ODM EDUCATIONAL GROUP
Changing your Tomorrow

PHYSICAL QUANTITIES AND MEASUREMENT

SUBJECT-PHYSICS

CHAPTER NO- 2

Measurement of time

PERIOD-5

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: 1800 120 2316
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

LEARNING OBJECTIVE

Students will be

- familiarized with the concept of time
- able to define mean solar day
- Sensitized about the units of time
- familiarized with the devices used for measuring time
- familiarized with the devices used for measuring short time interval.

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WARM UP QUESTIONS

- Recapitulation of previous topic by asking certain questions
- Define mass
- explain the relationship between gram, kilogram and pound
- Explain the process in which you can measure the mass of a body using beam balance
- Describe the parts of electronic balance
- What are standard weights? Give some examples

Measurement of time-

- The interval between two instances or events is called time.
- We measure time in terms of the mean solar day. A solar day is the time taken by the earth to complete one rotation about its own axis. The mean of 365 days in a year is called the mean solar day.

Units of time

The SI unit of time is second (s).

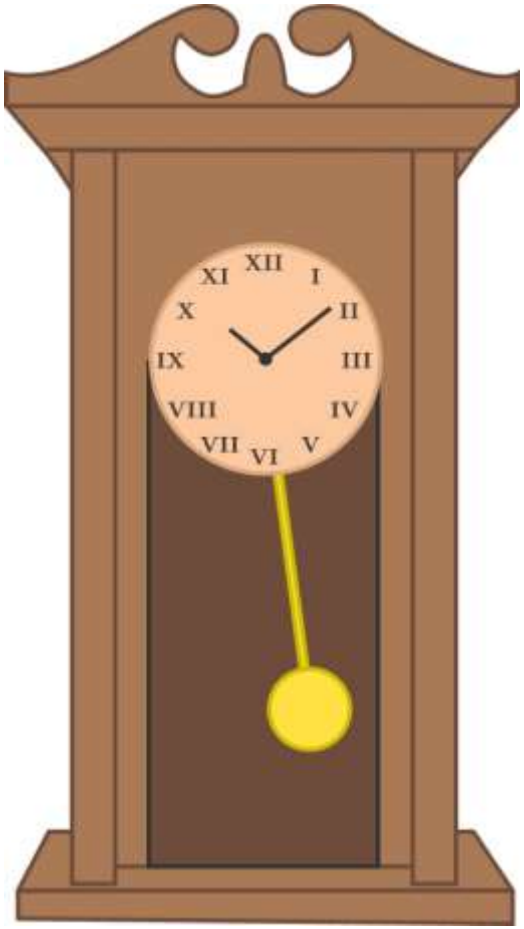
- 1 second is defined as 1/ 86400 part of a mean solar day that is
- 1 s = 1 / 86400 x one mean solar day.

1 second is the time interval between two consecutive ticks that we hear from a Pendulum wall clock.

- In case of metric system F.P.S. system as well as in C.G.S. system , the unit of time is second (s) Second is a smaller unit of time.
- Bigger unit of time is **minute**.
- **1 minute = 60 second or 1 min = 60 s**
- Still a bigger unit of time is **hour**
- 1 hour = 60 minutes
- **1 hour = 60 x 60 seconds = 3600 s**
- Another big unit of the time is day.
- 24-hour makes 1 day. 1 day is the time taken by the earth to rotate once on its own axis.
- **Thus 1 day = 24 hour = 24 X 60 minutes = 1440 minutes = 24 X 60 X60 = 86400 seconds.**
- A year is another bigger unit of time.
- 365 days makes one year. 1 year is the time taken by the earth to complete one Revolution around the sun.
- **1 year = 365 days = 365 x 86400 s = 3.15×10^7.**

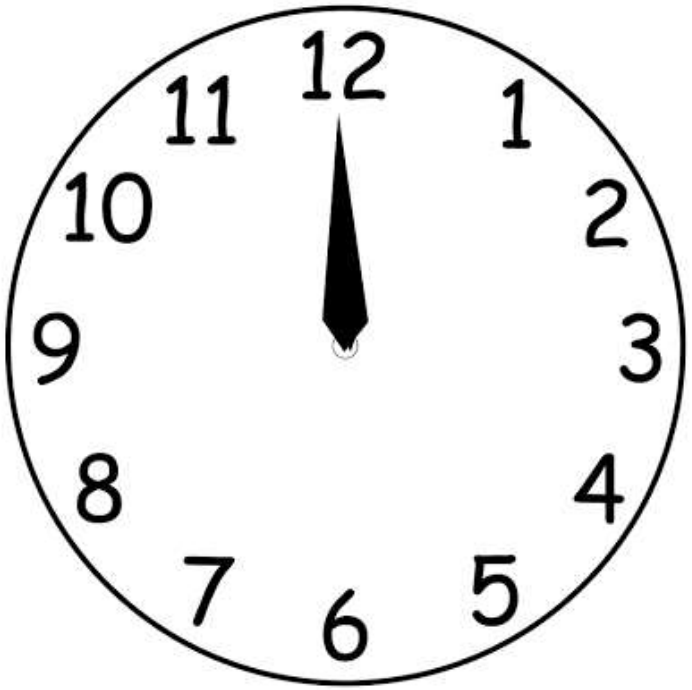
Devices for measuring time

1. A pendulum clock



Devices for measuring time

2. Watch



Measuring devices for a short time interval

- The short time interval of an event is measured with the help of a stop clock or a stopwatch.
- Stopwatch has arrangements **to start**, **to stop** and to **reset** at 0.
- An electronic stop watch is more accurate than a mechanical stopwatch.
- It can measure time intervals accurately up to 0.01 second
- It does not have a minute or a second arm.
- On the other hand it has the digital display screen.
- Such watches are used for measuring the timings of Athletic activities such as the time taken by the athletes to complete a hundred metre race.

HOME ASSIGNMENT

Exercise- B 15, 16

Q. what do you mean by mean solar day

Q. The unit of time in MKS and CGS system is_____

Q. How can you measure short time interval? Explain

THANKING YOU

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