

NCERT QUESTIONS WITH SOLUTIONS

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.

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 the 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.
- (iv) Motion of the needle of a sewing machine is periodic.
- (v) Motion of the wheel of a bicycle is a combination of translational and rotational motion.

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

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.

4. Arrange the following lengths in their increasing magnitude:

1 metre, 1 centimetre, 1 kilometre, 1 millimetre

Solution

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

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

$$\text{Again, } 1 \text{ km} = 1000 \text{ m} = 100000 \text{ cm} = 1000000 \text{ mm.}$$

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.,

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

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

Solution

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

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

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

Hence, the height of the person is 165 cm.

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

Therefore,

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

Hence, the height of the person is 1650 mm.

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

Solution

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

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

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

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

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 at one of end of the scale is 3 cm and at the other end is 33.1 cm. Therefore the length of the needle is $(33.1 - 3.0) \text{ cm} = 30.1 \text{ cm}$

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

Solution

The similarities between the motion of a bicycle and a ceiling fan are

- (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.

The differences between the motion of a bicycle and a ceiling fan are

- (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.

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?

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 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.

10. Give two examples of periodic motion.

Solution

Two examples of periodic motion are

- (i) Motion of a pendulum
- (ii) Motion of the Earth around the Sun.