Motion and Time

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LESSON PLAN

SPECIFIC OBJECTIVES

The students will learn about

- ✧ motion and rest
- ✧ fast and slow motions
- ✧ measurement of time and unit of time
- ✧ speed and its unit; average speed
- ✧ simple pendulum and measurement of its time period
- ✧ graphical representation of speed; uniform and nonuniform motions

TEACHING AIDS

Pictures/charts/models/animations on earlier time-measuring devices; different types of clocks–wall clock, table clock, digital clock; analogue and digital stopwatch; simple pendulum in oscillatory motion; speedometer, odometer; distance-time graph of speed.

LESSON PLAN

- ✧ Teacher will start the chapter by going through the points given in 'Know these points before you start' section.
- ✧ Now, teacher will discuss the concepts of motion and rest, and will explain when an object is said to be in the state of motion.
- ✧ Teacher will discuss the differences between slow and fast motions.
- ✧ Now, teacher will define the physical quantity time, need to measure it, earlier time-measuring and modern time-measuring devices, its SI unit with multiples and submultiples of units.
- ✧ Teacher will ask students to solve Check Point 1.
- ✧ Teacher will explain physical quantity speed, its SI unit and how it is determined and measured.
- ✧ Teacher will also define average speed.

- Now, teacher will instruct students to solve the numericals based on speed and average speed for clear understanding of concepts.
- Teacher will ask students to solve Check Point 2.
- Teacher will define simple pendulum and its construction.
- Teacher will define oscillatory motion with the help of a simple pendulum.
- Now, teacher will explain how to measure the time period of a simple pendulum by performing related activity given in the chapter.
- Teacher will discuss factors affecting the time period of a simple pendulum and verify it by performing related activity given in the chapter.
- Then, teacher will ask students to solve Check Point 3.
- Teacher will define the graphical representation of data by explaining the term graph and its elements.
- Now, teacher will discuss the graphical representation of speed by drawing the distance-time graph.
- Teacher will discuss uniform motion, distance-time graphs for uniform motion, nonuniform motion and zero-speed object.
- Now, teacher will ask students to solve Check Point 4.
- Teacher will make students revise the new terms given under the head 'Know These Terms'.
- Finally, teacher will help students to solve the questions given in exercises under the head 'Practice Time' and 'Think Zone'.

BOOST UP

- Teacher should demonstrate and explain activities given in the chapter.
- Teacher should discuss the information given under the head 'Something More'.
- Teacher should discuss the conversation of Annu and Mannu given in between the topics.
- Students should be encouraged for solving more numerical problems based on speed and average speed.
- The teacher may discuss a little more about the Indian Standard Time (IST) and National Physical Laboratory (NPL), New Delhi to aid to the knowledge of the students.

EXPECTED LEARNING OUTCOMES

The students know about

- concept of motion and rest; slow and fast motions.
- concept of time, ancient and modern time-measuring devices, SI unit of time, and its multiples and submultiples.
- concept of speed, its calculation and unit.
- concept of average speed.
- simple pendulum.
- distance-time graph of speed.

EVALUATIVE QUESTIONS

The teacher may ask the following questions for evaluating the understanding of students.

1. What is meant by motion?
2. Mention the differences between slow and fast motions.
3. Write the formula to calculate the speed.
4. A man is driving his car at a speed of 60 km/h. How far will he be travelling in 6 hours?
5. Establish the relation between hour and second.
6. Define time period of a simple pendulum.
7. Which instrument is used to measure the speed of motor vehicles?