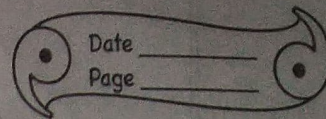


H.W
23.07.21



Test Yourself

A. Objective questions

1. Write true or false for each statement:

- S.I unit of temperature is Fahrenheit, **False**
- Every measurement involves two things - a number and a unit, **True**
- Mass is the measure of quantity of matter, **True**
- The S.I unit of time is hour, **False**
- The area can be expressed as the product of lengths of two sides, **True**

2. Fill in the blanks:

- The S.I unit of length is **metre**, of time is **second**, of mass is **Kilogram**.
- $^{\circ}\text{C}$ is the unit of **temperature**.
- 1 metric tonne = **1000 kg**
- The zero mark in Celsius thermometer is the melting point of **ice**.
- The thermometer used to measure the human body temperature is called the **clinical** thermometer.
- The normal temperature of human body is **37°C or 98.6°F** .
- The **mass** of an object is measured with the help of a beam balance.

3. Match the following columns:

<u>Column A</u>	<u>Column B</u>
a) Length of a housing plot	i) Clock
b) Breadth of a book	ii) Beam balance
c) Mass of an apple	iii) Thermometer
d) Period of time for study	iv) Measuring tape
e) Temperature of a body	v) Graph Paper
f) Surface area of a leaf	vi) Metre ruler

Ans: a - iv, b - vi, c - ii, d - i, e - iii, f - v

4. Select the correct alternative:

a) The symbol of degree Celsius is:

Ans- i) $^{\circ}\text{C}$

b) 10 mm is equal to:

Ans- i) 1 cm

c) The amount of surface occupied by an object is called its:

Ans- ii) area

d) A metre ruler is graduated in :

Ans- iii) mm

e) A thermometer is graduated in :

Ans- ii) °C

B. Short/Long Answer Questions

1. What is measurement? How is a measurement expressed?

Ans- Measurement is a comparison of an unknown quantity with a fixed quantity of the same kind.

The value obtained on measuring a quantity is called its ~~mag~~ magnitude. The magnitude of a quantity is expressed as numbers in its unit.

2. State two characteristics of a unit.

Ans- Two characteristics of a unit are

1. It should be of convenient size.

2. It must be universally accepted i.e. its value must remain same at all places and at all times.

3. Name four basic measurements in our daily life.

Ans- In our daily life we measure the following four basic physical quantities.

1. Length

2. Mass

3. Time

4. Temperature

4. What are the S.I units of
i) mass ii) length iii) time and iv) temperature.
Write their names and symbols.

Ans- S.I units are as follows-

<u>Quantity</u>	<u>S.I unit</u>	<u>Symbol of S.I unit</u>
i) Length	metre	m
ii) Mass	Kilogram	Kg
iii) Time	second	s
iv) Temperature	Kelvin	K

5. Define one metre, the S.I unit of length. State its one multiple and one submultiple.

Ans- One metre is defined as the distance travelled by light in air in $\frac{1}{299,792,458}$ of a second.
One multiple of metre = kilometre (km)
One submultiple of metre = Centimetre (cm)

6. Convert the following quantities as indicated:

a) 12 inch = 1 ft

b) 1 ft = 30.48 cm

c) 20 cm = 0.2 m

d) 4.2 m = 420 cm

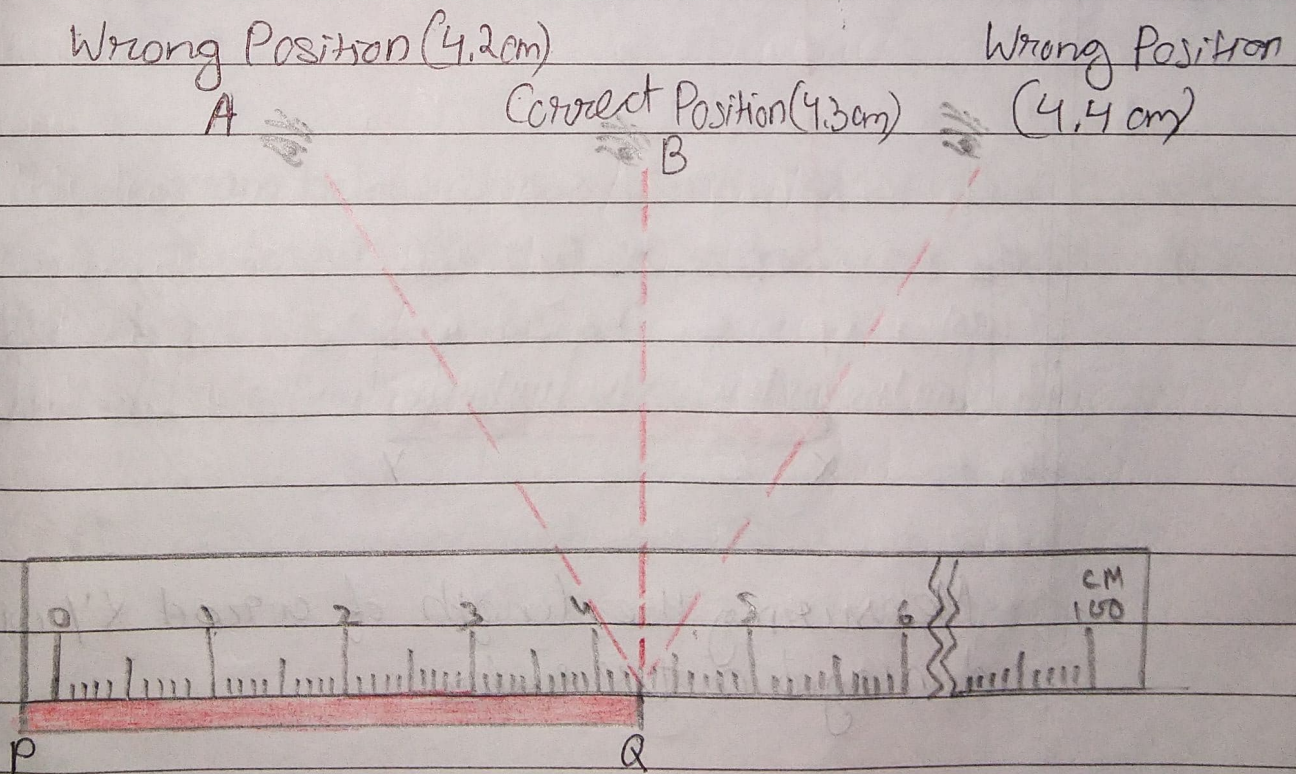
e) 0.2 km = 200 m

f) 0.2 cm = 2 mm

g) 1 yard = 0.91 m

7. a) Describe in step how would you measure the length of a pencil using a metre ruler. Draw a diagram if necessary.

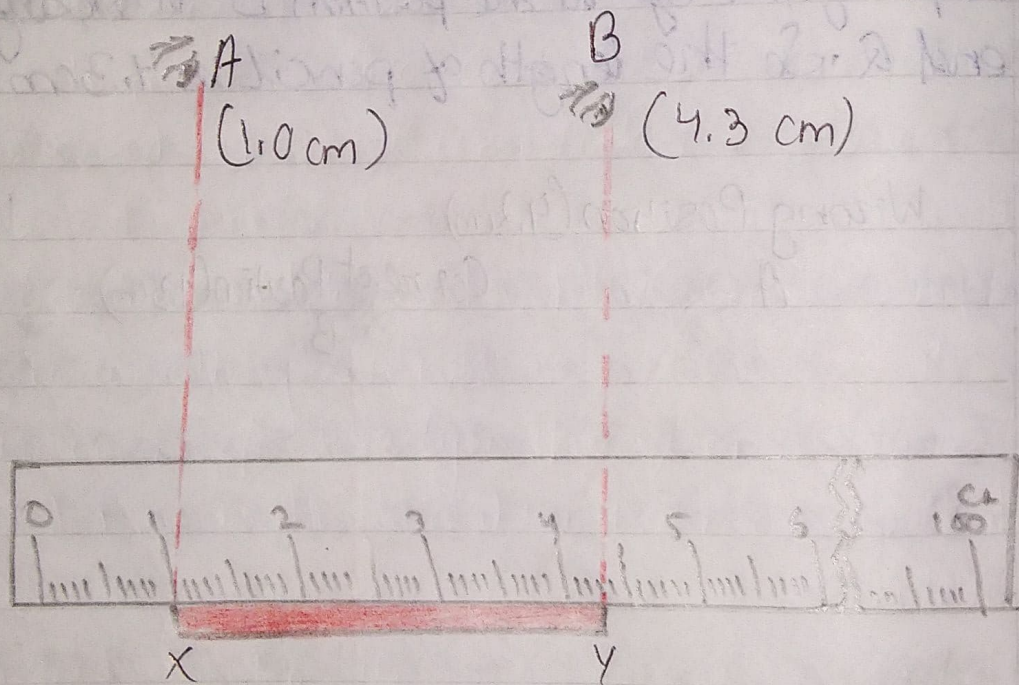
Ans- To measure the length of a pencil using a metre ruler, place meter ruler with its marking close to the object. Let PQ be a pencil. The end P of the pencil coincides with the zero mark on the ruler. The end Q of the pencil is read by keeping the eye at the position 'B' vertically above the end Q. So the length of pencil is 4.3cm.



Measuring the length of a rod PQ with a metre ruler.

b) Explain with an example how you will use the metre ruler in part (a) if the ends of ruler are broken.

Ans- The ends of the ruler get damaged with use and its zero mark may not be visible. To measure the length of an object with such a ruler, the object is placed close to a specific markings on the ruler and positions of both ends of the object are read on the ruler.



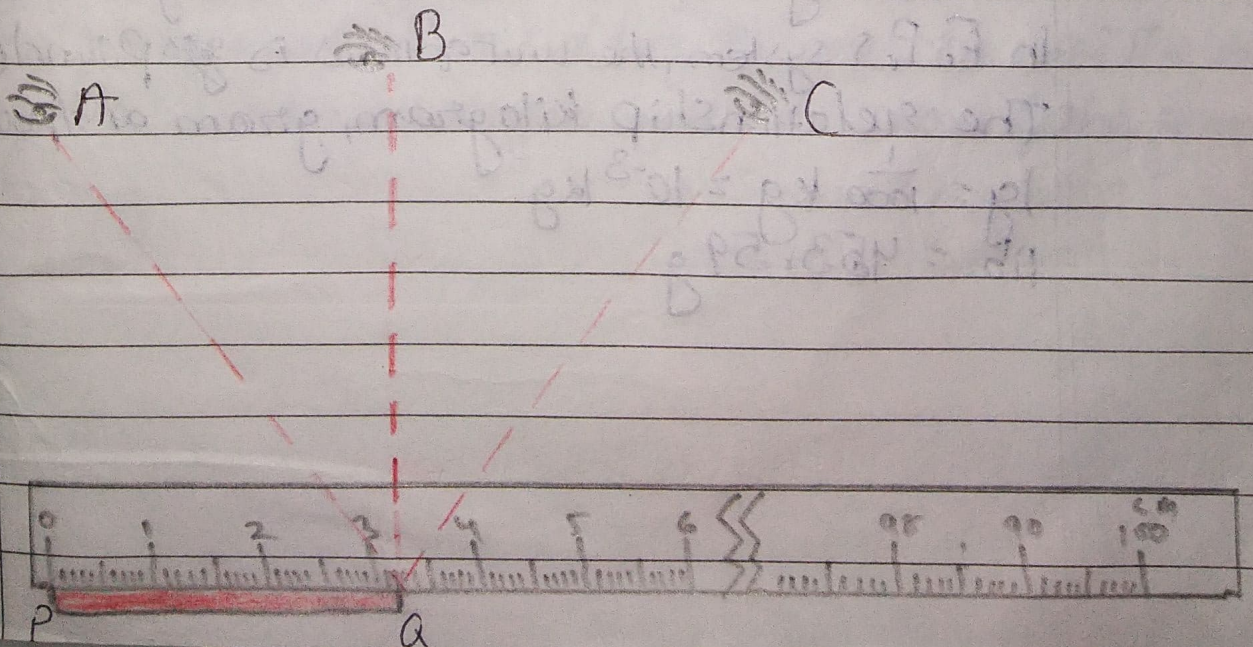
Measuring the length of a rod XY with a damaged metre ruler

The difference of the two readings gives the length of the object. In fig. the reading on ruler at the end X is 1.0 cm and at the end Y is 4.3 cm. So the length of the rod XY is $4.3 - 1.0 = 3.3$ cm.

8. Name the device which you will use to measure the perimeter of your play ground. Describe in steps how you will use it.

Ans- We will use a measuring tape to measure the ~~per~~ perimeter of our playground. To measure the length of playground the tape is spread along the length of the curved area.

9. The diagram below shows a stick placed along a metre ruler. The length of the stick is measured keeping the eye at positions A, B and C.



a) Write the length of stick PQ as observed, for each position of the eye. Are they all same?

Ans - Length of stick PQ from

- Position A = 3.4 cm

- Position B = 3.2 cm

- Position C = 3.0 cm

No, they are not same.

b) Which is the correct position of the eye? Write the correct length of the stick.

Ans - Position 'B' is the correct position of the eye.

Correct length of the stick PQ = 3.2 cm.

10. Define mass. State its (i) S.I (ii) C.G.S and (iii) F.P.S units.

How are they related?

Ans - The mass of a body is the quantity of matter contained in it. The S.I unit of mass is Kilogram (kg).

In C.G.S system, the unit of mass is gram. (symbol g).

In F.P.S system, the unit of mass is pound (symbol lb).

The relationship kilogram, gram and pound is:

$$1 \text{ g} = \frac{1}{1000} \text{ kg} = 10^{-3} \text{ kg}$$

$$1 \text{ lb} = 453.59 \text{ g}$$

11. Convert the following quantities as indicated :

a) $2500 \text{ kg} = 2.5 \text{ metric tonne}$

b) $150 \text{ kg} = 1.5 \text{ quintal}$

c) $10 \text{ lb} = 4.5359 \text{ kg}$

d) $2500 \text{ g} = 2.5 \text{ kg}$

e) $0.01 \text{ kg} = 10 \text{ g}$

f) $5 \text{ mg} = 5 \times 10^{-6} \text{ kg}$

12. Name the instrument which is commonly used to measure the mass of a body. State how is it used?

Ans- Instrument that is commonly used to measure the mass of a body, is the beam balance.

When we hold up the balance, we observe that when there is nothing on either pan, the beam is horizontal. The body whose mass is to be measured is placed on the left pan. The standard weights are put on the right pan. They are so adjusted that the beam is again horizontal on holding the balance up. The total of the standard weights gives the mass of the given body.

13. Define one kilogram, the S.I unit of mass. How it is related to (i) quintal (ii) metric tonne and gram.

Ans- The mass of 1 litre of water at 4°C is taken as 1 kilogram.

The S.I unit of mass is kilogram (kg).

It is related to (i) quintal (ii) metric tonne and (iii) gram.

$$(i) \text{ quintal} = 100 \text{ kg}$$

$$(ii) \text{ 1 metric tonne} = 10 \text{ quintal} = 1000 \text{ kg}$$

$$(iii) \text{ 1 Gram} = \frac{1}{1000} \text{ kg} = 10^{-3} \text{ kg}$$

14. Name and define the S.I unit of time. How it is related to (i) minute, (ii) hour, (iii) day and (iv) year?

Ans- The S.I unit of time is second. In short form we write it as 's'.

One second is the time interval between the two consecutive ticks that you hear from pendulum wall clock.

It is related to (i) minute, (ii) hour, (iii) day and (iv) year.

$$1 \text{ min} = 60 \text{ s}$$

$$1 \text{ h} = 60 \text{ min} = 3600 \text{ s}$$

$$1 \text{ day} = 24 \text{ h} = 86400 \text{ s}$$

$$1 \text{ year} = 365 \text{ days} = 3.15 \times 10^7 \text{ s}$$

15. Name two devices used to measure the short time interval of an event?

Ans - Two devices used to measure the time interval of an event are:

1. Stop watch

2. Stop clock

16. Express in second,

i) 3 minute 15 second and ii) 5 hour 2 minute 5 second

Ans - i) 3 minute 15 second

$$= 3 \text{ minute} = 15 \text{ second}$$

$$= 1 \text{ minute} = 60 \text{ second}$$

$$= 3 \text{ minutes} + 15 \text{ second} = 60 \times 3 + 15$$

$$= 180 + 15$$

$$= 195 \text{ seconds}$$

ii) 5 hour 2 minute 5 second

$$= 1 \text{ minute} = 60 \text{ second}$$

$$2 \text{ minutes} = 2 \times 60$$

$$= 120 \text{ second}$$

$$5 \text{ hour } 3600 \text{ second} \times 5 = 18000 \text{ second}$$

5 hour 2 minutes and 5 second

$$= 18000 + 120 + 5 = 18125 \text{ seconds}$$

17. What does the temperature measure?

Ans - Temperature measures the degree of coldness & hotness of a body.

18. Name the (i) S.I unit and (ii) one common unit of temperature. Write their symbols also.

Ans - The S.I unit of temperature is kelvin (symbol: K).
One common unit of temperature is degree centigrade or degree celsius. (symbol: $^{\circ}\text{C}$).

22. What is the normal temperature of the human body? How is it indicated in a clinical thermometer.

Ans - Normal temperature of a human body is 37°C or 98.6°F .

To measure the temperature of a patient's body, its bulb is kept either below the tongue or under the arm's pit of the patient for about a minute. Then the thermometer is taken out and its reading is noted. When the temperature of patient's body is above 37°C , he/she is said to suffer with fever.

23. Can a clinical thermometer be used to measure the temperature of the boiling water? Give reason for your answer.

Ans - NO, a Clinical thermometer cannot be used to measure the temperature of the boiling water. The reasons are -

1. It has a very small range.
2. It can break on cooling and on excess heating.

24. Explain the term 'area of a surface'.

Ans - The total surface occupied by an object is called its 'area of surface area'.

25. Name the S.I unit of area and define it.

Ans - The S.I unit of area is square metre or metre² which in short form is written as m².

26. How the units (i) Square yard (ii) hectare (iii) km² (iv) cm² (v) mm² related to the S.I unit of area?

Ans - (i) Square yard: One square yard is the area of a square of each side 0.9144 metre

$$\begin{aligned}
 1 \text{ square yard} &= 1 \text{ yard} \times 1 \text{ yard} \\
 &= 0.9144 \text{ m} \times 0.9144 \text{ m} \\
 &= 0.836 \text{ m}^2 \text{ (or } 0.84 \text{ m}^2 \text{ nearly)}
 \end{aligned}$$

(ii) hectare: One hectare is the area of a square of each side 100 metre. Thus,

$$1 \text{ hectare} = 100 \text{ metre} \times 100 \text{ metre} = 10000 \text{ metre}^2 \quad (\text{or } 10^4 \text{ m}^2)$$

(iii) km²: One square kilometre is the area of a square of each side 1 kilometre. Thus,

$$1 \text{ km}^2 = 1 \text{ km} \times 1 \text{ km} = 1000 \text{ m} \times 1000 \text{ m} = 10^6 \text{ m}^2$$

$$(iv) \text{ m}^2 \text{ : } 1 \text{ cm}^2 = \left[\frac{1}{100} \text{ m} \right] \times \left[\frac{1}{100} \text{ m} \right] = \frac{1}{10000} \text{ m}^2 \\ = 10^{-4} \text{ m}^2$$

$$(v) \text{ mm}^2 \text{ : } 1 \text{ mm}^2 = 10^{-6} \text{ m}^2$$

27. Explain how you will measure the area of (i) a square (b) a leaf?

Ans - The area of a square can be calculated by using the following formula -

1. Area of square of side l
 $= \text{side} \times \text{side}$
 $= l \times l = l^2$

The area of a leaf is obtained by using a graph paper. A graph paper has small squares of each side 1mm. The area of each big square is 1 cm^2 .

- Procedure: Place the leaf on graph paper. Draw its outline on the paper and remove it. Now count the number of

Complete squares. To this add the number of incomplete squares which are half or more than half. Ignore the squares which are less than half. Thus, Approximate area = (No. of Complete squares + no. of half or more than half of incomplete squares) \times area of one square.

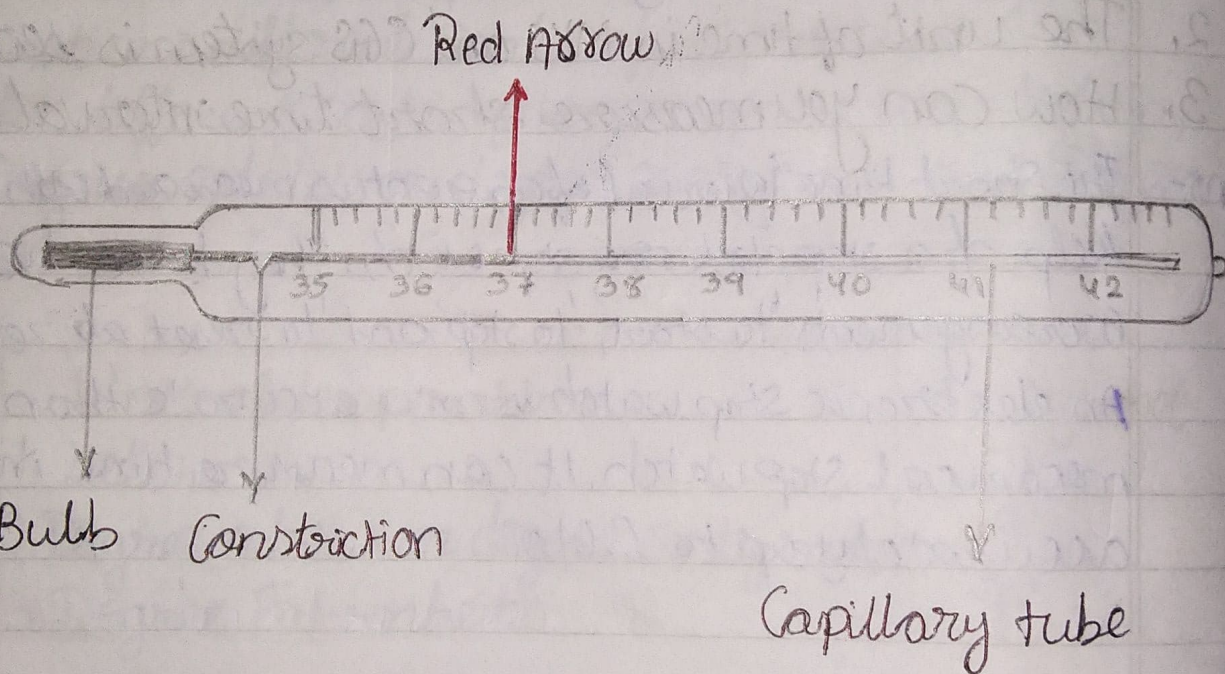
H.W
10.07.21

Test Yourself

B. Short/Long Answer Questions.

19. Name the instrument used for measuring of the temperature of a person. Draw its labelled neat diagram.

Ans- The temperature is measured with a thermometer.



Clinical Thermometer

20. Write the temperature of i) melting ice ii) boiling water

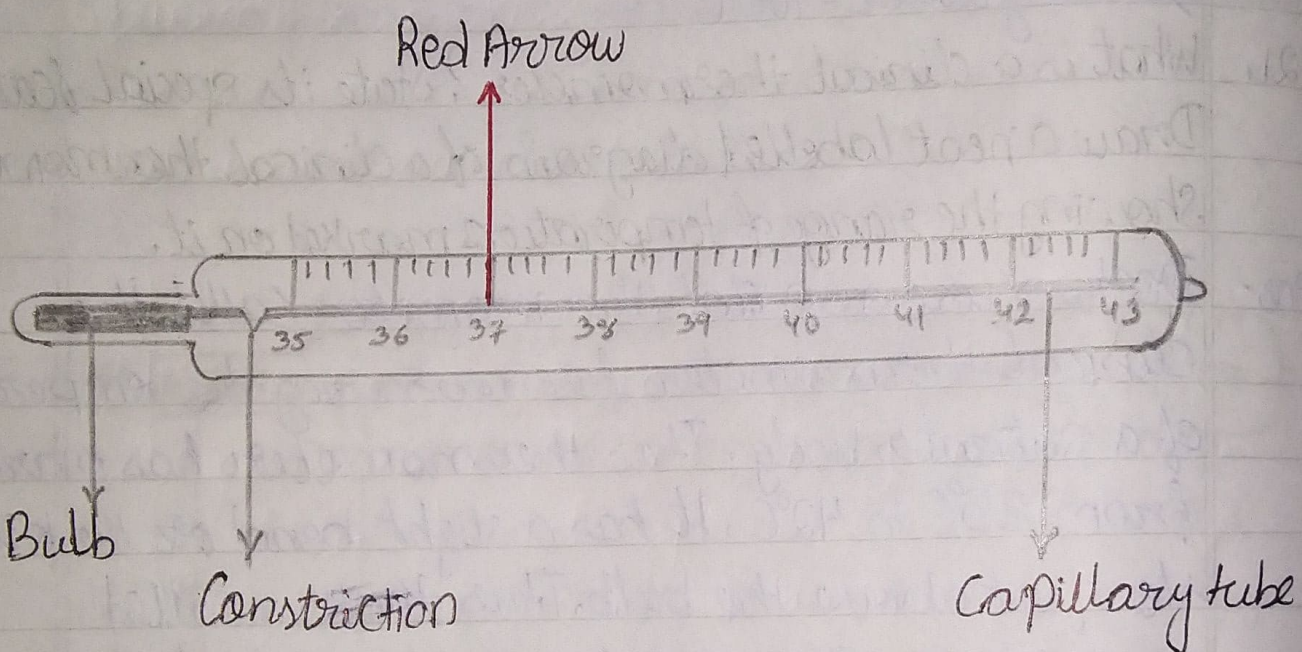
Ans - The temperature of :

i) melting ice = 0°C

ii) boiling water = 100°C

21. What is a clinical thermometer? State its special features. Draw a neat labelled diagram of a clinical thermometer showing the range of temperature marked on it.

Ans - Doctors use a special thermometer called the clinical thermometer for measuring the temperature of a patient's body. This thermometer has markings from 35°C to 42°C . It has a slight bend or kink in the stem just above the bulb. This kink is called constriction. This constriction prevents the mercury from falling back all by itself. The temperature of a healthy person is 37°C . This temperature is marked by a red arrow. Clinical thermometers marked in $^{\circ}\text{F}$ are also available. They have markings from 95°F to 110°F . The red arrow indicating the temperature of a healthy person at 98.6°F .



Clinical Thermometer