

CLASS-VIII SUBJECT-PHYSICS page 1

CHAPTER-2 TEACHER: Charanjeet kaur

Good Morning Students!

This lesson is for class-VIII, for the subject of 'Physics', Topic - 'Some terms related to motion', which is covered in Chapter-2 'Motion in One Dimension' starting on Page Number - 27 of your textbook, titled - 'Concise Physics by Adina Publications' and is being submitted to you on -

Students! before starting our chapter, let us recap the definition of Physical Quantities (which we have already done in class-VII)

PHYSICAL QUANTITIES are the quantities which can be measured like mass, length, time, temperature, electric current etc.

PHYSICAL QUANTITY	INSTRUMENT FOR MEASUREMENT
1) Mass	Beam Balance
2) Length	Metre scale
3) Time	Simple Pendulum, Watch
4) Temperature	Thermometer
5) Electric Current	Ammeter
6) Weight	Spring Balance

Physical quantities are broadly classified into two categories, namely:

SCALAR QUANTITY, and VECTOR QUANTITY

1) SCALAR QUANTITY - These are physical quantities which are expressed only by their magnitude. To express any scalar quantity, we need two things:

- a) Unit in which the quantity is being measured,
- b) Numerical value of the measured quantity.

Scalar quantities can be added, subtracted, multiplied and divided by simple arithmetic methods.

FOR EXAMPLE- mass, Temperature, distance, speed, work, energy, power, frequency, volume, electric current, pressure, density, charge, mechanical advantage are few scalar quantities.

mechanical advantage does not have any unit and thus it is represented only by a numeric value.

Similarly, $\pi = \frac{22}{7} \approx 3.14$, also does not

have any unit of its own but is a scalar quantity (also known as scalar constant).

1) Suppose, you purchased 2 kg of apple and later you brought 1 kg of apple again. So, the net mass of apple purchased by you is 3 kg.

2) Similarly, if you finished your work in 20 minutes and then took 5 minutes extra to revise that work thoroughly before submitting. Then, the total time taken by you to finish your assigned task is $(20+5)$ minutes i.e. 25 minutes.

From the above given instances, it can be concluded, that on scalar quantities simple arithmetic methods can be applied.

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2) **VECTOR QUANTITY** - Vector quantity is specified by giving magnitude, unit and its direction.

For example - If we say that drive your vehicle 5 km to reach Hospital, then the first question which will arise will be 'in which direction'?

The first statement was incomplete. But if we say that drive your vehicle 5 km towards east to reach Hospital, then this statement is complete as it has direction associated with the magnitude (i.e. with the numeric value).

EXAMPLES OF VECTOR QUANTITIES

Displacement, Velocity, Acceleration, Force, Weight, Linear Momentum, Impulse, Magnetic Field

Magnitude of any vector quantity is POSITIVE. If we have to write force vector, then it is denoted by $\vec{F}$.

The negative sign with a vector quantity implies the reverse or opposite direction.

• If $\vec{F}$ represents force applied in east direction, then $-\vec{F}$ represents the force in west direction.

NOTE- Vector quantities follow different algebra for their addition, subtraction and multiplication.

Before starting further, let us revise the terms Rest and Motion (as done in previous class).

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

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MOTION - A body is said to be in motion if it changes its position with respect to its immediate surroundings.

POINT PARTICLE - For a moving body, if the distance travelled in a certain time interval is much large as compared to the size of the body, the body can be assumed to be a point particle.

ONE DIMENSIONAL MOTION - When a body moves along a straight line path, its motion is said to be one dimensional motion. It is also called motion in a straight line or rectilinear motion. For example -

- a) A stone falling down vertically,
- b) The motion of a train on a straight track etc.

Note: In one dimensional motion, there is no movement of the body in lateral directions (i.e. no sideways motion as the word lateral means side).

TWO DIMENSIONAL MOTION - If a body moves on a plane along a curved path, its motion is two dimensional motion (2-d).

THREE DIMENSIONAL MOTION - If a body moves in space, its motion is three dimensional (3-d) motion.

With this I come to an end of this interactive session. You all are requested to read Page Number 27 and 28 and then write the answers of Question Number-1 to 5, given on Page Number 35, in your Physics notebook.

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