

Exercise 12.1

Monday, July 20, 2026 11:31 AM

Information Handling:

Information handling is the process of collecting, organizing, summarizing, analyzing and interpreting numerical data.

Data:

The collection of meaningful information in the form of facts and numerical figures is called data.

Types of Data:

There are following two types of data:

1. Discrete data:

It can take only some specific values. Whole numbers are used to write discrete data.

Examples:

- (a) Number of books sold by a shopkeeper
- (b) Number of patients visited a hospital in a week

2. Continuous data:

It can take every possible value in a given interval. Decimal numbers are used to write continuous data.

Example:

The mass of students in a class

Ungrouped Data:

Data which is not arranged in systematic order (groups or classes) is called ungrouped data.

Grouped Data:

Data which is arranged in systematic order (groups or classes) is called grouped data.

Frequency Distribution:

A distribution of table that represents classes or groups along with their respective class frequencies is called frequency distribution.

Types of Graphs:

There are following two types of graphs to represent a frequency distribution:

- (a) Histogram

(b) Frequency polygon

Note:

$$\text{Midpoint} = \frac{\text{Lower class limit} + \text{Upperer class limit}}{2}$$

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Solution of Exercise

Question 1:

The following distribution represents the scores achieved by a group of chemistry students in the chemistry laboratory.

Scores	24 – 28	29 – 33	34 – 38	39 – 43	44 – 48	49 – 53	Total
No. of students	3	6	12	23	15	6	65

Answer the following questions.

- (i) What is the upper limit of the last class?
- (ii) What is the lower limit of the class 39 – 43?
- (iii) What is the midpoint of the class (34 – 38)?
- (iv) What are the class frequencies of the classes 29 – 33 and 44 – 48?
- (v) What is the size of the class limits in the above frequency distribution?
- (vi) In which class or group does minimum number of students fall?
- (vii) What is the lower limit of the class having 15 as its class frequency?
- (viii) What is the number of students having scores between 24 and 43?

Solution:

(i) Upper limit of the last class = **53**

(ii) Lower limit of the class 39 – 43 = **39**

(iii) Midpoint of the class (34 – 38) = $\frac{34+38}{2}$
 $= \frac{72}{2}$
 $= \mathbf{36}$

(iv) Class frequencies of the classes 29 – 33 and 44 – 48 = **6 and 15**

(v) Size of the class limits = **5**

(vi) Minimum number of students fall in group **(24 – 28)**

(vii) Lower limit of the class having 15 as its class frequency = **44**

(viii) Number of students having scores between 24 and 43 = $3 + 6 + 12 + 23$
 $= \mathbf{44}$

Question 2:

For a school staff, the following expenditures (rupees in hundred) are required for the

repair of chairs.

145, 152, 153, 156, 158, 160, 146, 152, 155, 159,
161, 163, 165, 147, 148, 151, 154, 156, 158, 160,
144, 167, 151, 150, 152, 149, 145, 153, 152, 155

Prepare a frequency distribution by tally bar method using 3 as the class size. Also write down the frequencies of the last three classes.

Solution:

Data after arrangement is:

144, 145, 145, 146, 147, 148, 149, 150, 151, 151, 152, 152, 152, 152,
153, 153, 154, 155, 155, 156, 156, 158, 158, 159, 160, 160, 161,
163, 165, 167

Smallest value = 144

Largest value = 167

Frequency Distribution Table:

Class Interval	Tally Marks	Frequency
144 – 146		4
147 – 149		3
150 – 152		7
153 – 155		5
156 – 158		4
159 – 161		4
162 – 164		1
165 – 167		2
Total		$\Sigma f = 30$

Frequencies of the last three classes

- 159-161 = **4**
- 162-164 = **1**
- 165-167 = **2**

Question 3:

Given below are the weights (kg) of 30 students of a high school.

30, 33, 24, 21, 15, 39, 37, 44, 42, 33,
33, 28, 29, 32, 31, 28, 26, 32, 34, 35,
38, 36, 41, 30, 35, 41, 23, 26, 18, 34

Taking 5 as the class size, prepare a frequency table and construct a frequency polygon.

Solution:

Data after arrangement is:

15, 18, 21, 23, 24, 26, 26, 28, 28, 29,
30, 30, 31, 32, 32, 33, 33, 33, 34, 34,
35, 35, 36, 37, 38, 39, 41, 41, 42, 44

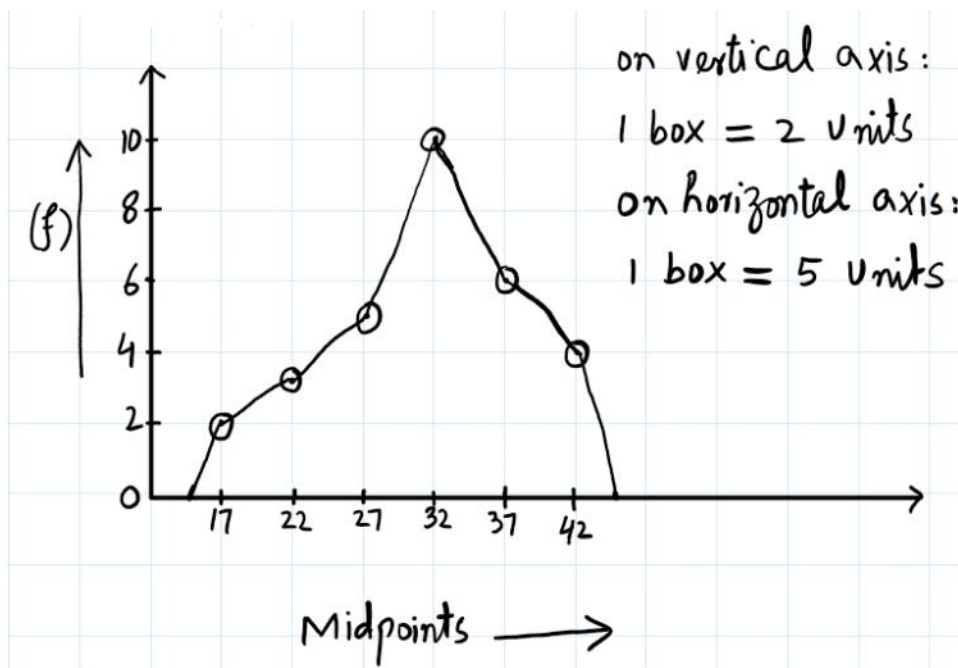
Smallest value = 15

Largest value = 44

Frequency Distribution Table:

Class Interval	Tally Marks	Mid-point	Frequency (f)
15 – 19		$\frac{15 + 19}{2} = 17$	2
20 – 24		$\frac{20 + 24}{2} = 22$	3
25 – 29		$\frac{25 + 29}{2} = 27$	5
30 – 34		$\frac{30 + 34}{2} = 32$	10
35 – 39		$\frac{35 + 39}{2} = 37$	6
40 – 44		$\frac{40 + 44}{2} = 42$	4
Total			$\Sigma f = 30$

Frequency Polygon:



Question 4:

A group of Grade-10 students obtained the following marks out of 100 marks in English test.

58, 59, 58, 33, 40, 58, 45, 46, 43, 45, 45,
50, 52, 49, 50, 57, 52, 55, 49, 50, 62, 49,
48, 44, 42, 47, 46, 47, 46, 53, 40, 44

Classify the data into a frequency distribution (direct method) taking 6 as the class size. Also find the class limit with least class frequency and construct a histogram.

Solution:

Data after arrangement is:

33, 40, 40, 42, 43, 44, 44,

45, 45, 45, 46, 46, 46, 47, 47, 48, 49, 49, 49, 50, 50, 50,

52, 52, 53, 55, 57, 58, 58, 58, 59, 62

Smallest value = 33

Largest value = 62

Frequency Distribution Table:

Class Interval	Class Boundaries	Tally Marks	Frequency
33 – 38	32.5–38.5		1

39 – 44	38.5 – 44.5		6
45 – 50	44.5 – 50.5		15
51 – 56	50.5 – 56.5		4
57 – 62	56.5 – 62.5		6
Total			$\Sigma f = 32$

Least Frequency:

The least frequency is **1**, occurring in the class interval (33–38).

Histogram:

