

# 7th Standard- Maths

## Data Handling

Collection and Organisation of data in a particular manner makes it easier for us to understand and interpret data.

Before collecting data, we need to know what we would use it for.

Examples

- Performance of your class in Mathematics.
- Performance of India in football or in cricket.
- Female literacy rate in a given area, or
- The number of children below the age of five in the families around you.

Average is a number that represents or shows the central tendency of a group of observations of data.

The arithmetic mean (AM) or simply mean is defined as follows:

Arithmetic mean =  $\frac{\text{Sum of all observations}}{\text{Number of observations}}$

Mean always lies between the greatest and smallest observation of the data.

Range is the difference between the highest and the lowest observation of the data. i.e. Range = Highest observation – Lowest observation

Mode of a set of observation is the observation that occurs, the most often e.g. 2 is the mode of a set of numbers 1, 1, 2, 4, 3, 2, 1, 2, 2, 4.

Median refers to the value which lies in the middle of the data with half of the observations above it and the other half below it.

e.g. 24, 36, 46, 17, 18, 25, 35 is given data.

Firstly, data is to arranged in ascending order i.e. 17, 18, 24, 25, 35, 36, 46.

Since the median is the middle observation, therefore 25 is the median.

If the data has an odd number of items, then the median is the middle number.

If the data has an even number of items, then the median is mean of two middle numbers.

A bar graph is a representation of numbers using bars of uniform widths.

Mode of the data is the longest bar if the bar represents frequency.

Double bar graphs help to compare two collections of data at a glance.

The situation that may or may not happen, have a chance of happening.

Probability of an event =  $\frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$  in the experiment

Probability of an event which has no chance of happening is '0'.

Probability of an event which is bound to happen is 1.

### **Collecting Data**

A given collection of data may not give us a piece of the specific information related to that data. Before collecting data, we need to know what we would use it for.

## **Organisation of Data**

After the collection of data, we have to record and organize it.

Many kinds of data we come across are put in tabular form. Our school rolls, progress report, index in the notebooks, temperature record and many others are all in tabular form. Similarly, census record, a record of the values of shares, the record of DA, the record of HRA, are all in tabular form.

When we put data in a proper table, it becomes more meaningful. We can then interpret the data and take some inferences from them.

## **Representative Values**

In our day-to-day life, we come across many statements that involve the term 'average'. Average is a number indicating the representative of the central value of a group of observations or data. This representative value or central value is known as measure of central tendency.

Different forms of data need different forms of representative or central value to describe it.

## **Arithmetic Mean**

The most common representative value is the arithmetic mean or the mean.

Rule: To find the mean, we find the sum of all the observations and divide this by the number of observations.

Result:

- (i) The mean of several observations is the value which is equally shared out among all the observations.
- (ii) The mean lies in between the greatest and the smallest observation.

## **Range**

Range = Highest observation – Lowest observation

## **Mode**

The mode of a set of observations is the observation that occurs most often.

## **Mode of Large Data**

Putting the same observations together and counting is not easy if the number of observations is large. In such cases, we tabulate the data. Tabulation can begin by putting tally marks and finding the frequency.

## **More than one Mode**

A set of numbers can have more than one mode.

For example: For numbers 2, 2, 2,3, 3, 4, 5, 5, 5, 6,6, 8 ; 2 and 5 both occur highest (three) times.

Therefore, they both are the modes of the data.

## **Median**

Median is the middle most observation of the data arranged in ascending or descending order.

## **Use of Bar Graphs with a Different Purpose**

By looking at the bar graph, we can make deductions about the data.

For example, we can say that the mode is longest bar if the bar represents the frequency.

### **Choosing a Scale**

We should choose a proper scale so that all the data may be represented on the available graph paper.

### **Drawing a double bar graph**

These are used when we have to make comparisons between two collections of data at a glance.

### **Chance**

Chance predicts simply a possibility.

### **What is Probability?**

Probability is the measure of the chance of a particular event. It is measured as

$$\frac{\text{no. of favourable outcomes}}{\text{no. of all possible outcomes}}$$

Note: Two outcomes are said to be equally likely if we cannot expect one in preference to the other.