

**Chapter-8 | Measurement of Time and Motion Worksheet-1****Multiple Choice Questions**

- The time taken by a pendulum to complete one full swing is called**
  - Frequency
  - Speed
  - Time period
  - Motion
- A device that shows time based on the shadow formed by sunlight is called**
  - Water clock
  - Sundial
  - Hourglass
  - Candle clock
- Heat from the Sun reaches Earth by**
  - Conduction
  - Radiation
  - Convection
  - Friction
- A clock that works with oscillations of a pendulum was invented by**
  - Varahamihira
  - Aryabhata
  - Galileo
  - Christiaan Huygens
- The SI unit of time is**
  - Minute
  - Hour
  - Second
  - Millisecond
- The distance covered by an object in unit time is called**
  - Uniform motion
  - Speed
  - Linear motion
  - Velocity
- A train moving on a straight track but changing its speed frequently shows**
  - Uniform motion
  - Oscillatory motion
  - Periodic motion
  - Non-uniform motion
- Which instrument measures the speed of a vehicle?**
  - Odometer
  - Thermometer
  - Stopwatch
  - Speedometer
- In an hourglass, time is measured with the flow of**
  - Air
  - Water
  - Sand
  - Oil

10. **A simple pendulum completes one oscillation when it**
- (a) Moves from one side to the other and stops
  - (b) Swings from mean to one extreme position only
  - (c) Moves from mean → extreme → opposite extreme → mean
  - (d) Completes any half swing

### Fill in the blanks :

11. The time taken by a pendulum to complete one oscillation is called its \_\_\_\_\_.
12. The SI unit of time is \_\_\_\_\_.

### True / False

13. A simple pendulum takes different time for each oscillation
14. The speed of an object is the distance travelled divided by the time taken.

### Very Short Type Questions

15. What is an oscillation of a pendulum?
16. What do we mean by the speed of an object?

### Short Type Questions

17. What is a sundial and how does it measure time?
18. What is a simple pendulum? What does its time period depend on?

### Essay Type Questions

19. Describe how time was measured in ancient times and how modern timekeeping evolved.
20. Describe different types of motion with examples and explain why speed is an important quantity in studying motion.

### HOTS

21. **Assertion (A):** A pendulum of the same length has the same time period at a given place.

**Reason (R):** The time period of a pendulum depends only on the mass of the bob.

Choose the correct option:

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true



1. (c) Time period
2. (b) Sundial
3. (b) Radiation
4. (d) Christiaan Huygens
5. (c) Second
6. (b) Speed
7. (d) Non-uniform motion
8. (d) Speedometer
9. (c) Sand
10. (c) Moves from mean → extreme → opposite extreme → mean
11. Time period
12. Second
13. FALSE
14. TRUE
15. One oscillation is the complete movement of the pendulum bob from the mean position to one extreme, then to the opposite extreme, and back to the mean position.
16. Speed is the distance covered by an object in unit time
17. A sundial is an ancient device used to measure time based on the position of the Sun. It has a triangular stick called a gnomon that casts a shadow on a marked plate. As the Sun moves across the sky, the shadow changes its position, and its movement indicates the approximate time of the day.
18. A simple pendulum consists of a small heavy bob tied to a string that swings freely about a fixed point. Its time period depends only on the length of the string; it does not depend on the mass of the bob or the angle of swing.
19. In ancient times, people used natural repeating events to measure time, such as the rising and setting of the Sun and the phases of the Moon. To measure smaller intervals, they developed devices like sundials, which showed time by the movement of a shadow during the day. Water clocks used the flow of water to mark time, and hourglasses measured time by the flow of sand between two glass bulbs. Candle clocks measured time by observing how long a marked candle took to burn. As civilization advanced, more accurate mechanical clocks were created. A major improvement came with the invention of the pendulum clock by Christiaan Huygens, which used the regular oscillations of a pendulum to mark equal intervals of time. Later, quartz clocks and atomic clocks brought extraordinary accuracy by using vibrations of crystals or atoms. These modern clocks can measure tiny fractions of a second and are essential in sports, medicine, space research, and daily life.

20. Objects around us show different types of motion. If an object moves along a straight path, it is in linear motion, such as a moving car. If the motion repeats after equal intervals of time, it is periodic motion, like the swinging of a pendulum or the hands of a clock. When an object moves with changing speeds, such as a bicycle slowing down and speeding up in traffic, it shows non-uniform motion. If an object moves in a circular path, such as a child on a merry-go-round, it is circular motion.

Speed is important because it tells us how fast an object is moving and allows us to compare motions. It is calculated by dividing the distance travelled by the time taken. Knowing speed helps us understand and predict movement in everyday activities—such as travel planning, sports performance, safe driving, and scientific measurements. Thus, speed is a key concept in describing and analysing motion.

21. Correct Answer: (C)

**Explanation:**

Assertion is true because pendulums of equal length swing in equal time. The reason is false because the time period does not depend on the mass of the bob; it depends on the length of the pendulum

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