10. Motion and Measurement of Distances

Solved Exercise(By:J S Mishra)

Q1:Give two examples each of modes of transport used on land, water, and air.

Ans: Two examples of modes of transport used on land are buses and wheel carts.

•Two examples of modes of transport used on water are ships and boats.

•Two examples of modes of transport used in air are aeroplanes and helicopters.

Q2:Fill in the blanks:

Ans:(i) One metre is __100__ cm.

(ii) Five kilometres is __5000__ m.

(iii) Motion of a child on a swing is __periodic__.

(iv) Motion of the needle of a sewing machine is __periodic__.

(v) Motion of the wheel of a bicycle is __circular__.

Q3:Why can a pace or a footstep not be used as a standard unit of length?

Ans: Because the size of pace or footstep of different people are different so the lengths measured by two different persons using their footsteps will not be the same. Due to this reason pace or a footstep cannot be used as a standard unit of length

Q4: Arrange the following lengths in their increasing magnitude:

1 metre, 1 centimetre, 1 kilometre, 1 millimetre

Ans:

1 m = 100 cm

1 cm = 10 mm

∴ 1 m = 100 × 10 = 1000mm

Now, 1 km = 1000 m

∴ 1 km = (1000 × 100)cm = 100000 cm = (100000 × 10)mm = 1000000mm

So, arranging 1 metre, 1 centimetre, 1 kilometre, 1 millimetre in increasing order we have:

1mm < 10mm < 1000mm < 1000000mm

Or, 1 millimetre < 1 centimetre < 1 metre < 1 kilometre

Q5:The height of a person is 1.65 m. Express this in cm and mm.

Ans: Height of the person = 1.65 m

1 m = 100 cm

1.65 m = 100 × 1.65 = 165 cm

Hence, the height of the person is 165 cm.

Again, 1 m = 100 cm = 1000 mm

Therefore, 1.65 m = 1.65 × 10 = 1650 mm

Hence, the height of the person is 1650 mm.

Q6:The distance between Radha's home and her school is 3250 m. Express this distance in km.

Ans: The distance between Radha's home and her school is 3250 m.

1 km = 1000 m

or, 1000 m = 1 km

or,3250 m= 3.25 km

Q 7:While measuring the length of a knitting needle, the reading of the scale at one end is 3 cm and at the other end is 33.1 cm. What is the length of the needle?
Ans : The reading of the scale at one end is 3 cm and at the other end is 33. 1 cm.
Therefore, the length of the knitting needle is given by subtracting both the readings, i.e., (33.1−3.0) cm = 30.1 cm.
Q8:Write the similarities and the differences between the motion of a bicycle and a ceiling fan that has been switched on.
Ans:Similarities between the motion of a bicycle and a ceiling fan:
(i) The blades of a fan and the wheels of a bicycle are fixed at a point.
(ii) Both have circular motion about their respective fixed points.
Differences between the motion of a bicycle and a ceiling fan:
(i) A bicycle has linear motion, whereas the blades of a ceiling fan do not have linear motion.
(ii) The motion of the blades of a fan is periodic, whereas the motion of a bicycle is rectilinear motion.
Q 9:Why can 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 is stretchable. It cannot be used to measure distances because the length of the tape may change on stretching. As a result, the measured length would not be correct.
If we measure the length of an object twice using an elastic tape, then we may get different values of the same length each time. This is because elastic tapes are stretchable.
Q10:Give two examples of periodic motion.
Ans:Examples of periodic motion:
(i) Motion of a pendulum
The bob of a pendulum repeats itself at a certain time period. This motion is called periodic motion.
(ii) Motion of a boy sitting on a swing
The motion of a swing repeats itself at a certain time period. Hence, a boy sitting on a swing has periodic motion.