

NORTH-EX PUBLIC SCHOOL
(Senior Secondary, Affiliated To CBSE)
School Block, Jain Nagar, Sector-38, Rohini, Delhi – 81
Subject – Science (Physics)
Class - IX
Worksheet 3

***Note-** Before attempting the worksheet you must check the links given below which will help you in doing the same correctly.

You can download the worksheets or if you do not have facility to get printout then you can ask your ward to copy the worksheet in a simple notebook and must do exercise and question answers in the notebook.

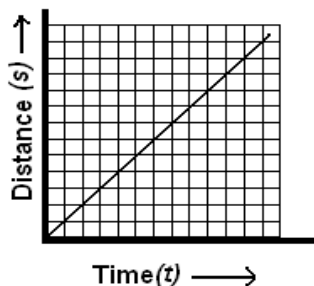
Link- <https://youtu.be/a451lmDKv9w>

NOTES

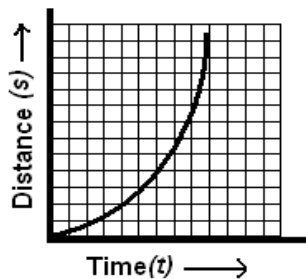
Uniform Motion And Non-Uniform Motion-

Uniform motion- A body has a uniform motion if it travels equal distances in equal intervals of time, no matter how small these time intervals may be. The distance-time graph for uniform motion is a straight line. Ex.- if we drop a ball from the roof of a tall building.

Non-Uniform motion- A body has a non-uniform motion if it travels unequal distance in equal intervals of time. The distance-time graph for a having non-uniform motion is a curved line.



Distance-time graph of an object moving with uniform speed



Distance-time graph for a car moving with non-uniform speed

Speed, Velocity and Acceleration-

Speed-

*Speed of a body gives us an idea of how slow and fast that body is moving.

*Speed of a body is = distance travelled / time taken.

$$v = s/t$$

•Where v = speed

•S = distance travelled

•t = time taken

Average Speed-

*The average speed of a body is the total distance travelled divided by the total time taken to cover this distance.

Average speed = total distance travelled / total time taken.

Uniform Speed

*A body has uniform speed if it travels equal distance in equal intervals of time, no matter how small these time intervals may be.

Velocity

•Velocity of a body is the distance travelled by it per unit time in a given direction.

*We know that the 'distance travelled in a given direction' is known as 'Displacement'.

•Velocity = displacement / time taken

$$V = s / t$$

Where V = velocity of the body

S = displacement of the body

And t = time taken

•The SI unit of velocity is the same as that, (m/s or $m s^{-1}$). We can use the bigger unit of kilometers per hour.

Uniform Velocity

-A body has a uniform velocity if it travels in a specified direction in a straight line and moves over equal distances in equal intervals of time, no matter how small these time intervals may be.

The velocity of a body can be change in two ways -

- 1- by changing the speed of the body, and
- 2- by keeping the speed constant but by changing the direction.

Speed And Velocity Are Not Always Equal In Magnitude

*The magnitude of speed and velocity of a moving body is equal only if the body moves in a single straight line. If, however, a body doesn't move in a single straight line, then the speed and velocity of the body are not equal. The average speed of a moving body can never be zero, but the average velocity of a body can be zero.

Average Velocity

Average velocity = Initial velocity + Final velocity / 2

$$\bar{v} = \frac{u + v}{2}$$

-When a bar on the v denotes the average velocity, u is the initial velocity and v is the final velocity.

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Worksheet

1. Can a body have constant speed but variable velocity?
2. What do you mean by average speed? What are its units?
3. Distinguish between speed and velocity.
4. A body travels along a circular path of radius 70 m. After travelling half a revolution in 20 s, find the average velocity and average speed.
5. Abdul while driving to school computes the average speed for his trip to be 20 km/h. On his return trip along the same route, there is less traffic and the average speed is 40 km/h. What is the average speed for Abdul's trip?
6. An artificial satellite is moving in a circular orbit of radius 42250 km. Calculate its speed if it takes 24 hours to revolve around the earth.