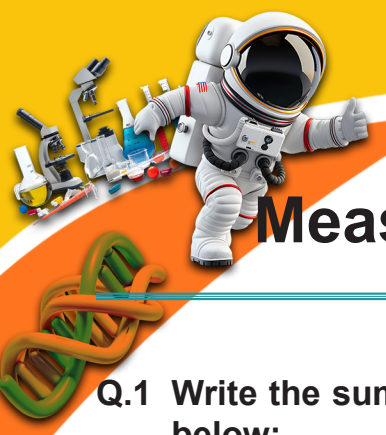

Chapter-5
Measurement of Length and Motion

Q.1 Write the summary of the chapter in the flow chart below, using the hints given below:

1. **Meassurement:** It is defined as the comparison of unknown quantity with a known fixed quantity.
2. **Traditional Units of measurement:** Such units many be:
   a) Handspan b) Cubit c) Yard d) Foot
3. **Motion & Rest:** The body is said to be in motion if it changes its position with respect to time or referece point e.g, Motion of car.
   Rest: The body is said to be at rest if it doesn't change its position with respect to time or refernce time. e.g: Car parked outside
4. **Linear Motion:** A body has linear motion if it noues in a straight line or path
   e.g; Motion of car moving on straight road.
5. **Circular Motion:** A body is said to be in circular motion it moves along a circular path Keeping a fixed distance from centre of path
   e.g; Motion of moon around earth.
6. **Periodic Motion:** The motion of a body that repeats after fixed interval of time is known as periodic motion.
   e.g; Motion of earth around sun.

Q2. Multiple Choice Questions

1. (a) International System of Units
2. b) Linear and circular
3. b) 13340 cm
4. c) Motion of butterfly is uniform.
5. d) Both a and b

Q3.Fill in the blanks:

1. The pendulum of a clock exhibits **Periodic & Oscillatory** motion.
2. The distance between two cities is measured in **kilometre**.
3. The length between **Tip of thumb** and **tip of little** finger is a handspan.
4. In **Circular** motion a body moves along a circular path.
5. 109.32 cm = **1093.2** mm

Q4. State whether the statements are 'True' or 'False'.

1. Motion and rest are relative terms. **True**
2. Metre rod is used to measure the girth of a tree. **False**
3. The length between tip of thumb and the tip of little finger is cubit. **False**
4. 2.5 cm = 25 m. **False**
5. The position of our eye while reading the Scale should be in front of the reading. **True**

Q5.. Give one word for the following:

1. Reference point
2. Standard unit
3. Measurement
4. Cubit
5. Periodic

Q6. Assertion and Reason Questions

Choose the correct options

1. **Assertion (A):** Now-a-days we use cubit to measure the length of table.
Reason (R): Cubit is not reliable for measuring length.

Ans (D) The assertion is false, but the reason is true.

2. **Assertion (A):** Pendulum of a clock shows oscillatory motion.
Reason (R): To and fro motion about a mean position is oscillatory motion.

Ans (A) Both the assertion and reason are true, and the reason is the correct explanation.

Q7. Match the column

1.

	Event		Types of motion
A	Motion of earth	R	circular motion and rotational motion.
B	A bicycle moving on a straight road	P	rotational motion as well as rectilinear motion
C	The wheel of sewing machine	S	Oscillatory and periodic
D	The needle of sewing machine	Q	Rotation only

2.

	Column I		Column II
A	Length between tip of thumb to tip of little finger	R	Hand-span
B	Length of tip of heel to tip of toe	P	Foot
C	Length between tip of chin to tip of centre finger	S	Yard
D	Length between tip of elbow to tip of centre finger	Q	Cubit

Q8. Very Short Answer Questions

1. **Name the device used by the tailor to take measurement for stitching dresses.**
   Measuring tape
2. **Define cubit.**
   Distance between elbow and tip of the middle finger of an outstretched arm
3. **Kilometre stone rates 'Jaipur 250 km'. What is meant by this statement?**
   Distance left to reach Jaipur is 250 km
4. **Define distance.**
   It is the total path length covered by a moving body
5. **Complete the following:**
   i) **1 km = _____m**
   1 Km = 1000m
   ii) **1 m = _____dam**
   $1\text{m} = \frac{1}{10}\text{ dam}$

Q9. Short Answer Questions

1. **State the types of motion in the following:**
   i) **Motion of a swing _____**
   Oscillation, Periodic
   ii) **Motion of Earth around Sun _____**
   Rotation, Circular
2. **Length of a book is 13.8 cm. If initial reading of the ruler is 0.5 cm, calculate its final reading.**

$$\begin{array}{r} 11.8 \\ +\ \ 0.5 \\ \hline 12.3\text{ cm} \end{array}$$

3. **A bicycle has both rectilinear and rotatory motion. Comment.**
   The Wheels of a bicycle undergo rotational motion while the bicycle moving along a straight line shows rectilinear motion
4. **Height of 10 coins is 8 mm, What will be the thickness of 1 coin?**
   $\frac{8}{10} = 0.8\text{ mm}$
5. **Give the advantage of S.I. units over traditional units of measurement.**
   Traditional units use body parts which are not the same for everyone.

Q10. Long Answer Questions

1. **Motion and rest are relative terms. Justify the statement with the help of an example.**
   We can be at rest while sitting in a moving bus while to an observer outside we are in motion as the bus is moving.

2. Write all precautions we must take to measure the length of an object ?

(i) The scale should be parallel to the object whose length is to be measured.

(ii) If the edge is broken, start measuring with the next complete reading

(iii) The reading should be taken right from above the reading

Q11 Case Study Based Question

A teacher asked her students to measure the length and breadth of their desks. She provided a few metre scales and measuring tapes. She found that though all the tables were identical, The measurements varied

1. Why did the readings vary ?

Due to faulty placement of tape or reading not taken from above.

2. What is Parallax error ?

When the eye is not placed at the correct position,

3. Give three precautions to be taken while measuring length with a scale.

(i) The scale should be parallel to the object whose length is to be measured.

(ii) If the edge is broken, start measuring with the next complete reading

(iii)The reading should be taken right from above the reading

Q12. Unjumble the words given in column II and write them in space provided with the help of hints in column I, then match the columns:

Column I		Column II
1.		Distance
2.		Second
3.		Periodic motion
4.		Metre
5.		Cubit

Q13.Funn Activity

1. Take any object (a notebook / pencil box / A-4 sheet) Measure The dimensions of the object with your body parts, That is cubit / handspan / yard separately. Then use a scale to take the measurements again Compare them.

Pencil box Body parts scal

S.No	Length	breadth	Height	Length	Breadth	Height	Difference
1	Cubit	Cubit	Cubit	Cm	Cm	Cm	
2	Hand span	Hand span	Hand span	Cm	Cm	Cm	
3	Yard	Yard	Yard	Cm	Cm	Cm	

2. A pendulum wave toy

Material required: A wooden stand (as shown in fig.), ten nuts of same diameter, strings, ruler, maker pen, glue gun.

Instructions: Cut ten pieces of string (smallest being 5-6 cm and gradually increasing the length of each string by cm). Attack one nut to each string. On the frame mark 10 equal makings with a maker pen and attach each string to that place with glue gun. Your toy is ready.

Inference: With the help of a wooden ruler bring all the nuts to a height (using the ruler helps you to bring them all to the same height at the same time) and release them. You will see a beautiful pattern. The number of oscillation made by a pendulum depends on the length of the string.