Measurement of Length and Motion

Standard difficulty · 20 questions · 40 marks · Time: 36 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. The SI unit of length is the:
(a) kilometre **(b)** handspan **(c)** centimetre **(d)** metre

2. The motion of the Earth going around the Sun is:
(a) no motion **(b)** linear **(c)** circular **(d)** oscillatory

3. The best unit to measure the height of a building is the:
(a) millimetre **(b)** centimetre **(c)** kilometre **(d)** metre

4. 16.5 km is equal to:
(a) 165,000 m **(b)** 1,650 m **(c)** 16,500 m **(d)** 165 m

5. 2 m 49 cm is equal to:
(a) 259 cm **(b)** 249 cm **(c)** 69 cm **(d)** 2,049 cm

6. A ruler's zero end is broken, so a pencil is measured from the 3 cm mark. Its other end is at 8 cm. How long is the pencil?
(a) 5 cm **(b)** 3 cm **(c)** 8 cm **(d)** 6 cm

7. A desk is 8 handspans long. Neha's handspan is 15 cm. About how long is the desk?
(a) 105 cm **(b)** 23 cm **(c)** 135 cm **(d)** 120 cm

8. 13 cm 8 mm is equal to:
(a) 1,308 mm **(b)** 21 mm **(c)** 138 mm **(d)** 148 mm

Section B — Short answer — 8 × 2 = 16 marks

9. Why do we need standard units of measurement?

10. Is each motion "linear", "circular" or "oscillatory"? (a) a ball rolled on a straight floor (b) a pendulum of a clock

11. Which unit (mm, cm, m or km) would you use for (a) the height of a door (b) the length of a cricket bat?

12. Convert 1,650 m into kilometres.

13. Aarav is 145 cm tall. Write his height in metres and in millimetres.

14. A leaf is measured from the 5 cm mark of a broken ruler, and its tip is at 17.5 cm. How long is the leaf?

15. A coin is 2.5 cm wide. How many coins in a row would cover 40 cm?

16. A runner goes 6 times around a 200 m track. How far does she run, in metres and in kilometres?

Section C — Word problems — 4 × 4 = 16 marks

17. Describe the correct way to measure the length of a pencil with a ruler.

18. Meena walks 500 m to the bus stop, travels 1 km by bus and then walks 16 m to school. (a) What is the total distance in metres? (b) In kilometres? (c) Name the type of motion of the bus on a straight road and of its wheels.

19. Describe the type of motion in each: a see-saw; a car on a straight highway; a vibrating tuning fork; the hands of a clock. Give one more example of each type.

20. A table is 680 cm long. Riya's handspan is 17 cm and her father's is 20 cm. (a) How many handspans long is the table for each? (b) Why do they get different answers? (c) What should they use instead?

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Answer key

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Q	Answer	Working
1	**(d) metre**	—
2	**(c) circular**	—
3	**(d) metre**	—
4	**(c) 16,500 m**	16.5 × 1000 = 16500
5	**(b) 249 cm**	2 × 100 + 49 = 249
6	**(a) 5 cm**	8 − 3 = 5
7	**(d) 120 cm**	8 × 15 = 120
8	**(c) 138 mm**	13 × 10 + 8 = 138
9	**Body units like handspans differ from person to person; standard units give the same measure everywhere.**	—
10	**(a) linear (b) oscillatory**	—
11	**(a) metre (b) centimetre**	—
12	**1.65 km**	1650 ÷ 1000
13	**1.45 m; 1450 mm**	145 ÷ 100; 145 × 10
14	**12.5 cm**	17.5 − 5
15	**16 coins**	40 ÷ 2.5 = 16
16	**1,200 m; 1.2 km**	6 × 200 = 1200
17	**Place the ruler along the pencil with one end at the zero mark (or a full mark if zero is broken). Keep your eye directly above the other end and read the mark. Subtract the starting mark if you did not start at zero.**	—
18	**(a) 1,516 m (b) 1.516 km (c) The bus: linear; its wheels: circular.**	500 + 1000 + 16
19	**a see-saw: oscillatory; a car on a straight highway: linear; a vibrating tuning fork: oscillatory; the hands of a clock: circular. Any correct extra examples.**	—
20	**(a) Riya: 40; father: 34 (b) Their handspans are different sizes. (c) A standard unit such as the centimetre, with a ruler or tape.**	680 ÷ 17; 680 ÷ 20

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