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Measurement of length and motion

A. Multiple Choice Questions.

1. What is the distance between two points known as?
a. Speed b. Length c. Weight d. Height
2. Which body part did Deepa use to measure the length of the table?
a. Hand span b. Foot c. Arm d. Finger width
3. How many divisions is one meter typically divided into on a meter scale?
a. 10 b. 50 c. 100 d. 1000
4. What was the Traditional Indian unit used by Deepa's mother to measure the length of her uniform?
a. Hand span b. Yojana c. Dhanusa d. Char angula
5. What does "balisht" refer to?
a. The length of a foot b. The length of a hand span
c. The length of an arm d. The length of a finger
6. Which civilization's archaeological sites have revealed objects with ruled marking that could be scales?
a. Indus valley b. Harappan c. Egyptian d. Mesopotamian
7. What type of scale is typically used by tailors?
a. Metal rod b. Wooden ruler c. Laser d. Flexible measuring tape
8. How many millimetres are there in a centimetre?
a. 100 b. 10 c. 1000 d. 1
9. What kind of motion does a swing exhibit?
a. Oscillatory b. Linear c. Circular d. Random
10. Which of the following is NOT mentioned as a body part used for measurement in ancient times?
a. Arm b. foot c. Hand span d. Nose
11. Which of the following motions is both circular and periodic?
a. A pendulum swinging b. A car moving on a straight road
c. A merry-go-round rotating d. A ball falling straight down
12. Which measuring device is the best for measuring large distances?
a. Meter stick b. Flexible tape c. Ruler d. Kilometre scale
13. Which unit would be best for measuring the thickness of a sheet of paper?
a. Millimetre b. Metre c. Centimetre d. Kilometre

14. Which tool is used to measure very short lengths accurately, such as the diameter of a thin wire?

- a. Protractor b. Ruler c. Vernier caliper d. Measuring tape

15. Which of the following is NOT an SI unit of length?

- a. Kilometre b. Centimetre c. Inch d. Millimetre

B. Fill in the Blanks.

Starting	1000	Angula	Periodic	Transport
Uniform	Aligned	Above	Length	Traditional

- Travelling is the act of going from one place to another using different modes of _____.
- _____ Methods of measurement using body parts were inconsistent.
- Standard units provide a _____ way of measuring for consistency.
- The position of the eye should be directly _____ the measurement mark to avoid parallax error.
- The _____ is still used today by traditional workers such as carpenters and tailors.
- If the ends of a scale are broken, you can use any other full mark as the _____ point.
- One kilometre is equal to _____ metres.
- The scale should be placed in contact with the object along its _____.
- Both circular and oscillatory motion are _____ in nature
- The zero mark on a scale must be _____ to the object being measured.

C. State true or false.

- The metre is divided into 100 millimetres.
- Several systems of units evolved with time in different parts of the world.
- An object is in motion if its position changes over time.
- Body parts are a reliable method for measurement.
- The units of length should always be written with uppercase letters.
- Periodic Motion repeats its path after a fixed interval of time.
- A full stop is must be written after the symbol of measurement units.
- Standard units of measurement are necessary for consistency and accuracy.
- Such as length of hand, foot, fist or fingers, same from person to person.
- The reference point is important in deciding whether an object is at rest or in motion.

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D. Answer the following questions.

1. Define measurement.

Ans. _____

2. What is the full form of SI unit.

Ans. _____

3. What is the system of unit of measurement used all over the world now? What is that for length?

Ans. _____

4. What is circular motion?

Ans. _____

5. What is periodic motion?

Ans. _____

6. How can we measure a curved line?

Ans. _____

7. Name some units of length?

Ans. _____

8. Define rest and motion.

Ans. _____

9. Arrange the following lengths in their increasing magnitude: 1 m, 1 cm, 1 km, 1 mm.

Ans. _____

10. How can you accurately measure the length of an object using a ruler or scale with a broken or incomplete zero point?

Ans. _____

E. Give reason.

1. Why do people use standard units of measurement instead of body parts?

Ans. _____

2. Why are flexible measuring tapes preferred for measuring the girth of objects?

Ans. _____

3. Why can't we use elastic tape to measure distances?

Ans. _____

4. Why is it important to use standard units of measurement in everyday life?

Ans. _____

5. Why should scales be placed correctly when measuring length?

Ans. _____

F. Match the Following.

Column A	Column B	Ans.
1. SI unit of length	i. Angula	a. ____
2. The width of a finger	ii. km	b. ____
3. Ancient units of measurement	iii. One inch	c. ____
4. 2.54 centimeters	iv. Measuring tape	d. ____
5. Symbol for kilometre	v. Dhanusa and Yojana	e. ____
6. Flexible measuring tool	vi. Metre	f. ____

G. Give One-Word Answers.

- The distance from the tip of the thumb to the tip of the little finger. :- _____
- The measuring tool which can be used for measuring the girth of a tree. :- _____
- Name the types of motion an object moves in a straight line. :- _____
- A fixed point used to determine the position or movement of an object. :- _____
- The motion when an object moves to and fro about a fixed position. :- _____
- The smallest unit of length in a centimetre. :- _____

H. Give two examples for each of the following motions.

- Linear motion :- _____
- Oscillatory motion :- _____

3. Periodic motion :- _____
4. Circular motion :- _____

I. Difference between the following with some examples in each case. (At least two points)

1. Periodic Motion and Random or Non-periodic Motion

Periodic Motion	Non - periodic Motion

2. Circular Motion and Rotational Motion

Circular Motion	Rotational Motion

3. Motion and Rest

Motion	Rest

J. Give the unit for measuring the following.

- | | | |
|---|----|-------|
| 1. The length of a door | :- | _____ |
| 2. The distance between Mumbai to Uttar Pradesh | :- | _____ |
| 3. The thickness of a coin | :- | _____ |
| 4. The length of a paper clip | :- | _____ |
| 5. The height of a basketball hoop | :- | _____ |
| 6. The depth of the ocean | :- | _____ |
| 7. The size of a grain of rice | :- | _____ |
| 8. Length of your pencil | :- | _____ |

K. Find the odd one out.

- | | | |
|--|----|-------|
| 1. Ship, Metro, Bullock cart, Aeroplane, Scooter | :- | _____ |
| 2. Linear, Circular, Rotational, Gravitational | :- | _____ |
| 3. Palm, Centimetre, Foot, Cubit. | :- | _____ |
| 4. Uniform, Non-uniform, Periodic, Oscillatory | :- | _____ |
| 5. Speedometer, Odometer, Stopwatch, Thermometer | :- | _____ |

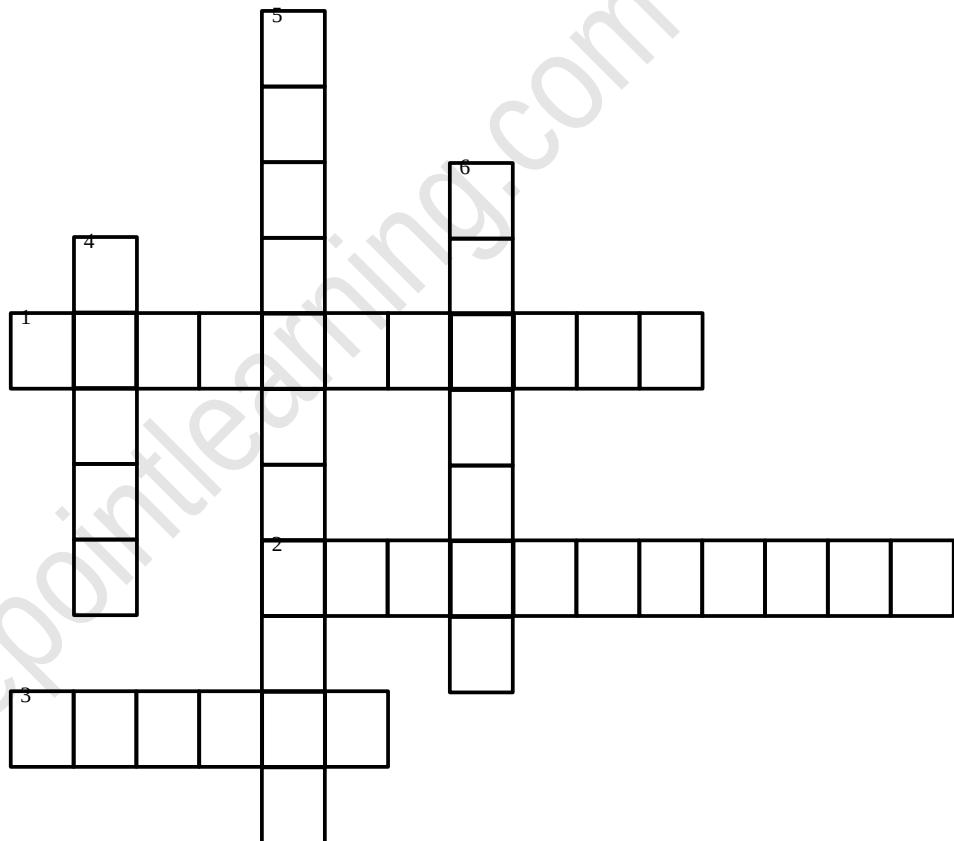
L. Solve the crossword puzzle given alongside with the help of the clues given below.

Across:

1. Motion along a straight line.
2. Motion that does not repeat after regular intervals of time.
3. The length of a curved line can be measured by using.

Down:

4. SI unit of distance.
5. Motion along with a curved line.
6. A traditional unit of length.



Answer

A.

- | | | |
|------------------------------|----------------------------|-------------------------------|
| 1. Length | 6. Harappan | 11. A merry-go-round rotating |
| 2. Hand span | 7. Flexible measuring tape | 12. Kilometre scale |
| 3. 100 | 8. 10 | 13. Millimetre |
| 4. Char angula | 9. Oscillatory | 14. Vernier caliper |
| 5. The length of a hand span | 10. Nose | 15. Inch |

B.

- | | | |
|----------------|-------------|-------------|
| 1. transport | 5. Angula | 9. periodic |
| 2. Traditional | 6. starting | 10. aligned |
| 3. uniform | 7. 1000 | |
| 4. above | 8. length | |

C.

- | | | |
|----------|----------|----------|
| 1. False | 5. False | 9. False |
| 2. True | 6. True | 10. True |
| 3. True | 7. False | |
| 4. False | 8. True | |

D.

- Measurement is the process of comparing an unknown quantity with a known quantity.
- SI unit stands for International System of Units.
- The system of units used all over the world now is the International System of Units (SI units). The SI unit for length is meter.
- Circular motion is a type of motion where an object moves along a circular path, constantly changing its direction but maintaining a constant distance from a central point.
- Periodic motion is a type of motion that repeats itself after a fixed interval of time.
- A curved line can be measured using a flexible measuring tape or by wrapping a thread along the curve and then measuring the length of the thread.
- Some units of length are meter, centimeter, millimeter, kilometer, inch, foot, yard.
- Rest refers to an object's position not changing with respect to a reference point over time. Motion refers to an object's position changing over time relative to a reference point.
- 1 mm, 1 cm, 1 m, 1 km
- To measure the length of an object using a ruler or scale with a broken or incomplete zero point, you can use any other full mark on the scale as the starting point and then subtract this mark from the reading at the end of the object.

E.

- People use standard units of measurement instead of body parts because:
 - Body parts vary in size from person to person, leading to inconsistent measurements.
 - Standard units provide a uniform and consistent way of measuring, ensuring accuracy and comparability.
- Flexible measuring tapes are preferred for measuring the girth of objects because:
 - They can easily conform to the shape of curved objects, providing accurate measurements.
 - Rigid measuring tools like rulers might not fit snugly around curved surfaces, leading to inaccurate measurements.
- Elastic tape cannot be used to measure distances because:
 - Elastic tape can stretch or contract, leading to inconsistent and inaccurate measurements.
 - For accurate measurements, a rigid and non-stretchable measuring tool is necessary.
- Standard units of measurement are important in everyday life because:
 - They ensure consistency and accuracy in various tasks, such as construction, manufacturing, and scientific research.
 - They facilitate communication and understanding of measurements across different regions and cultures.
 - They enable the efficient exchange of goods and services.
- Scales should be placed correctly when measuring length to:
 - Avoid parallax errors, which can occur when the eye is not positioned directly above the measurement mark.
 - Ensure accurate readings and consistent results.

F.

1. vi

2. i

3. v

4. iii

5. ii

6. iv

G.

- | | | |
|-------------------|--------------------|-----------------------|
| 1. Handspan | 3. Linear motion | 5. Oscillatory Motion |
| 2. Measuring tape | 4. Reference point | 6. Millimetre |

H.

- Linear motion: A car moving on a straight road, a train moving on straight tracks
- Oscillatory motion: A pendulum swinging, a guitar string vibrating
- Periodic motion: A pendulum swinging, a satellite orbiting the Earth
- Circular motion: The hands of a clock, a merry-go-round rotating

I.

- Periodic Motion and Non-periodic Motion
 - Periodic Motion:- Repeats its path after a fixed interval of time
Examples: A pendulum swinging, a satellite orbiting the Earth
 - Non-periodic Motion:- Does not repeat its path in a regular pattern
Examples: A car driving on a winding road, a person walking randomly
- Circular Motion and Rotational Motion
 - Circular Motion:- An object moves along a circular path, always maintaining a constant distance from a central point
Examples: The hands of a clock, a merry-go-round rotating
 - Rotational Motion:- An object rotates around an axis, with different parts of the object moving at different speeds.
Examples: The Earth rotating on its axis, a spinning top
- Motion and Rest
 - Motion:- An object's position changes over time relative to a reference point
Examples: A car moving, a person walking
 - Rest:- An object's position does not change with respect to a reference point over time
Examples: A stationary object, a book resting on a table

J.

- | | | |
|---------------|---------------|---------------|
| 1. Meter | 4. Centimeter | 7. Millimeter |
| 2. Kilometer | 5. Meter | 8. Centimeter |
| 3. Millimeter | 6. Kilometer | |

K.

- | | |
|------------------|----------------|
| 1. Scooter | 4. Non-uniform |
| 2. Gravitational | 5. Thermometer |
| 3. Centimetre | |

L.

Across:

- Rectilinear
- Non-periodic
- Thread

Down:

- Meter
- Curvilinear
- Handspan