

Question:1

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

Solution:

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.

Question:2

Fill in the blanks:

- (i) One metre is _____ cm.
- (ii) Five kilometres is _____ m.
- (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 _____.

Solution:

- (i) One metre is 100 cm.
- (ii) Five kilometres is 5000 m.

$$1 \text{ km} = 1000 \text{ m}$$

$$5 \text{ km} = 1000 \times 5 = 5000 \text{ m}$$

Hence, the answer is 5000 m.

- (iii) Motion of a child on a swing is periodic.

Periodic motion:

The motion of a swing repeats itself at a certain time interval. Therefore, it has periodic motion. Hence, a child on a swing is said to have periodic motion.

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

Periodic motion:

The needle of a sewing machine moves up and down repeatedly with a certain time interval. Hence, it is an example of periodic motion.

- (v) Motion of the wheel of a bicycle is circular.

Circular motion:

The central part of the wheel of a bicycle is attached to a fixed point. The wheel rotates about this fixed point as the bicycle moves. Hence, the wheel has circular motion.

Question:3

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

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Solution:

The size of the foot varies from person to person. If footsteps of two persons are used to measure the length respectively, then the two distances may not be equal. Thus, a footstep is not a constant quantity. Hence, it cannot be used as a standard unit of length.

Question:4

Arrange the following lengths in their increasing magnitude:

1 metre, 1 centimetre, 1 kilometre, 1 millimetre

Solution:

$$1 \text{ cm} = 10 \text{ mm}$$

$$1 \text{ m} = 100 \text{ cm} = 1000 \text{ mm}$$

$$\text{Again, } 1 \text{ km} = 1000 \text{ m} = 100000 \text{ cm} = 10000000 \text{ mm.}$$

Hence, 1 mm is smaller than 1 cm, 1 cm is smaller than 1 m, and 1 m is smaller than 1 km, i.e.,

$$1 \text{ millimetre} < 1 \text{ centimetre} < 1 \text{ metre} < 1 \text{ kilometre}$$

Question:5

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

Solution:

$$\text{Height of the person} = 1.65 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1.65 \text{ m} = 1.65 \times 100 \text{ cm} = 165 \text{ cm}$$

Hence, the height of the person is 165 cm.

$$\text{Again, } 1 \text{ m} = 100 \text{ cm} = 1000 \text{ mm}$$

$$\text{Therefore, } 1.65 \text{ m} = 1.65 \times 1000 \text{ mm} = 1650 \text{ mm}$$

Hence, the height of the person is 1650 mm.

Question:6

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

Solution:

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

$$1 \text{ km} = 1000 \text{ m}$$

$$\text{i.e. } 1000 \text{ m} = 1 \text{ km}$$

$$3250 \text{ m} = \frac{1}{1000} \times 3250 = 3.25 \text{ km}$$

Question:7

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

Solution:

The reading of the scale at one end is 3.0 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. $(33.1 - 3.0) \text{ cm} = 30.1 \text{ cm}$.

Question:8

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

Solution:

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.

Question:9

Why would you not like to use a measuring tape made of an elastic material like rubber to measure distance? What would be some of the problems you would meet in telling someone about a distance you measured with such a tape?

Solution:

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 you measure the length of an object twice using an elastic tape, then you may get different values of the same length each time. This is because elastic tapes are stretchable.

Question:10

Give two examples of periodic motion.

Solution:

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.