



**BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034**

**SUBJECT: PHYSICS**

**CLASS IX**

**CHAPTER: - MOTION**

**GUIDELINES:**

**Dear students**

- There are 3 assignments:
  - Assignment 1: Based on states of motion
  - Assignment 2: Based on distance and displacement
  - Assignment 3: Based on scalar and vector quantities.
- Attempt the assignments in a separate notebook for Physics.
- Suitable Video links have been provided with every assignment.
- Please read NCERT book for better understanding of these concepts.
- Link for the Book: - <http://ncert.nic.in/textbook/textbook.htm?iesc1=8-15>

**SUBTOPICS:** 1. STATES OF MOTION

- Rest and Motion
- Motion is always relative

2. DISTANCE AND DISPLACEMENT

3. SCALAR AND VECTOR QUANTITIES

**LET US WALK TOGETHER AND EXPLORE THE TERM 'MOTION':**

**1. STATES OF MOTION**

There are two states of motion as per Physics: Rest and Motion

A body is said to be at **rest** if it does not change its position with respect to its surroundings.

A body is said to be in **motion** if it changes its position with respect to its surroundings

For better understanding watch this video and solve the assignment that follows:

<https://www.youtube.com/watch?v=8qh--3X6E5w>

**Assignment 1 (States of motion)**

1. Give 2 examples from your daily life where an object can be said to be at rest as well as in motion at the same time.
2. Motion is relative not absolute. Justify the statement giving suitable reason/reasons.

## **2. DISTANCE AND DISPLACEMENT**

View the following links and answer the Assignment 2 that follows

LINKS:

<https://www.youtube.com/watch?v=21BwUNDOQno>

<https://www.youtube.com/watch?v=rOC2poJHSFY>

### **Assignment 2**

1. The numerical ratio of displacement to distance for a moving object is
  - (a) always less than 1
  - (b) always equal to 1
  - (c) always more than 1
  - (d) equal or less than 1
2. A particle is moving in a circular path of radius  $r$ . What would be the distance travelled by the particle and its displacement
  - a) after it completes half a circle
  - b) if it completes three and a half round of the circle
  - c) if it completes one full round of the circle

In which two cases is the particle displaced equally?

3. A person moves from point O in a straight line to a point X 50m, and returns from X to point Y in direction XO 20m. What is the displacement made?
  - (a) 50m
  - (b) 80m
  - (c) 20m
  - (d) 30m
4. If 's' is displacement and 'd' is the distance between the two points, then the correct relation is
  - (a)  $s = d$
  - (b)  $s > d$
  - (c)  $d > s$
  - (d) none
5. A car travels along a straight road 100 m east then 50 m west. Find the distance and displacement of the car.

**NOTE:** Solve questions 1,2,3 on page 100 of NCERT and question 1 on page 112.

## **3. SCALAR AND VECTOR QUANTITIES**

All measurable quantities in Physics can be categorized into Scalar and vector quantities depending on the information needed to describe them.

For better understanding watch the video shared below

<https://www.youtube.com/watch?v=Pj8Zh0A-uLU&list=TLPQMjUwMzlwMjAi9MyZyvtiiA&index=3>

Now try to answer these questions.

### **Assignment 3**

1. Differentiate between scalar quantities and vector quantities with examples.
2. Michael walks 10m north, 3m west, 5m south, 12m east, and then stops to catch his breath. What is the magnitude of his displacement from his original point? (Ans: Approx. 10 m)
3. Walter is washing windows on a large building. He starts by washing the window on the 4th floor, then down to the 3rd floor, then up to the 6th floor, then down to the 5th floor, then down to the 2nd floor, and finally he washes the 1st floor window. What is his total distance? (9 Floors)
4. Identify the following measurements as scalar or vector:
  - a) The airplane was flying 500 miles per hour due west from New York to California.
  - b) The 1500 kg car was sitting in the last parking space on the block.
  - c) The object was pulled down to the Earth with the force of 5 Newtons.
  - d) The temperature in the city was a pleasant 23degree Celsius

## SUMMARY:

### DISTANCE

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- The total path or length covered by the moving object
- Its SI unit is metre

### DISPLACEMENT

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- It is the length of the shortest distance between the initial point and final point of the moving object
- Its SI unit is metre

### SCALAR AND VECTOR QUANTITIES

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- Scalar quantities are described only in terms of the magnitude e.g. distance
- Vector quantities are described in terms of the magnitude as well as direction e.g. displacement