

Board – CBSE

Class – 6th

Topic – Motion and Measurement of Distances

1. Why can a pace or a footstep not be used as a standard unit of length?

Ans: Because a pace or a footstep of every person is not equal.

2. Arrange the following lengths in their increasing magnitude:

1 metre, 1 centimetre, 1 kilometre, 1 millimetre.

Ans: 1 millimetre < 1 centimetre < 1 metre < 1 kilometre

3. The height of a person is 1.65 m. Express it into cm and mm.

Ans: As $1\text{m} = 100\text{cm}$ and $1\text{cm} = 10\text{mm}$

So, we can say that $1.65\text{ m} = 1.65 \times 100\text{ cm} = 165\text{ cm}$

Also, $1.65\text{ m} = 165\text{ cm} = 165 \times 10\text{ mm} = 1650\text{ mm}$

4. The distance between Radha's home and her school is 3250 m. Express this distance into km.

Ans: Since $1\text{m} = 1/1000\text{ km}$

So, $3250\text{m} = 3250/1000\text{km} = 3.250\text{km}$

5. While measuring the length of a knitting needle, the scale reading at one end is 3.0 cm and at the other end is 33.1 cm. So what is the length of the needle?

Ans: Length of the needle = $33.1\text{ cm} - 3.0\text{ cm} = 30.1\text{ cm}$.

6. Write the similarities and differences between the motion of a bicycle and a ceiling fan that has been switched on.

Ans: (i) Similarity: Both the wheel of a bicycle and a ceiling fan exhibit motion on a fixed axis.

(ii) Dissimilarity: Bicycle moves forward thus executes rectilinear motion, but the fan does not show such motion.

7. Fill in the blanks:

- I. One metre is_____
- II. Five kilometre is_____
- III. Motion of a child on a swing is_____.
- IV. Motion of the needle of a sewing machine is_____
- V. Motion of wheel of a bicycle is_____.

Ans:

- I. 100 cm
- II. 5000 m
- III. periodic (oscillatory) motion
- IV. periodic oscillatory
- V. Circular

8. Why could you not use an elastic measuring tape to measure distance? What would be some of the problems you would meet in telling someone about a distance you measured with an elastic tape?

Ans: An elastic measuring tape gives the incorrect length of the distance between two points.

Reasons: (i) The length of the elastic tape varies and depends upon the force by which it is stretched.

(ii) Measurement would vary between 2 or 3 readings even when measured by the same person and by the same elastic tape.

(iii) Measurement will also vary if different persons measure the same distance.

9. Give two examples each of modes of transport used on land, water and air.

- Ans: (i) Land—Bus, truck, train.
(ii) Water—Ship, boat.
(iii) Air—Aeroplane, Helicopter.

10. Give two examples for each of the following motions:

- i. Linear motion
- ii. Spinning motion
- iii. Oscillatory motion
- iv. Periodic motion
- v. Vibrational motion
- vi. Circular motion
- vii. Random motion

Ans: (i) Linear motion: (a) Rolling of a ball on the ground, (b) Moving of bicycle on the road,

(ii) Spinning motion: (a) Rotating fan, (b) Wheel of a sewing machine.

(iii) Oscillatory motion: (a) Pendulum of a clock, (b) Motion of a child on a swing,

(iv) Periodic motion: (a) Pendulum of a clock, (b) Motion of a swing, heartbeat.

(v) Vibrational motion: (a) String of a guitar, (b) Surface of drums.

(vi) Circular motion: (a) Rotation of fan, (b) Bicycle wheel.

(vii) Random motion: (a) Motion of football players, (b) Movement of mosquito.

11. State two precautions to be observed while measuring length with the help of a metre scale.

Ans: Two precautions are:

- I. The initial point of distance must coincide with the zero reading of the metre scale.
- II. The eye should be kept in line with the point of measurement.

12. Define the term standard unit.

Ans: The unit that could be used everywhere as a basic unit of measurement is called a standard unit.

13. Why do we need a standard unit for measurement?

Ans: We need a standard unit for measurement to make our judgement more reliable and accurate. For proper dealing, measurement should be the same for everybody. Thus there should be uniformity in measurement. For uniformity, we need a common set of units of measurement, which are called standard units. Nowadays, SI units are used in science and technology almost universally.

14. Name the device used to measure the following:

- i. Size of your shoulder.
- ii. Size of your wrist.
- iii. Your height.
- iv. Your weight.
- v. Cloth for the curtain.
- vi. Circumference of a round table.

Ans:

- I. Measuring tape
- II. Measuring tape
- III. Measuring tape
- IV. Weighing balance
- V. Metre scale or measuring tape
- VI. A long thread or measuring tape

