CBSE Class 7 Science Notes Chapter 13: You've come to the right site if you're seeking some excellent Motion and Time Class 7 notes. When you read the chapter, all of your questions will be answered because the notes cover the entire subject in great detail. They are useful as study notes for exams. The notes were created by professional educators in the field, keeping in mind the latest CBSE curriculum.

Taking notes is advantageous as it reduces the amount of time you need to spend reading through each chapter before a test. To succeed on your exam, all you need to do is download these notes and read through them.

CBSE Class 7 Science Notes Chapter 13 Overview

Motion and time are two important science topics that are clearly and thoroughly covered in the CBSE Class 7 notes. Understanding the features and attributes of motion and time measurement is beneficial to students. Better retention is facilitated by the well-structured framework, which facilitates effective revision. The subject is better understood through real-world examples such as measuring time and comprehending how objects move.

These notes are crucial for achieving academic success and laying a solid foundation in the fascinating field of motion and time. They have shown to be quite helpful in assisting pupils in achieving academic success.

CBSE Class 7 Science Notes Chapter 13

Motion

Motion is the movement of an object or the tendency of an object to move about time from its original location.

Motions include, for instance, the pendulum of a clock moving, leaves falling from trees, etc.

The exact path that an object travels in a specific amount of time is called its distance. The shortest distance an object travels in a specific amount of time is its displacement. Calculating distance involves multiplying speed by time. Meters and kilometers are used to express the distance.

When an object's position changes throughout time, as when an automobile travels down the road, it remains in motion. If an object remains in the same location concerning time, it is said to be at rest. similar to someone standing on the ground.

As a standard, time is measured in seconds, distance is measured in meters, and speed is measured in meters per second.

The object moves in a straight line when it is linear or straight.

circular, where the thing follows a path that is circled.

Curvilinear refers to motion along a curve by the item.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total Time}}$$

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Measuring Time

Many events in nature repeat after a time interval:

- Morning – The rising of the sun
- Day and Night – The time between the sunrise and sunset
- Month – The time between two new moons
- Year – The time the earth takes to complete its one revolution around the sun

Basics of Standard Units

Units and their standardization

- The standard unit of distance is in meters.
- The standard unit of time is in seconds (s).
- The standard unit of speed is in meters per second (m/s).

There are two types of motions

Uniform Motion: An object is said to be moving uniformly if it moves in a straight line at a constant pace, meaning that its speed does not vary with time.

Non-Uniform Motion: An object is said to be moving non-uniformly if it is moving in a straight line yet its speed varies over time.

Speed

- The distance covered by an object per unit time is called speed. Thus,

$S = \frac{D}{T}$ where S represent the speed of an object, D represent the distance covered by an object and T represent the time taken by the object.

- SI unit of speed is m/s.

Slow and Fast Motion

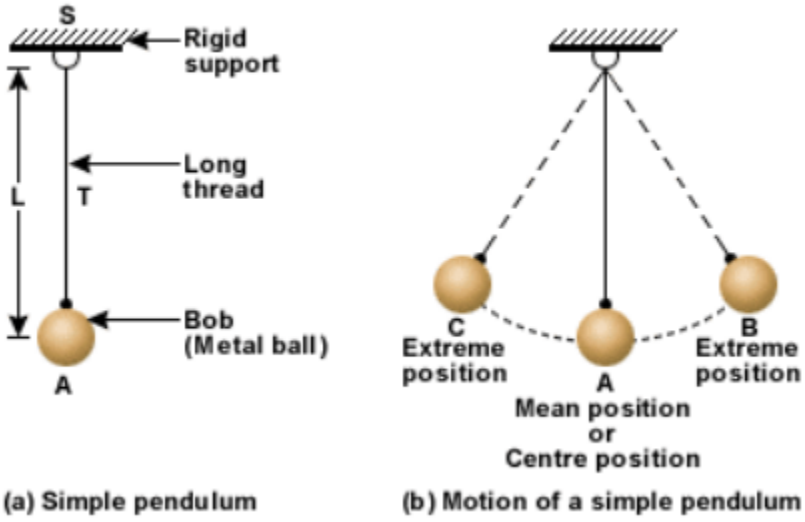
If one object covers a particular distance in less time and another object covers the same distance in more time then the first object is said to be moving slowly while the second object is said to be moving faster.

Measurement of Time

Time was once measured by the sun's shadow cast on various things.

Simple Pendulum: The best illustration of periodic motion is this kind of clock, which is used to measure time.

Clocks, or time-measuring devices, measure time by applying the principle of periodic motion. Its utilization of motion that repeats in equal intervals of time is indicated by this. Devices for measuring time come in a variety of forms.



(a) Simple pendulum (b) Motion of a simple pendulum

An object in to-and-fro motion is said to be in periodic or oscillatory motion.

Oscillation: The oscillatory movement.

The period is the length of time the pendulum takes to complete one full oscillation.

Seconds, represented by s, are the fundamental or SI unit of time.

Oscillatory motion: The pendulum's oscillatory motion is its to-and-fro motion. The pendulum's bob does indeed shift from its center, or mean position, to its extreme location on the opposite side.

Oscillation: One oscillation is defined as the bob moving from its center (mean position) to its extreme ends.

A pendulum's period is defined as the length of time it takes the pendulum bob to complete one oscillation.

Measuring Speed

A speedometer is a tool used to calculate a vehicle's speed in kilometers per hour.

An odometer is a tool used to calculate how far a car has traveled.

Distance-Time Graph

It is employed to investigate how an object moves.

On the Y-axis, the distance is displayed, and on the X-axis, the time.

When the distance-time graph is a straight line, the motion is uniform.

If the distance-time graph is rising, then the object's speed is rising.

An item is traveling at a slower speed if the distance-time graph is descending.

If the distance-time graph is parallel to the X-axis, the object is considered to be at rest.

The distance-time graph's slope indicates the object's speed.

The object's speed changes if the distance-time graph shows a curve.

Speedometer and Odometer

The vehicle's speed is directly recorded via the speedometer in kilometers per hour (km/h). The direct distance traveled by car is measured in kilometers (km) using an odometer.

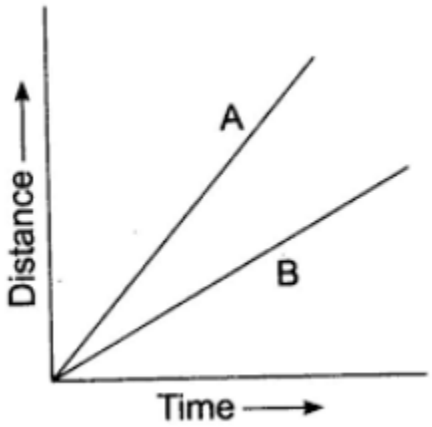
Visualizing Motion

Distance-time graph

- A distance-time graph is a graph plotted between the distance (in the y-axis) and time (in the x-axis).
- The slope of a distance-time graph gives the speed of an object.

To find the speed of the distance-time graph

Speed can be calculated as follows: distance traveled/time = (final position – beginning position)/time spent by the object



Additionally, a graph's slope can be used to calculate the speed of the distance-time graph. The object's speed increases with the graph's steeper slope. For instance, object A has a sharper slope in the graph below. This indicates that object A is traveling faster than object B.

Benefits of CBSE Class 7 Science Notes Chapter 13

- provide concise, understandable descriptions of important ideas.
- simplifies difficult subjects for easier comprehension.
- Effective study aid for final exam preparation.
- improves the recall of important information.
- offers essential points and advice to help with efficient exam preparation.
- combines information to save time.
- Gives priority to significant subjects and inquiries.
- provides useful illustrations for linkages to the actual world.
- increases students' exam-taking confidence.