4	25+4=29	29/30x100= 97
66 – 69	1	29+1=30	30/30x100= 100
Total	$\sum$ = 30		

Tables for Qualitative Data

Ex: A sample of 10 students were examined by certain teacher and the results of examination was as below:

1. good 2. very good 3. good
4. excellent 5. poor 6. very good

7. good 8. poor 9. excellent
10. poor

Sol:

Results	Frequency	Relative Frequency	Percentage Frequency %	Cumulative Frequency	Cumulative Frequency %
Poor	3	0.3	30	3	30
Good	3	0.3	30	6	60
Very good	2	0.2	20	8	80
Excellent	2	0.2	20	10	100
Total	10		100		