

PHYSICS GRADE 10

CHAPTER ONE LINEAR MOTION

Introduction

Study of motion is divided into two;

1. Kinematics
2. Dynamics

In kinematics forces causing motion are disregarded while dynamics deals with motion of objects and the forces causing them.

I. Displacement

Distance moved by a body in a specified direction is called displacement. It is denoted by letter 's' and has both magnitude and direction. Distance is the movement from one point to another. The SI unit for displacement is the metre (m).

II. Speed

This is the distance covered per unit time.

Speed= distance covered/ time taken. Distance is a scalar quantity since it has magnitude only. The SI unit for speed is metres per second (m/s or ms^{-1})

Average speed= total distance covered/total time taken

Other units for speed used are Km/h.

Examples

1. A body covers a distance of 10m in 4 seconds. It rests for 10 seconds and finally covers a distance of 50m in 60 seconds. Calculate the average speed.

Solution

Total distance covered=10+50=100m

Total time taken=4+10+6=20 seconds

Therefore average speed=100/20=5m/s

2. Calculate the distance in metres covered by a body moving with a uniform speed of 180 km/h in 30 seconds.

Solution

Distance covered=speed*time

$$=180 \times 1000/60 \times 60 \times 30 \text{ m/s}$$

$$=50 \times 30$$

$$=1,500 \text{ m}$$

3. Calculate the time in seconds taken a by body moving with a uniform speed of 360km/h to cover a distance of 3,000 km?

Solution

Speed: 360 km/h= $360 \times 1000/60 \times 60=100 \text{ m/s}$

Time=distance/speed

$$3000 \times 1000/100$$

$$=30,000 \text{ seconds.}$$

III. Velocity

This is the change of displacement per unit time. It is a vector quantity.

Velocity=change in displacement/total time taken

The SI units for velocity are m/s

Examples

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Didier Musso



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