| INDIAN SCHOOL AL WADI AL KABIR		
Class: VI	DEPARTMENT: SCIENCE 2023-24	DATE: 06-09-2023
WORKSHEET NO: 7 WITH ANSWERS	TOPIC: MOTION AND MEASUREMENT OF DISTANCES	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. OBJECTIVE-TYPE QUESTIONS

1. Andrea wanted to calculate the caterpillar's length she had collected for a science project. All she could find was a broken ruler. She lined up the ruler and the caterpillar-like this:
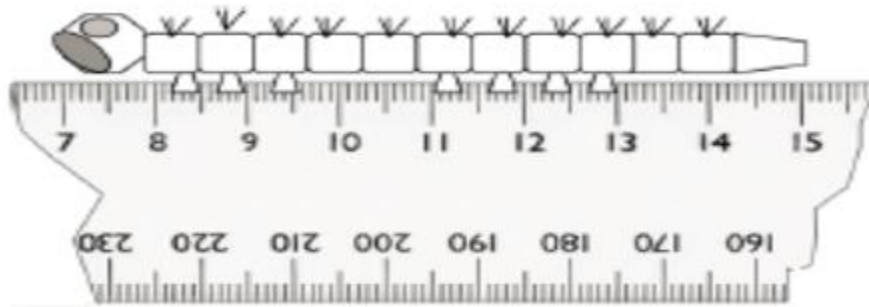
   What is the length of the caterpillar?

   a) 6 cm   b) 7 cm

   c) 8cm   d) 14cm

2. Sanvi 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 the 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. Sanvi concludes that her motion is -

   a) only rectilinear motion.   b) only periodic motion.

   c) neither rectilinear nor periodic   **d) rectilinear and periodic both**

3. Four pieces of wooden sticks A, B, C and D are placed along the length of 15 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

4. Bholu and Golu are playing on the 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 Figure. 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.

5. In the following figure, the proper way of reading the scale is –

a) C

b) B

c) A

d) Both (a) and (b)

6. Four children measured the length of a table which was about 2 m. Each of them used different ways to measure it.

(i) Sam measured it with a half-metre-long thread.

(ii) Gurmeet measured it with a 15 cm scale from her geometry box.

(iii) Reena measured it using her hand span.

(iv) Salim measured it using a 5 m-long measuring tape.

Which one of them would get the most accurate length?

a) i   b) ii

c) iii   **d) iv**

For the following questions, 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 the 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

7. **Assertion (A):** A branch of a tree moving to and fro and the motion of a child on a swing are

   examples of periodic motion.

   Reason (R): The motion which repeats itself after regular intervals is known as periodic

   Motion

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

8**. Assertion (A):** The standard system of units is called the SI system.

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

   iii) A is true but R is false.

9. **Assertion (A):** The motion of the blades of the 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 the correct explanation of the assertion.

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

   Reason (R): The distance between two places is usually expressed in cm.

   iii) A is true but R is false.

II. VERY SHORT QUESTIONS (2M):

1. 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.]**

2. Differentiate between a body at rest and in motion. **[Hint: <u>Rest-</u> An object that does not change its position with time, relative to its surroundings, is said to be at rest. <u>Motion-</u> An object that changes its position with time, relative to its surroundings, is said to be in motion.]**

3. 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 the ball-rotational, ball moving forward on the ground- rectilinear]**

4. 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]**

5. 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.]**

6. Observe the pictures given below and write down the type of motion exhibited by each.
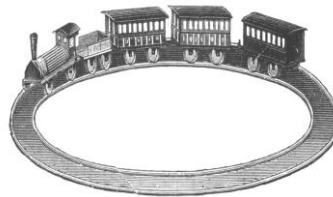
A   B   C

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

7. 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 the chest, and waist. Measuring tape is convenient as it can bend easily and give correct measurements of such body parts.]

8. 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 rotate and at the same time they cover a distance as well whereas the blade of a moving electric fan shows only circular motion.]**

9. 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.]**

III. SHORT ANSWER TYPE QUESTIONS: (3M)

1. 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 the 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.]**

2. Rahul wants to measure his new study table but he found that a zero mark is missing in his scale. In such a case, how will he measure his table? **[Hint: (a) Use any other full mark of the scale, say. (b) Subtract the reading of this mark from the reading at the other end.]**

3. (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.]**

4. 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 and whirled	**- Circular motion**
4. The plucked strings of a guitar	**- Periodic motion**

5. 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]

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

[Hint: 1km= 1000m. 3591m ÷ 1000

= 3.591 km.]

7. 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]

8. The distance between the two stations of the Mumbai metro is 6.28 km. Express this distance in i) metres ii) centimetres

[Hint: 1 km=1000 m, Thus 6.28 km = 6.28 x1000 = 6280 m.

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

IV. LONG ANSWER TYPE QUESTIONS. (5M)

1.   a. 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.]**
b. 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 a reason.

[Hint: (a) Rectilinear motion- handlebar 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 a circular path. (c) Rectilinear as well as circular- wheels of the bicycle. Any point on the wheel moves in a circular path as well as moves forward on the road.]

c. Raghav has a piece of cloth that measures 3.5 metres. How many smaller pieces can he make each measuring 50 cm in length?
[Hint: Cloth Length = 3.5 m

1m = 100 cm, 3.5 m = 3.5 × 100 = 350 cm

Each Smaller piece measures = 50 cm

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

= 350 ÷ 50 = 7

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

V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS

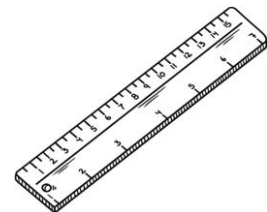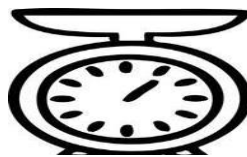1. Jenny wants to measure the height of her son. She asks her son to stand against a wall.

a. Which picture shows the correct way of marking his height? **(B)**

b. The height of her son was measured to be 1.32m. Express it in cm and mm.

[Hint:1 m =100 cm, Thus 1.32 m = 132 cm.

1 cm = 10 mm, Thus 132 cm = 132 x 10 mm = 1320 mm]

c. Which of the following can be used by Jenny to measure her son's height?

        MEASURING TAPE   WEIGHING SCALE   RULER

[Hint- Measuring tape and ruler]

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