

Board – CBSE

Class –6th

Topic – Motion and Measurement of Distances

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

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

2. 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.

3. 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.

4. Arrange the following lengths in their increasing magnitude :

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

Ans: Ascending order of length:

1 millimetre < 1 centimetre < 1 metre < 1 kilometre

5. The height of a person is 1.65 m. Express it in cm and mm.

Ans: (a) 1.65 m, as one metre = 100 cm
= 1.65 x 100 cm = 165 cm
(b) 65 x 10 x 10 mm = 1650 mm.

6. The distance between Radha's home and her school is 3250 ,m. Express this distance in km.

Ans: one km = 1000 m

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

Thus, the distance between Radha's home and her school is 3.250 km.

7. 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. What is the length of the needle?

Ans: Length of the needle = 33.1 cm - 3.0 cm = 30.1 cm.

8. 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.

9. 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.

10. Give two examples of periodic motion.

Ans: (i) Oscillations of a pendulum.

(ii) Motion of swing/motion of the earth around the sun.

VERY SHORT ANSWER TYPE QUESTIONS

11. Are senses reliable for accurate measurement?

Ans: Our senses are not reliable for accurate measurement.

12. Why can hand span and arm length not be used as standard units of length?

Ans: Hand span and arm length cannot be used as standard units of length because they vary from person to person.

13. How many centimetres are there in 1 m?

Ans: 100 cm.

14. Name the measuring device which can be used for measuring the girth of a tree.

Ans: Measuring tape.

15. Give one example of linear motion.

Ans: Motion of stone falling from a certain height.

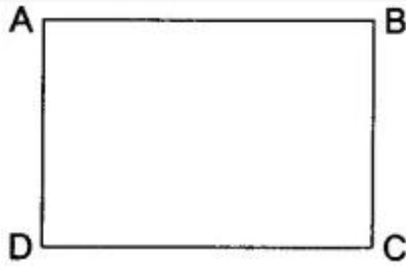
16. Give an example of circular motion.

Ans: Motion of arms of a watch.

17. Name the types of motion in which a body moves along a straight path

Ans: Rectilinear or linear motion.

18. Find the length and breadth of the given rectangle in mm and cm.



Ans: Using measuring scale (15 cm scale), Length $AB = 3$ cm and breadth $BC = 2$ cm.

$$AB = 3 \times 10 = 30 \text{ mm}$$

$$BC = 2 \times 10 = 20 \text{ mm.}$$

19. Give the unit for measuring the following:

- (a) Distance between Delhi and Jaipur.
- (b) Thickness of a coin.
- (c) Length of your eraser.
- (d) Length of your shoelace.

Ans: (a) Kilometre

(b) Millimetre

(c) Centimetre

(d) Centimetre

20. Name the device used to measure the following:

- (a) Size of your shoulder.
- (b) Size of your wrist.
- (c) Your height.
- (d) Your weight.
- (e) Cloth for a curtain.
- (f) Circumference of a round table.

Ans: (a) Measuring tape

(b) Measuring tape

(c) Measuring tape

(d) Weighing balance

(e) Metre scale or measuring tape

(f) A long thread or measuring tape.

SHORT ANSWER TYPE QUESTIONS

21. 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.

22. Define rest and motion.

Ans: The objects which do not change their positions with time are said to be at rest. The objects which change their positions with time are said to be in motion.

23. Define the term standard unit.

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

24. How can a measured length be expressed?

Ans: Each measurement has:

(i) A number describing the numerical value.

(ii) The unit in which that quantity is measured.

25. Give one example of each of the following types of motion:

(a) Linear

(b) Translation

(c) Circular

(d) Periodic.

Ans:

| Types of motion | Example |
|-----------------|-------------------------|
| (a) Linear | motion of stone falling |
| (b) Translatory | buses |
| (c) Circular | ceiling fan |
| (d) Periodic | pendulum of clock |

LONG ANSWER TYPE QUESTIONS

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

Ans: We need a standard unit for measurement to make our judgment 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.

27. What type of motion do the following objects have?

(a) the galloping of a horse

(b) the needle of a sewing machine

(c) the movements of a mosquito

(d) the blades of an electric fan

(e) the smoke from a lighted dhoopbatti

(f) wheels of moving car.

Ans: (a) The galloping of a horse: Linear motion.

(b) The needle of a sewing machine: Periodic motion.

(c) Movement of a mosquito: Random motion.

- (d) Blade of an electric fan: Circular motion.
- (e) The smoke from a lighted dhoopbatti: Random motion.
- (f) Wheels of moving car: Linear motion and Rotational motion.

28. 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.