**Frequency distribution**

**Frequency:** The number of observations falling in a particular class is called frequency. It is denoted by f.

**Frequency distribution:** The organization of data in a table showing the distribution of data into classes or groups together with number of observations in each class (frequency) is called frequency distribution.

**Class limits:** Defined as the values of the variables which describe the classes; the smaller number is the lower class limit and the larger number is upper class limit.

**Mid Points:** Mid-point or class mark is that number which divides each class into two parts. It is obtained by dividing the sum of lower and upper limits by 2.

**Relative frequency:** The frequency of a class divided by the total frequency is called relative frequency of that class. It is generally expressed as a percentage. Clearly the sum of relative frequencies of all the classes is 1 or 100%. For example, the relative frequency of the class 45-51 is (

**Cumulative frequency:** The total frequency of all classes less than the upper class boundary of a given class is called cumulative frequency of that class. For example cumulative frequency of the class 52-58 is 3+18=21 which means that 21 students have weights less than 58.5.

**Question: Make grouped frequency distribution from the weight measurements of 120 students.**

67,63, 57, 85, 67, 60, 75, 55, 67, 68, 51, 54, 45, 57, 64, 68, 67, 86, 63, 60, 98, 83, 76, 70, 56, 50, 74, 67, 77, 61, 85, 66, 66, 60, 61, 58, 56, 56, 57, 60, 60, 63, 64, 85, 80, 75, 75, 57, 58, 59, 58, 58, 61, 62, 91, 74, 72, 57, 73, 61, 86, 64, 91, 64, 64, 61, 62, 69, 57, 81, 66, 65, 81, 82, 76, 77, 81, 76, 66, 62, 63, 62, 63, 60, 60, 72, 72, 79, 70, 70, 58, 78, 58, 71, 76, 60, 60, 65, 65, 66, 65, 73, 73, 71, 73, 66, 73, 67, 68, 69, 68, 73, 68, 74, 68, 67, 76, 52, 79

**After arranging from smallest to largest**

45, 50, 51, 52, 54, 55, 56, 56, 56, 57, 57, 57, 57, 57, 57, 58, 58, 58, 58, 58, 58, 59, 60, 60, 60, 60, 60, 60, 60, 60, 60, 61, 61, 61, 6, 61, 61, 62, 62, 62, 62, 63, 63, 63, 63, 63, 64, 64, 64, 64, 64, 65, 65, 65, 65, 66, 66, 66, 66, 66, 66, 67, 67, 67, 67, 67, 67, 67, 68, 68, 68, 68, 68, 68, 69, 69, 70, 70, 70, 71, 71, 72, 72, 72, 73, 73, 73, 73, 73, 73, 74, 74, 74, 74, 75, 75, 75, 76, 76, 76, 76, 76, 77, 77, 78, 79, 79, 80, 81, 81, 81, 82, 83, 85, 85, 85, 86, 86, 91, 91, 98

**Step# 1:** Range= Maximum value-minimum value

**Step# 2: Number of classes**

Where N is total number of observations in data set

**Step# 3: Class Interval**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Class limits** | **Frequency** | **Class boundaries** | **Mid points** | **Cumulative frequency** | **Relative frequency=** |
| 45-51 | 3 | 44.5-51.5 |  | 3 |  |
| 52-58 | 18 | 51.5-58.5 | 55 | 3+18=21 | (18/120)\*100=15% |
| 59-65 | 33 | 58.5-65.5 | 62 | 21+33=54 | (33/120)\*100=27.5% |
| 66-72 | 29 | 65.5-72.5 | 69 | 54+29=83 | (29/120)\*100=24.17% |
| 73-79 | 23 | 72.5-79.5 | 76 | 83+23=106 | (23/120)\*100=19.17% |
| 80-86 | 11 | 79.5-86.5 | 83 | 106+11=117 | (11/120)\*100=9.17% |
| 87-93 | 2 | 86.5-93.5 | 90 | 117+2=119 | (2/120)\*100=1.67% |
| 94-100 | 1 | 93.5-100.5 | 97 | 119+1=120 | (1/120)\*100=0.83% |
| **Sum/ Total** | **120** |  |  |  | **1 0r 100%** |

**Do Yourself: Tabulate the data into a frequency distribution**

138, 164, 150, 132, 144, 125, 149, 157, 146, 158,140, 147, 136, 148, 152, 144, 168, 126, 138, 176, 163, 119, 154, 165, 146, 173, 142, 147, 135, 153, 140, 135, 161, 145, 135, 142, 150, 156, 145, 128