



INDIAN SCHOOL AL WADI AL KABIR



CLASS: VI	DEPARTMENT: SCIENCE 2022 - 23	DATE: 12.09.2022
WORKSHEET NO.: 07 WITH ANSWERS	TOPIC: Motion and measurement of distances	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. VERY SHORT ANSWER TYPE QUESTIONS (1M):

1. Which invention led to a great change in modes of transport? [Hint: Invention of wheel]
2. Which invention as new source of power led to development of railroads?
[Hint: Steam engine]
3. Give two examples of each of the following mode of transport by human –
a) Land b) Water c) Air
[Hint: a) Land – motorcycle, car b) Water – Boat, ship c) Air – Aeroplane, helicopter]
4. Are senses reliable for accurate measurement?
[Hint: Our senses are not reliable for accurate measurement.]
5. What is the need for measurement? [Hint: Measurement is needed because it is required to find out accurate length, area, volume or mass of different objects for various purposes]
6. Is the hour hand of a wall clock at rest or in motion? [Hint: The hour hand of the wall clock is in motion because it is changing its position.]
7. State the types of motion that you see in different parts of a moving sewing machine.
[Hint: wheel - circular, needle - periodic]
8. Would the distance of the stone from your hand will be same when you whirl it around? Give reason. [Hint: Yes, because the length of the string with which we have hold the stone is not changing]
9. Name the unit of length, which should be used to express the thickness of a coin.
[Hint: Millimetre (mm)]
10. What type of measuring device would you use to measure the girth of a tree? [Hint: Measuring tape is suitable to measure the girth of a tree.]

For question numbers 11 to 13, two statements are given- one labelled Assertion (A) and the other labelled Reason (R).

Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below -

i) Both A and R are true and R is correct explanation of the assertion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

iii) A is true but R is false.

iv) A is false but R is true

11. **Assertion (A):** The standard system of unit is called the SI system.

Reason (R): The SI unit of length is a kilometre.

iii) A is true but R is false.

12. **Assertion (A):** Motion of blades of fan is an example of circular motion.

Reason (R): When a body moves along a circular path, it is said to be in circular motion.

i) Both A and R are true and R is correct explanation of the assertion.

13. **Assertion (A):** The length of the space between two points is called distance.

Reason (R): If a body moves from its position, then it is said to be in motion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

II. PASSAGE BASED QUESTIONS:

For the sake of uniformity, scientists all over the world have accepted a set of standard units of measurement. The system of units now used is known as the International System of Units (SI units). The SI unit of length is a metre. Each metre (m) is divided into 100 equal divisions, called centimetre (cm). Each centimetre has ten equal divisions, called millimetre (mm). Thus, $1\text{ m} = 100\text{ cm}$, $1\text{ cm} = 10\text{ mm}$. For measuring large distances, metre is not a convenient unit. We define a larger unit of length. It is called kilometre (km).

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

1. What is the system used for measurements nowadays? [Hint: S.I. system.]

2. Arrange the following lengths in their increasing magnitude:

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

[Hint: Ascending order of length: $1\text{ millimetre} < 1\text{ centimetre} < 1\text{ metre} < 1\text{ kilometre}$]

3. Name the SI unit of length. [Hint: Metre (m)]

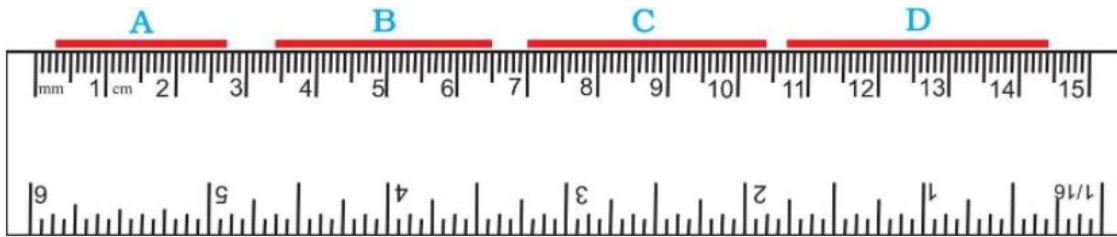
4. What is the need for a standard unit for measurements? [Hint: To overcome the inconsistencies of measurement and for the sake of uniformity]

III. CASE STUDY BASED QUESTIONS:

1. Samidha moves on a straight road from point A to point C. She takes 20 minutes to cover a certain distance AB and 30 minutes to cover the rest of distance BC. She then turns back and takes 30 minutes to cover the distance CB and 20 minutes to cover the rest of the distance to her starting point. She makes 5 rounds on the road the same way. Samidha concludes that her motion is -

- a) only rectilinear motion.
- b) only periodic motion.
- c) neither rectilinear nor periodic
- d) **rectilinear and periodic both**

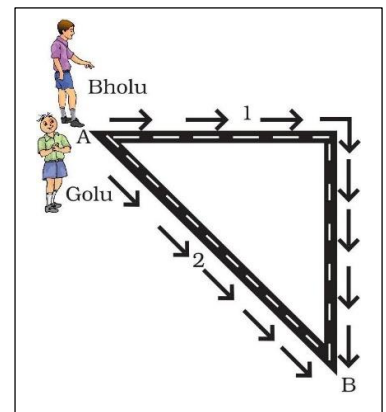
2. Four pieces of wooden sticks A, B, C and D are placed along the length of 30 cm long scale as shown in Fig. 10.4. Which one of them is 3.4 cm in length?



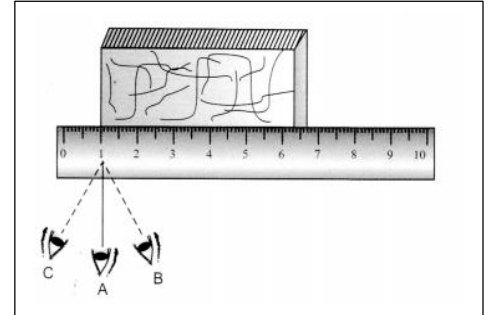
- a) A
- b) B
- c) **C**
- d) D

3. Bholu and Golu are playing in a ground. They start running from the same point A in the ground and reach point B at the same time by following the paths marked 1 and 2 respectively as shown in Fig. Which of the following is/are true for the given situation?

- As compared to Golu, Bholu covers a -
- a) longer distance but with a lower speed.
 - b) **longer distance with a higher speed.**
 - c) shorter distance with a lower speed.
 - d) shorter distance with a higher speed.

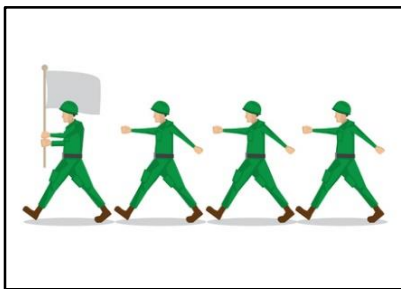


4. In the following figure, the proper way of reading scale is –
- C
 - B
 - A
 - Both (a) and (b)

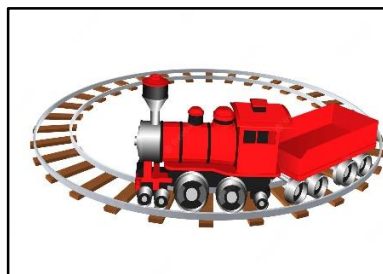


IV. a) SHORT ANSWER TYPE QUESTIONS: (2M)

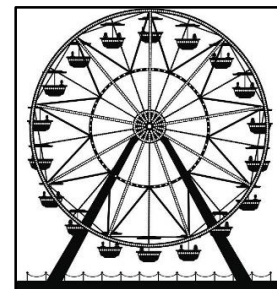
- Why can't we use a finger or a fist as standard unit of measurement of length? [Hint: Sizes of body parts of different people are different. So, it creates confusion]
- State any two precautions to be observed while measuring the length with the help of a metre scale. [Hint: Place the scale in contact with the object along its length, our eye must be exactly in front of the point where the measurement is to be taken.]
- Define rest and motion. [Hint: Rest- An object that does not change its position with time, relative to its surroundings, is said to be at rest. Motion- An object that changes its position with time, relative to its surroundings, is said to be in motion.]
- Is it possible for a body to undergo both rotational motion and rectilinear motion at the same time? Justify? [Hint: motion of a ball on the ground. Rolling of ball- rotational, ball moving forward on ground- rectilinear]
- A carpenter is fixing a curtain rod on the wall by tightening a screw. How many different kinds of motion is the screw undergoing? [Hint: rotational and rectilinear motion]
- How can a measured length be expressed? [Hint: Each measurement has – i) A number describing the numerical value. ii) The unit in which that quantity is measured.]
- Observe the pictures given below and write down the type of motion exhibited by each.



A



B



C

[Hint: A – Rectilinear motion, B – Circular motion, C – Rotational motion]

8. A tailor does not use a scale to take our body measurements, he uses a measuring tape, why? [Hint: Some parts of our body are not straight like chest, waist. Measuring tape is convenient as it can bend easily and give correct measurements of such body parts.]
9. You do not use an elastic measuring tape to measure distance. Why? [Hint: length of the tape may change on stretching, may get different values on measuring each time]
10. How are the motions of a wheel of a moving bicycle and a mark on the blade of a moving electric fan different? Explain. [Hint: The wheels of a moving bicycle depict circular as well as rectilinear motion i.e., the wheels rotates and at the same time they cover a distance as well whereas the blade of a moving electric fan shows only circular motion.]
11. Why it is important to know how far a place is? [Hint: It is important to know how far a place is, so that we can have an idea how we are going to reach that place, i.e., by walking, taking a bus or train, a ship, an aeroplane or even a spacecraft.]

IV. b) SHORT ANSWER TYPE QUESTIONS: (3M)

1. Define the following terms -
 - a) Measurement - [Hint: The process of comparing an unknown quantity with a known quantity of the same kind.]
 - b) Unit: [Hint: The known fixed quantity used in measurement is called a unit.]
 - c) Rectilinear motion: [Hint: When a body moves in a straight line it is said to be in linear or rectilinear motion.]
 - d) Periodic motion: [Hint: Any motion which repeats itself at equal intervals of time.]
2. A 30 cm scale has one end broken. The mark at the broken end is 2.6 cm. How would you use it to measure the length of your pencil? [Hint: Put one end of the pencil at nearest full mark say 3.0 cm in this case. Take the reading of the other end. Now subtract 3 from the previous reading and this will be the required length of pencil.]
3. Kainaz wants to measure her new study table but she found that zero mark is missing in her scale. In such a case, how will she measure her table? [Hint: (a) Avoid taking measurements from zero mark. (b) Use any other full mark of the scale, say 1cm. (c) Subtract the reading of this mark from the reading at the other end.]
4. Why can't we use elastic tape to measure distances? [Hint: An elastic tape can be stretched. It cannot be used to measure distances because the tape length can change when it is stretched. As a result, the measured length will not be correct.]

5. (a) Two trains A and B pass each other at the same speed in opposite directions.
 (b) Two trains A and B at the same speed are moving together on different tracks in the same directions. To an observer sitting in one of the trains, when do the trains appear to be
- i] Stationary - [Hint: When two trains A and B at the same speed are moving together on different tracks in the same directions.]
 ii] Moving very fast - [Hint: Two trains A and B pass each other at the same speed in opposite directions.]
6. Identify the type of motion exhibited by each of the following-

1. A spinning top	- Rotational motion
2. Motion of a pendulum	- Periodic motion
3. A stone tied to a string	- Circular motion
4. The plucked strings of a guitar	- Periodic motion

7. Would the distance of the stone from your hand will be same when you whirl it around? Give reason. [Hint: Yes, because the length of the string with which we have hold the stone is not changing.]
8. Four children measure the length of a table which was about 4m. Each of them used different ways to measure it -
- (a) Nathan measured it with a half metre long thread.
 (b) Gurmeet measured it with a 15cm scale from his geometry box.
 (c) Sameer measured it using a 5m long measuring tape.
 (d) Salim measured it using his handspan.

Which one of them would get the most accurate length? Give reason for your answer.

[Hint: Sameer would get most accurate results because measuring tape is much longer than the table. While in other cases the chances of making an error is more due to multiple measurements]

9. Convert the following :

a) 43 km = _____ m b) 78 m = _____ cm c) 159 cm = _____ mm

[Hint: a) 1 km=1000 m, Thus 43 km = 43 x1000 = 43000 m.

b) 1m = 100 cm, Thus 78 m = 78 x 100 cm = 7800 cm

c) 1 cm = 10 mm, Thus 159 cm = 159 x 10 mm = 1590 mm]

10. The height of a person is 1.72m. Express it in cm and mm.

[Hint: 1 m = 100 cm, Thus 1.72 m = 172 cm.]

1 cm = 10 mm, Thus 172 cm = 172 x 10 mm = 1720 mm]

11. The distance between Kaizad's house and school is 3591m. Express it in km.

[Hint: 1km= 1000m. 3591m ÷ 1000

= 3.591 km.]

12. While measuring the length of a knitting needle, the reading of the scale at one end is 4.0 cm and at the other end is 43.2 cm. What is the length of the needle?

[Hint: Reading on the first end of the scale = 4.0 cm

Reading on the last end of the scale = 43.2 cm

= 43.2 cm - 4.0 cm

Length of the knitting needle = 39.2 cm]

13. The distance between two stations of Mumbai metro is 6.28 km. Express this distance in

i) metre

ii) centimetre

[Hint: 1 km=1000 m, Thus 6.28 km = 6.28 x 1000 = 6280 m.

1m = 100 cm, Thus, 6280 m = 6280 x 100 cm = 628000 cm]

V. LONG ANSWER TYPE QUESTIONS. (5M)

1. While travelling in a train, it appears that the trees near the track are moving whereas co-passengers appear to be stationary. Explain the reason. [Hint: When we see the trees from a moving train, their position is changing with respect to us. Hence, they appear to be moving. On the other hand, the position of co-passengers is not changing with respect to us, hence they appear to be stationary.]
2. Mandar was riding on his bicycle along a straight road. He classified the motion of various parts of the bicycle as-

a) Rectilinear motion b) circular motion c) both rectilinear as well as circular motion.

Can you list one part of the bicycle for each type of motion? Support your answer with reason.

[Hint: (a) Rectilinear motion- handle bar or seat of the bicycle. It moves in a straight line as the wheels of the bicycle move forward. (b) Circular motion- pedal of the bicycle which moves in circular path. (c) Rectilinear as well as circular- wheels of the bicycle. Any point on the wheel moves in circular path as well as move forward on the road.]

3. Raghav has a piece of cloth that measures 3.5 metres. How many smaller pieces can he make of each measuring 50 cm in length?

[Hint: Cloth Length = 3.5 m

1m = 100 cm, 3.5 m = $3.5 \times 100 = 350$ cm

Each Smaller piece measure = 50 cm

Number of Smaller pieces can be made = Total Cloth Length \div Smaller piece length

= $350 \div 50 = 7$

7 Smaller pieces can be made of 50 cm in length from 3.5 m Length]

PREPARED BY MR. VIKRANT V. PURANDARE	CHECKED BY HOD - SCIENCE
---	-----------------------------