

Don SCIENCE



FULL YEAR BOOK

Term - I

+

Term - II

+

Term - III

- ☛ As per the Latest Syllabus
- ☛ Points to Remember
- ☛ Mind Maps
- ☛ Textual Questions Solved
- ☛ Additional Questions Solved
- ☛ Pointed Answers
- ☛ Model Question Papers



Don Publications (P) Ltd.

Don

SCIENCE

2024-2025

FULLY REVISED EDITION

- * Points to Remember
- * Mind Map (Each Chapter)
- * Textual Questions Solved
- * Additional Questions Solved
- * Pointed Answers
- * Model Question Papers



FULL YEAR BOOK

TERM-I

+

TERM-II

+

TERM-III

**Don Publications (P) Ltd.**

Don**Science****6th Standard**

(3 Terms Combined)

As per the latest syllabus

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PREFACE

Don Science Workbook for the students of VI Std. is prepared based on the new term-wise syllabus.

In every chapter, 'Points to Remember' are given to aid the students remember the important points pertaining to that unit easily. All the textual questions are solved with pointed answers, so as to score high marks in exams. There are plenty of additional questions with answers given to cover the subject thoroughly.

Three Summative Assessment question papers are given at the end of every term.

We hope this book will be of immense help to score high marks. Wishing you all the best!

S.A. Suresh Kumar, MCA., MBA.,
for **Don Publications (P) Ltd.**

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Science

Don

6th Standard

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FIRST TERM



MEASUREMENTS

1. MEASUREMENTS

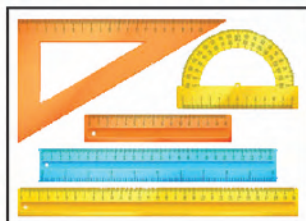
POINTS TO REMEMBER

- ❖ Measurement - The comparison of unknown quantities with some known quantities.
- ❖ Length - The distance between one end and the other desired end is called length.
- ❖ SI Units (International System of Units) - A system of common set of units to express measurements.
- ❖ SI unit of length is metre (m).
- ❖ SI unit of mass is kilogram (kg).
- ❖ SI unit of time is second (s).
- ❖ Area of surface = m^2 (or) square metre.
- ❖ Volume of solid = m^3 (or) cubic metre.
- ❖ Area = Length $\times$ Breadth.
- ❖ Volume of a cube = length $\times$ breadth $\times$ height.
- ❖ Volume of liquids and gases is measured in litres.
- ❖ Mass is the measure of the amount of matter in an object.
- ❖ Weight is the gravitational pull experienced by the mass.
- ❖ Clocks are used to measure time.

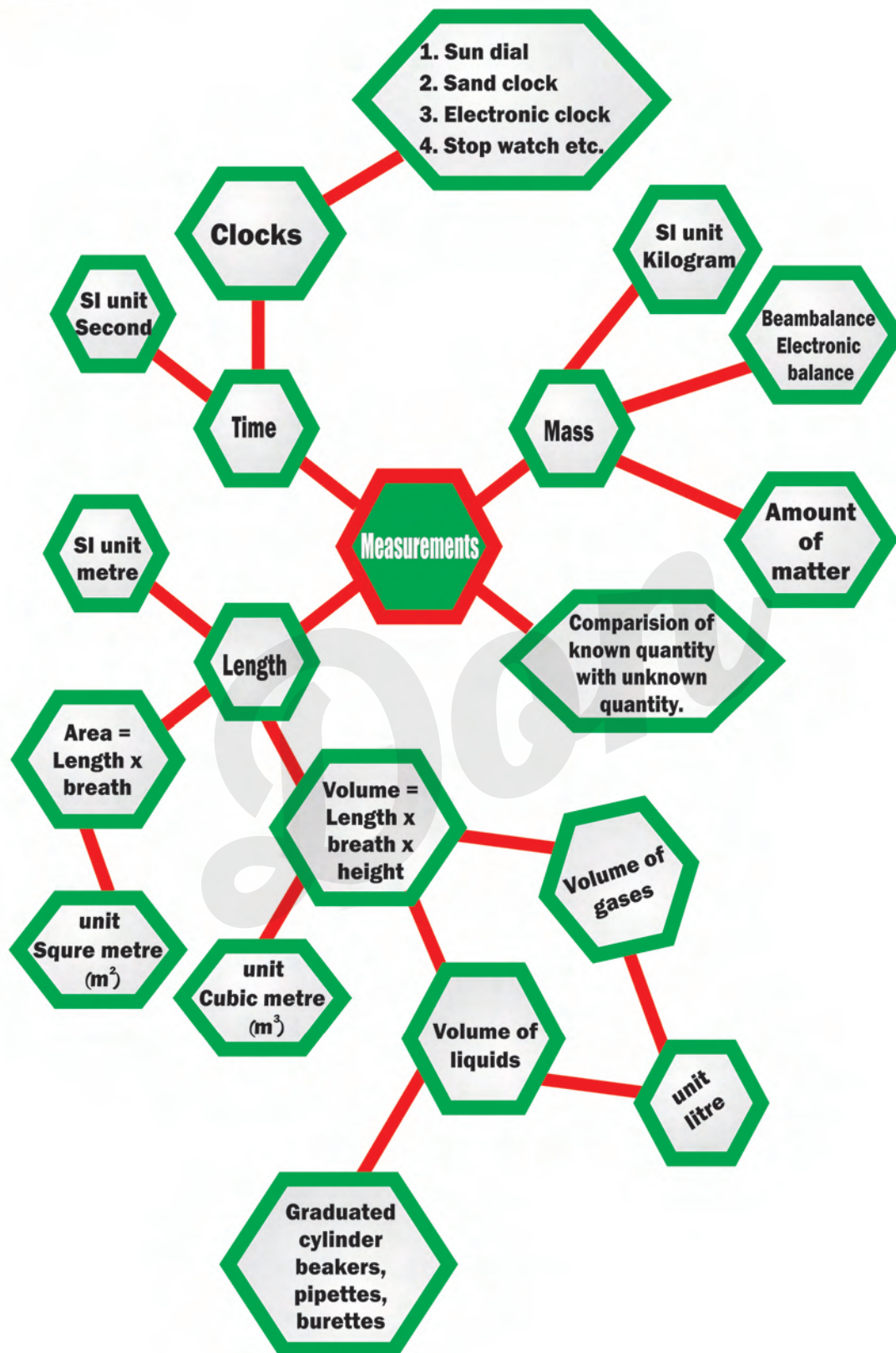
Memorize:

$1 \text{ km} = 1000 \text{ m.}$
 $1 \text{ m} = 100 \text{ cm.}$
 $1 \text{ cm} = 10 \text{ mm.}$
 $1 \text{ m}^3 = 1 \text{ kilo litre (kl).}$
 $1 \text{ cm}^3 = 1 \text{ milli litre (ml).}$
 $1 \text{ mm}^3 = 1 \text{ micro litre (}\mu\text{l).}$
 $1000 \text{ mg} = 1 \text{ g.}$
 $1000 \text{ g} = 1 \text{ kg.}$
 $1000 \text{ kg} = 1 \text{ tonne.}$

MESUREMENT TOOLS:



MIND MAP



**EVALUATION****I. Choose the correct answer:****1. The height of a tree can be measured by**

- a) metre Scale b) metre rod c) plastic ruler d) measuring tape

2. The conversion of 7 m into cm gives

- a) 70 cm b) 700 cm c) 7 cm d) 7000 cm

3. Quantity that can be measured is called

- a) Physical quantity b) Unit
c) Measurement d) Motion

4. Choose the correct one

- a) $\text{km} > \text{mm} > \text{cm} > \text{m}$
b) $\text{km} > \text{mm} > \text{cm} > \text{km}$
c) $\text{km} > \text{m} > \text{cm} > \text{mm}$
d) $\text{km} > \text{cm} > \text{m} > \text{mm}$

5. While measuring length of an object using a ruler, the position of your eye should be

- a) Left side of the point
b) Vertically above the point where the measurement is to be taken
c) Right side of the point
d) Any where according to one's convenience.

Answers

- 1) d 2) c 3) a 4) c 5) b

II. Fill in the blanks:

- SI Unit of length is _____.
- 500 gm = _____ kilogram.
- The distance between Delhi and Chennai can be measured in _____.
- 1 m = _____ cm.
- 5 km = _____ m.

Answers

- 1) m 2) 0.500 3) Kilometre
4) 100 5) 5000

III. State True or False. If false, correct the statement.

- We can say that mass of an object is 126 kg.
- Length of one's chest can be measured using metre scale.
- Ten millimeter makes one centimetre.
- A hand span is a reliable measure of length.
- The SI system of units is accepted everywhere in the world.

Answers

- 1) **True**
- 2) **False** Correct Ans: **Length of one's chest can be measured by using a measuring tape.**
- 3) **True**
- 4) **False** Correct Ans: **A hand span is not a reliable measure of length.**
- 5) **True**

IV. Complete the Analogy

1. Sugar : Beam balance :: Lime juice : _____?
2. Height of a person : cm :: Length of your sharpened pencil lead : _____?
3. Milk : volume :: Vegetables : _____?

Answers 1) **measuring jar** 2) **mm** 3) **mass**

V. Match the following:**Column A**

1. Length of the fore arm
2. SI unit of length
3. Nano
4. SI Unit of time
5. Kilo

Column B

- a) metre
- b) second
- c) 10^3
- d) 10^{-9}
- e) Cubit

Answers 1) **e** 2) **a** 3) **d** 4) **b** 5) **c**

VI. Arrange the following in the increasing order of unit:

1 Metre, 1 centimetre, 1 kilometre and 1 millimetre

Answers **1 millimetre, 1 centimetre, 1 metre, 1 kilometre**

VII. Answer in a word or two:**1. What is the full form of SI system?**

International system of Units.

2. Name any one instrument used for measuring mass.

Beam Balance (or) Electronic balance.

3. Find the odd one out: kilogram, millimetre, centimetre, nanometre.

kilogram.

4. What is the SI Unit of mass?

Kilogram.

5. What are the two parts present in a measurement?

A number and its unit.

VIII. Find the answer for the following questions within the grid:

- 10^{-3} is one _____.
- SI Unit of time is _____.
- Cross view of reading for a measurement leads to _____.
- _____ is the one what a clock reads.
- _____ is the amount of substance present in an object.
- _____ can be taken to get the final reading of the recordings of different students for a single measurement.
- _____ is a fundamental quantity.
- _____ shows the distance covered by an automobile.
- A tailor uses _____ to take measurements to stitch a cloth.
- Liquids are measured with this physical quantity.

A		P		L							R		K
C		O		E							O		S
M		K		N							R		I
P		R		G							R		T
R	H	E	S	T	E	D	L	L	I	T	R	E	A
L		T		H						D		H	P
O		E		O					N		K		E
A		M	A	S	S				O		R		V
V		I		E				C			T		O
E		L		K		E					S		S
R		L		I	S					T		K	H
A		I		T					I			V	P
G		M		X				M				N	U
E		Z		D		E	S	K	P	G	I	W	M
Z	T	D	K	H			O	D	O	M	E	T	E

Answers

- | | | | | |
|---------------|-----------|-------------|---------|-----------|
| 1) Millimetre | 2) Second | 3) Error | 4) Time | 5) Mass |
| 6) Average | 7) Length | 8) Odometer | 9) Tape | 10) Litre |

IX. Answer briefly:**1. Define measurement.**

The comparison of unknown quantities with some known quantities is known as measurement.

2. Define Mass.

Mass is the measure of the amount of matter in an object.

3. The distance between two places is 43.65 km. Convert it into metre and cm.**Solution:**

$$\begin{aligned}
 \text{We know, } 1\text{ km} &= 1000 \text{ m.} \\
 \therefore 43.65 \text{ km} &= 43.65 \times 1000 \text{ m} = 43650 \text{ m} \\
 1 \text{ m} &= 100 \text{ cm} \\
 \therefore 43650 \text{ m} &= 100 \times 43650 \\
 &= 43,65,000 \text{ cm} \\
 \text{Ans: } 43.65 \text{ km} &= 43,650 \text{ m} \\
 &= 43,65,000 \text{ cm}
 \end{aligned}$$

4. What are the rules to be followed to make accurate measurement with scale?

- ✿ One end of the object to be measured has to coincide with 'O' of the scale.
- ✿ Measure the quantities using suitable measuring units and express them with suitable multiple and submultiples.
- ✿ Always keep the object parallel to the scale.
- ✿ Our eye must be exactly in front of vertically above the point where the measurement has to be taken.

X. Solve the following:**1. The distance between your school and your house is 2250 m. Express this distance in kilometre.****Solution:**

$$\begin{aligned}
 1000 \text{ m} &= 1 \text{ km} \\
 2250 \text{ m} &= \frac{1}{1000} \times 2250 \\
 &= 2.250 \text{ km}
 \end{aligned}$$

Ans: 2.250 km

2. While measuring the length of a sharpened pencil, reading of the scale at one end is 2.0 cm and at the other end is 12.1 cm. What is the length of the pencil?**Solution:**

$$\begin{aligned}
 \text{The length of the pencil} &= \text{Difference of two readings} \\
 &= 12.1 - 2.0 \text{ cm} \\
 &= 10.1 \text{ cm} \\
 \text{Ans: Length of the pencil} &= 10.1 \text{ cm.}
 \end{aligned}$$

XI. Answer in detail:**1. Explain two methods those you can use to measure the length of a curved line.****Method1:**

- ✿ Place a string along the curved line. Make sure that the string covers every bit of the curved line.
- ✿ Mark the points where the curved line begins and ends on the string.
- ✿ Now, stretch the string along the length of a meter scale and measure the distance between the two markings of the string.
- ✿ This will give us the length of a curved line.

Method2:

- ✿ Draw a curved line AB on a piece of paper.
- ✿ Separate the legs of the divider by 0.5 cm or 1 cm using a ruler.
- ✿ Place it on the curved line starting from one end. Mark the position of the other end. Move it along the line again and again cutting the line into number of segments of equal lengths. The remaining parts of the line can be measured using a scale.
- ✿ Count the number of segments.
- ✿ Therefore, the length of the line = (number of segments × length of each segment) + length of the left over part.

2. Fill in the following chart.

PROPERTY	DEFINITION	BASIC UNIT	INSTRUMENT USED FOR MEASURING
Length	The distance between one end and the other desired end.	metre	Measuring tape, Ruler
Mass	The amount of matter in an object.	kilogram	Beam balance, Electronic balance
Volume	The amount of space a substance occupies	cubic metre (or) litre	measuring jar, Pipetter buret etc.
Time	Interval between two events	second	Stop clock Electronic clock; etc

**ADDITIONAL QUESTIONS:****1. Choose the correct answer:****1. The SI unit of mass is _____.**

- a) gram b) kilogram c) milligram d) tonne

2. _____ is a fundamental quantity.

- a) Volume b) Area c) Length d) Density

3. The volume of liquid is usually measured in _____.

- a) cubic metre b) litre c) m² d) gram

4. The moon's gravitational pull is _____ of the earth's pull.

- a) $\frac{1}{6}$ b) $\frac{1}{16}$ c) 6 times d) 16 times

5. In earlier days people used _____ to measure the passage of time during the day.

- a) stop watch b) electronic clock c) atomic clock d) sun dial

Answers 1) **b** 2) **c** 3) **b** 4) **a** 5) **d**

II. State True or False. If False, correct the statement:

1. Very small lengths can be measured in 'mm' and 'cm'.
2. Volume is a fundamental quantity.
3. Liquids and gases are usually measured in cubic metre.
4. The weight is directly proportional to the mass on earth's surface.
5. The SI unit for time is minute.

Answers

- 1) **True**
- 2) **False** Correct Ans: **Length is a fundamental quantity.**
- 3) **False** Correct Ans: **Liquids and gases are usually measured in cubic feet.**
- 4) **True**
- 5) **False** Correct Ans: **The SI unit for time is second.**

III. Fill in the blanks:

1. 1 km = _____ m.
2. A graduated container is used to measure the _____ of the liquids.
3. $1\text{mm}^3 = 1$ _____.
4. _____ is the gravitational pull experienced by the mass.
5. An _____ is a device used to find accurate measurements of weight.
6. An _____ is a device used for indicating distance travelled by an automobile.

Answers

- | | | |
|------------------|------------------------------|----------------------|
| 1) 1000 | 2) volume | 3) microlitre |
| 4) weight | 5) electronic balance | 6) Odometer |

IV. Match the following:

- | | | |
|--------------------------------|---|------------------------------|
| 1. Submultiple $\frac{1}{100}$ | - | a) standard mass |
| 2. Volume of a stone | - | b) centi |
| 3. length of a curved line | - | c) William Bedwell |
| 4. Beam balance | - | d) string |
| 5. ruler | - | e) water displacement method |

Answers 1) **b** 2) **e** 3) **d** 4) **a** 5) **c**

V. Answer in a sentence or two:**1. What is length?**

The distance between one end and the other desired end is called as length.

2. Why do we need SI units?

The sake of uniformity, scientists all over the world have adopted a common set of units to express measurements. This system is called as the International System of Units or SI Units.

3. Name some devices used to measure the volume of liquids.

Graduated cylinders, beakers, pipettes and burettes are available for measuring exact volume of liquids.

4. Differentiate mass and weight:

MASS	WEIGHT
Mass is the measure of the amount of matter in an object.	Weight is the gravitational pull experienced by the mass.
Mass remains the same everywhere.	Weight changes from place to place.

5. Write a short note on electronic Balance.

- ✿ An electronic balance is a device used to find accurate measurements of weight.
- ✿ It is used very commonly in laboratories for weighing precise amount of chemicals.
- ✿ It is also used to weigh food, other grocery items as well as jewellery.

6. Name some earlier devices used to measure time.

Sun dial, sand clock, water clock, pendulum clock etc.

7. What is meant by parallax error?

Parallax is a displacement or difference in the apparent position of an object viewed along two different lines of sight.

VI. Answer in Detail:**1. Name some measuring devices and their uses.**

MEASURING TOOLS	USES
Measuring Tape	It is used to measure the length of the distance.
Stop clock	It is used to measure the accurate time of the activity.
Measuring jar	It is used to measure the volume of the liquid.
A metre scale	It is used to measure the length of the object.
Balance	It is used to measure the mass of the object.

VII. NUMERICAL PROBLEMS:

Look at a meter scale carefully and answer the following:

1. How many mm are there in a cm?

10 mm

2. How many cm are there in a m?

100 cm

3. Complete the following.

- ✿ 7875 cm = 78 m 75 cm
- ✿ 1195 m = 1 km 195 m
- ✿ 15 cm 10 mm = 160 mm
- ✿ 45 km 33 m = 45,033 m

VIII. SOME OPEN ENDED QUESTIONS:

1. The school authority planned to conduct a mini marathon race within the school campus. They decided that the running distance to be 2 kilometres. Is it possible to have a school campus with circumference of 2km? Discuss with your friends of how big the campus should be?

Give other options if it is not a big campus.

- ✿ No, it is not possible to have school campus with circumference of 2 km unless it has very large area.
- ✿ The school must have a play ground of circumference of atleast 400 m to lay a track.
- ✿ In the track they have to run 5 laps to complete the distance of 2 km.

2. Is the distance in the sea also calculated in kilometres? How is it possible to calculate the distance in sea water? Explore!

- ✿ In the sea the distance is calculated in Nautical miles and not in kilometres.
- ✿ Nautical mile is a unit of distance used for sea based on the length of a minute of arc of a great circle of the earth.
- ✿ It is equal to 1.852 km.

3. We know that the distance between celestial bodies is calculated in terms of light year. (Ah! Unit of distance in terms of year???) Yes, it's the distance travelled by light in one year. Now without calculator find how many kilometres light would have travelled in a year. (No Calculator). Get the speed of light from your class teacher.

$$\begin{aligned}
 \text{Speed of light (c)} &= 3 \times 10^8 \text{ m/s} \\
 &= 3 \times 10^8 \times 365.25 \times 60 \times 60 \\
 &= 9.467 \times 10^{15} \text{ m} \\
 \text{Distance travelled by light in one year} &= 9.467 \times 10^{12} \text{ km}
 \end{aligned}$$

4. We see that the distance between Chennai and Madurai is '462' kms. But from which point to which point is this distance calculated?. As we are science students we need to know it with the precision. Is it between the two bus stands? Or between the two railway stations? Discuss and figure it out. Check your answers with your class teacher.

The road distance between chennai and Madurai is 462 km. It is the distance between the two bus stands.



	kilo-	hecto-	deka-	base unit	deci-	centi-	milli-
Prefix	thousand 1,000	hundred 100	ten 10	one 1	tenth 0.1 $\frac{1}{10}$	hundredth 0.01 $\frac{1}{100}$	thousandth 0.001 $\frac{1}{1000}$
Meaning							
Length	kilometer	hectometer	dekameter	meter	decimeter	centimeter	millimeter
Mass & Weight	kilogram	hectogram	dekagram	gram	decigram	centigram	milligram
Capacity	kiloliter	hectoliter	dekaliter	liter	deciliter	centiliter	milliliter



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