PARAGON CONVENT SCHOOL

SECTOR : 24B, CHANDIGARH

LESSON - 11

MOTION AND MEASUREMENT OF DISTANCES

Summary:

- Measurement is important for all kinds of work that we do.
- To measure a quantity, it is compared with a standard value called unit.
- The unit of length is 'm', the unit of mass is kg', the unit of time is 's' and unit of temperature is 'K'.
- The SI units are used all over the world to maintain uniformity.
- To measure short distances, units like 'cm' and 'm' are used whereas to measure large distances 'km' is used.
- While measuring the length of an object the scale should be kept straight and read at the correct eye level.
- An object is said to be in motion when its position changes with respect to a stationary point.
- Rectilinear motion is the motion of an object in a straight line.
- Curvilinear motion is the movement of a body along a curved path.
- In a circular motion, the path of the body remains the same and its distance also remains same from a central point.
- When a motion repeats after the same interval of time, it is called periodic motion.
- When a motion does not repeat after the same interval of time, it is called non-periodic motion.

Multiple Choice Questions (Page No 136)

1. (c) 2. (a) 3. (d) 4. (b) 5. (c)

Multiple Choice Questions (Page No 139)

1. (b) 2. (d) 3. (a) 4. (d) 5. (b)

SECTION A

Oral Questions

Q1.- Name two means of transport used - a) on land b) in water c) in air.

Ans.- (a) Motorbike / Train / Bus / Bicycle / Car

(b) Boat, ship, yacht

(c) Aeroplane, helicopter

Q2.- Why is it necessary to have a standard unit of length?

Ans.- It is necessary to have standard units of length for the sake of uniformity and convenience in measurements.

Q3.- What is rotatory motion?

Ans.- Rotatory motion is the movement of an object about a fixed axis without changing the position. Eg. A spinning top

Science Quiz

Q1.- Name the SI unit of temperature.

Ans.- Kelvin (K)

Q2.- Is mass a physical quantity?

Ans.- Yes, mass is a physical quantity because it can be measured.

Q3.- Name the two types of translatory motion.

Ans.- i) Rectilinear motion (ii) Curvilinear motion

Q4.- Name the type of motion possessed by an athlete running on a circular track.

Ans.- Circular motion.

WORKSHEET

Tick (√) the correct options

1. (a) 2. (d) 3. (a) 4. (b)

Circle the odd ones. Give reasons for your choice

1. Handspan Cubit Metre Pace

Ans.- Metre - It is a standard unit of measurement, whereas others were used for measurement in older days.

2. Second Minute Hour Pace

Ans.- Pace - It is not a standard unit of measurement, whereas others are the standard units of time.

3. Sofa Table Falling stone Pen

Ans.- Falling stone - It is an object in motion, whereas others are stationary objects.

4. Blades of a fan Giant wheel Spinning top Swinging pendulum

Ans.- Swinging pendulum - It shows periodic movement, whereas others show rotatory motion.

Fill in the blanks

1. metre 2. length 3. rest 4. circular 5. rectilinear

SECTION B

Multiple Choice Questions

1. (c) 2. (a) 3. (c)

Very Short Answer Questions

Q1.- The distance between two bus stops is 3540m. Express this distance in - a) km b) cm.

Ans.- (a) 3.54 km (b) 3,54,000 cm

Q2.- Give two means of transport developed with the invention of the steam engine.

Ans.- Motor-ships, electric trains, aeroplanes, automobiles etc., have developed with the invention of the steam engine.

Q3.- Give the SI unit of the following : a) length b) time c) mass

d) temperature.

Ans.- (a) Metre (b) Seconds (c) Kilogram (d) Kelvin

Short Answer Questions

Q1.- How is circular motion different from rotatory motion? Give an example to support your answer.

Ans.- When an object moves along a circular path, it is said to be in circular motion. For example, the Earth moves around the Sun in a circular path, minute hand of a watch.

An object is said to be in rotatory motion if it moves about a fixed axis without changing its position. For example, the motion of the blades of a fan, a giant wheel.

Q2.- Define rectilinear motion.

Ans.- When an object moves along a straight line, its motion is called rectilinear motion. Example, the movement of the drawer of a table, a car moving in a straight line.

Q3.- When is an object said to be in motion?

Ans.- An object is said to be in motion if it changes its position with respect to a stationary object in its surroundings. For example, when the position of a car changes with time, we say that the car is moving or that the car is in motion.

Q4.- While measuring the length of a paper clip on a scale, the reading at one end is 1.0 cm and at the other end is 4.3 cm. What is the total length of the paper clip?

Ans.- Reading at one end - 1 cm

Reading at the second end - 4.3 cm

The total length of the paper clip :- 4.3 - 1.0 = 3.3 cm.

Q5.- What kind of motion does the earth have?

Ans.- The Earth rotates about its axis, it is rotatory motion. The Earth also revolves around the Sun in circular path, it is an example of circular motion.

Q6.- Give two precautions to be taken while measuring the length of a pencil using a scale.

Ans.- The scale should be placed with the pencil along its length. If we place it at an angle, our reading will not be correct. The correct position of the eye is also important for taking measurement. Our eyes must be focussed exactly above the end point on which we are taking measurement.

Q7.- Mohan goes to see the Republic Day parade with his father. He is very happy to see the soldiers marching in harmony. He tells his father of his desire to be a soldier.

a) Which type of motion do soldiers in a parade show?

b) What do we learn from the marching soldiers?

Ans.- (a) Soldiers in a parade show rectilinear motion.

(b) We learn to be disciplined from the marching soldiers.

Long Answer Questions

Q1.- Why is it necessary to have a standard unit of measurement?

Ans.- In our daily life, we use a variety of objects as units of measurement. For example, we can measure the length of an object by using handspan, cubit or pace. In this case, the length of each one of these objects becomes a unit of measurement of length But handspan, cubit and pace cannot be used as standard units of

measurements because their length is not the same for all the persons The length of handspan, cubit and pace are different for different persons as the length of the body parts varies from person to person. A unit of measurement which has a fixed value and does not change from person to person or place to place is called a standard unit of measurement. For example 'metre' is a standard unit of measuring length. It represents exactly the same length whether used by one person or another person or used in one country or other country. Thus, a 'metre' means the same length to everyone. So, it is a standard unit of measuring length. It is necessary to have standard units of measurements for the sake of uniformity and convenience in measurement.

Q2.- a) What is rotational motion?

b)Give two examples of rotational motion.

Ans.- (a) Rotational motion is the movement of an object about a fixed axis without changing its position.

(b) Motion of the wheel of a sewing machine, a spinning wheel, a merry-go-round, motion of blades of a fan and motion of a spinning top are examples of rotational motion.

Q3.- What is meant by periodic motion? Give two examples of periodic motion.

Ans.- A motion that repeats itself after regular intervals of time is called periodic motion. The swinging pendulum of a wall clock, heartbeat of a normal person and the needle of a sewing machine are examples of periodic motion.