Hus
28/6/21

Date
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TEST YOURSELF

I. Objective Questions

1. Write true or false for each statement:

a) S.I. unit for temperature is farenheit. False

b) Every measurement involves two things - a measurement and a unit. True.

c) Mass is the measure of quantity of matter. True.

d) The S.I. unit for ~~hour~~ time is hour. False.

e) The area can be expressed as the product of lengths of two sides. True

2. Fill in the blanks:

a) The S.I. Unit of length is metre, of time is second, of mass is kilogram.

b) °C is the unit of temperature.

c) 1 metric tonne = 1000 kg.

d) The zero mark in Celsius thermometer is the melting point of ice. ✓

e) The thermometre used to measure the human body temperature is is called the thermometer.

f) The normal temperature of human body is 37° Celsius or 98.6°F.

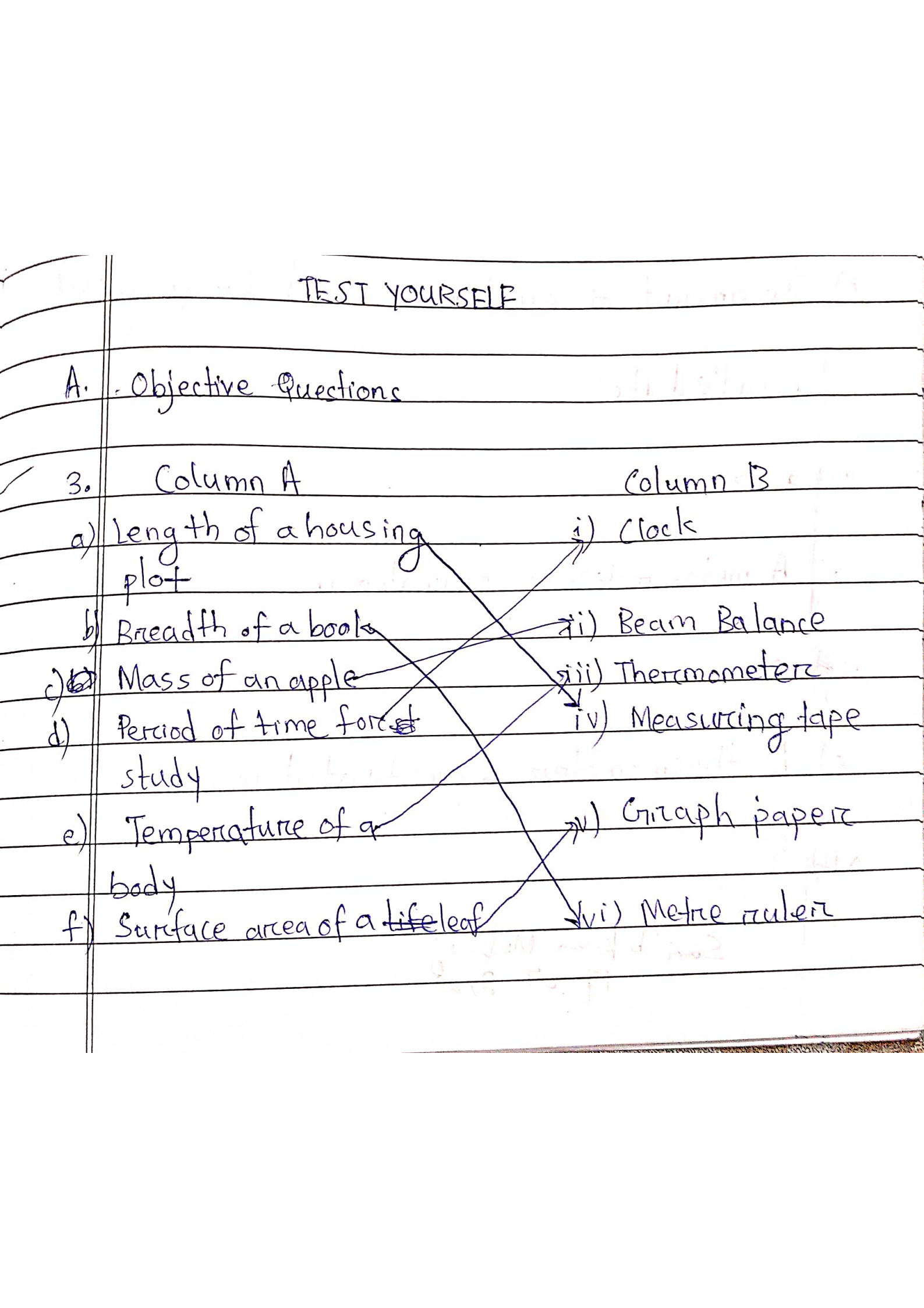
g) The mass of an object is measured with the help of a beam balance.

TEST YOURSELF

A. Objective Questions

3.

Column A	Column B
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 ~~life~~leaf	vi) Metre ruler



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4. Select the correct alternative:

a) The symbole of degree celsius is:

i) °C

b) 10mm is equal to:

ii) 1cm

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

ii) area

d) A metre ruler is graduated in:

iii) mm

e) A thermometer is graduated in:

ii) °C

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

Ans Measurement is the comparision of an unknown quantity with a known fixed quantity of the same kind.

The value obtained on measuring a quantity is called its 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:

- It should be of convenient size.
- It should 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

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

Ans- S.I units are as follows

	Quantity	S.I unit	symbol of S.I unit
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 ~~is~~ in air in $\frac{1}{299,792,458}$ of a second.
Multiple of metre = kilometre.
Submultiple of metre = centimetre.

6. Convert the following quantities as indicated

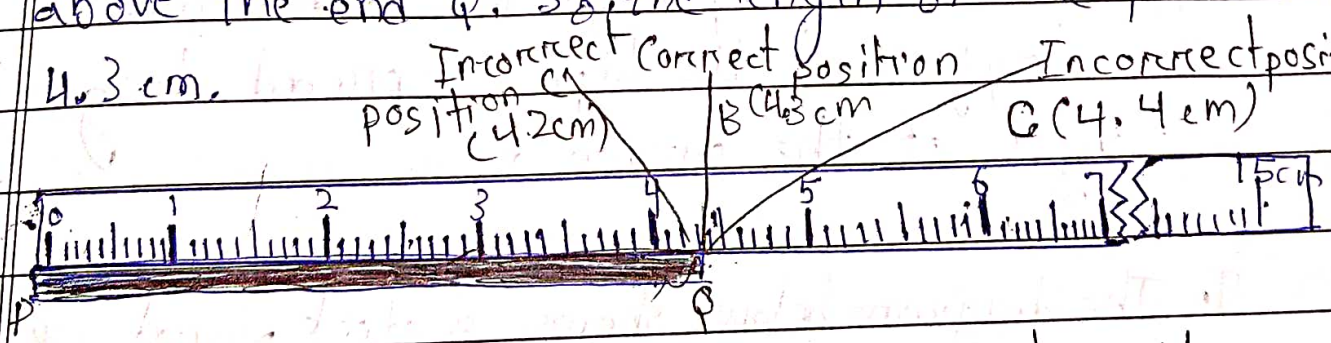
Ans- a) 12 inch = 1 ft
b) 1 ft = 30.48 cm
c) 20 cm = 0.2 m 1 cm = $\frac{1}{100}$ m, $20 \times \frac{1}{100}$ = 0.2 m
d) 4.2 m = 420 cm 1 m = 100, 4.2 × 100 cm = 420 cm
e) 0.2 km = 200 m 1 km = 1000 m, 0.2 × 1000 m = 200 m
f) 0.2 cm = 2 mm 1 cm = 10 mm, 0.2 × 10 mm = 2 mm
g) 1 yard = 0.91 m

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

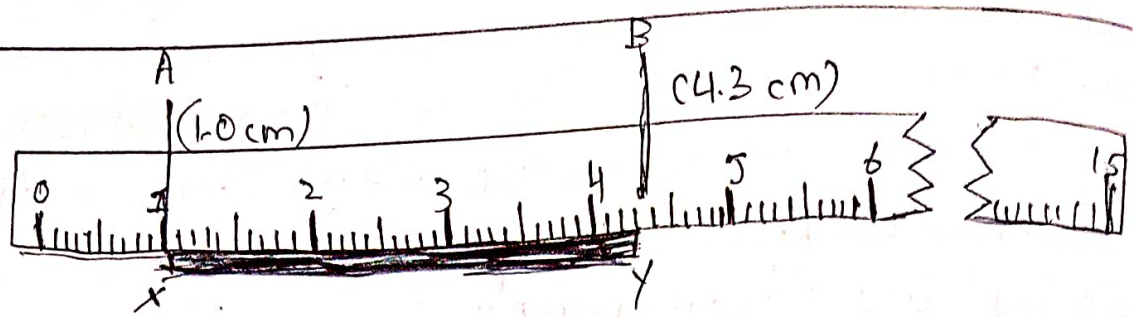
b) Explain with an example how would you use the metre ruler in part (a) if the ends of the ruler ~~are~~ are broken.

Ans-a) To measure the length of a pencil using a metre 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 the pencil is 4.3 cm.



b) 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 the object are read on the ruler.

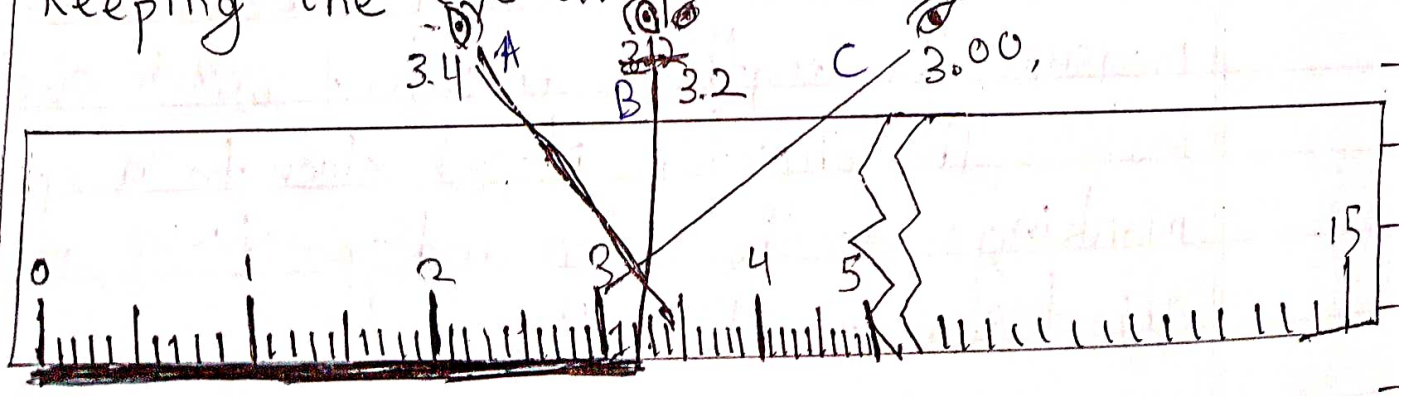


The difference of two readings gives the length of the object. In fig. the reading on ruler at the end X is 1.0cm and at the end Y is 4.3cm. So, the length of the rod XY is 4.3 − 1.0 = 3.3 cm.

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

Ans. We will use a measuring tape to measure the 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 using a metre Ruler. The length of the stick is measured keeping the eye at positions A, B and C.



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

Ans Length of stick PQ from
Position A = 3.4cm
Position B = 3.2cm
Position C = 3.00cm
No, they are not the same.

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

Ans 'B' is the correct position of the eye. Correct length of stick PQ = 3.2cm.

Q10 Define mass. State its 1) S.I, 2) C.G.S, 3) FPS 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. In short form, it is written as kg.
In C.G.S system, the unit of mass is gram. (Symbol g)
In F.P.S, the unit of mass is pound. (Symbol lb)
1 kg = 1000 g, 1 g = $\frac{1}{1000}$ kg, 1 lb = 453.59 g, 1 g = 0.4536 lb
1 kg = 2.205 lb, 1 lb = $\frac{1}{2.205}$

~~1kg=~~

11.a) 2500 kg = 2.5 metric tonne.

1000 kg = 1 metric tonne

1 kg = $\frac{1}{1000}$ metric tonne

∴ 2500 kg = $\frac{1}{1000}$ × 2500 metric tonne

∴ 2500 kg = 2.5 metric tonne

b) 150 kg = 1.5 quintal

100 kg = 1 quintal

1 kg = $\frac{1}{100}$ quintal

150 kg = $\frac{1}{100}$ × 150 quintal

= 1.5 quintal.

c) 1 lb = 4.5359 kg

1 lb = 453.59 g

= 453.59 × $\frac{1}{1000}$ kg

= ~~453.~~ 0.45359 kg

∴ 10 lb = 0.45359 × 10 kg

= 45359 kg.

∴ 10 lb = 4.5359 kg

d) 2500 g = 2.5 kg

1000 g = 1 kg

1 g = $\frac{1}{1000}$ kg

$\therefore 2500 \times \frac{1}{1000} = 2500 \times \frac{1}{1000} = 2.5 \text{ kg}$

$\therefore 2500 \text{ g} = 2.5 \text{ kg}$

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

$1 \text{ kg} = 1000 \text{ g}$

$\therefore 0.01 \text{ kg} = 0.01 \times 1000 = 10 \text{ g}$

$\therefore 0.01 \text{ kg} = 10 \text{ g}$

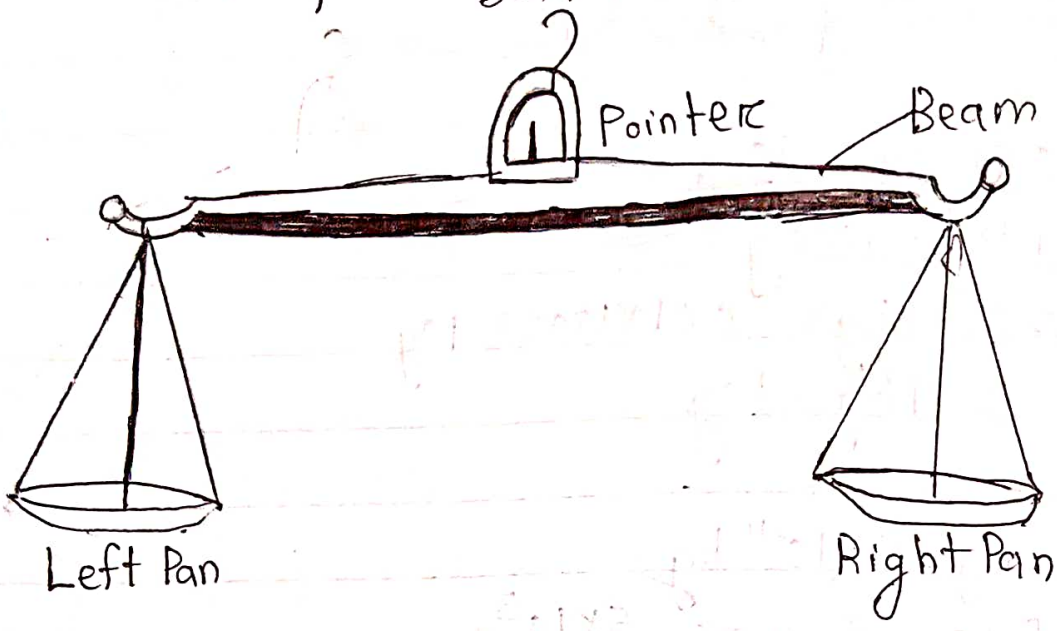
f) $5 \text{ mg} = 5 \times 10^{-4} \text{ kg}$

$5 \text{ mg} = \frac{5}{1000} \text{ g}$ or $5 \times 10^{-3} \text{ g}$

$\frac{5}{1000} \text{ g}$ or $5 \times 10^{-3} \text{ g} = \frac{5}{1000 \times 1000}$ or $5 \times 10^{-4} \text{ kg}$.

12. Name the measurement which is commonly used in measuring the mass of a body. State how is it useful.

Ans Instrument commonly used to measure the mass of a body-



-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 weight 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 is it related to i) quintal, ii) metric tonne and iii) gram.

Ans- The mass of 1 litre of water at 4°C is taken 1 kilogram.
1 quintal = 100 kg
1 metric tonne = 10 quintal = 1000 kg.

Q.14. Name ~~the~~ and define the S.I unit of time. How is it related to i) minute, ii) hours, iii) day and iv) years?

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 conseative ticks that ~~we~~ you hear from pendulum wall clock.
1 min = 60 s
1 h = 60 min = 3600 s
1 day = 24 h = 86400 s
1 year = 365 days = 3.15×10^7 s.

Q.15 Name two devices ~~th~~ used to measure short time interval of an event.

Ans- Two devices used to measure short time ~~inve~~ interval of an event are
1. Stopwatch
2. Stopclock.

16. Express in second

1) 3 minute 15 second

Ans- 3 minute & 15 second

1 minute = 60 seconds,

3 minutes 15 seconds : 60X3 + 15 : 180+15 = 195

= 195 seconds.

2) 5 hour 2 minute 5 seconds

1 minute = 60 seconds

2 minutes 5 seconds : 60X2 + 5 seconds

= 120 + 5 seconds

= 125 seconds

1 hour = 3660 seconds

5 hour = 3600X5 = 18000 second.

5 hour 2 minute 5 seconds = 18000 + 125 seconds

= 18125 seconds.

Qn. What does the temperature measure?

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

Qn: Name the

1) S.I unit and 2) one common unit of temperature write their symbols also,

Ans- The S.I unit of temperature is kelvin (symbol) common unit of temperature is degree

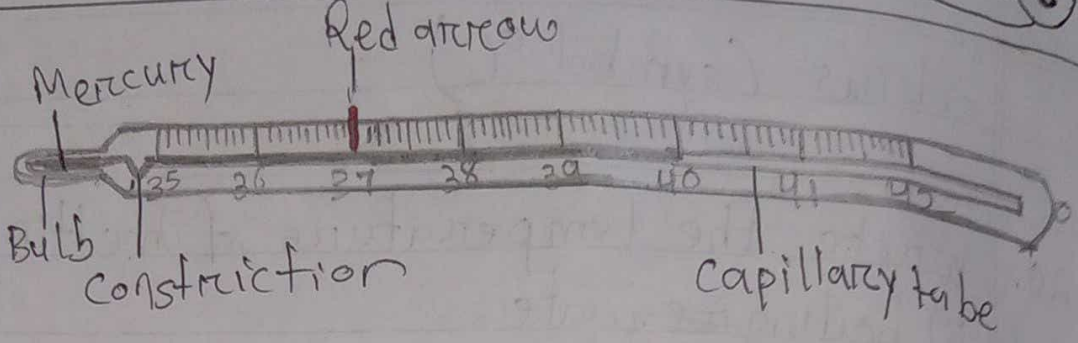
celsius (symbol °C)

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

Ans- Temperature of
1) melting ice = 0°C
2) boiling water = 100°C

21. What is a clinical thermometer? State its special feature. Draw a labelled neat diagram of a ~~clini~~ clinical thermometer showing ~~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 the constriction. This constriction prevents the mercury falling back all by itself. The temperature of a healthy person is 37°C. This temperature is marked by a red arrow.



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~~ 98.6°F.

To measure the temperature of a patient's body, it's 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 patient's temperature is above 37°C, he is said to be suffering from fever.

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

Ans- No, a clinical thermometer cannot be used to measure temperature of boiling water.

The reasons are.

1) It has a ~~large~~ 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 or surface area.

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

Ans- The S.I unit of area is square metre or metre^2, which in short form is written as m^2.

26) How are the units
1) square yard
2) hectare
3) km^2
4) cm^2
5) mm^2 related to the S.I unit of area?

Ans-1) square yard. One square yard is the area of a square of each side is 0.836 metre^2
1 square yard = 1 yard x 1 yard
= 0.9144 m x 0.9144 m
= 0.836 m^2 (or 0.84 m^2 nearly)

ii) hectare: One hectare is the area of a square of each side 100 metre. Thus,
1 hectare = 100 metre × 100 metre = 10000 metre^2 (10^4 m^2)

iii) km^2: One square kilometre is the area of a square of each side 1 kilometre. Thus,
1 km^2 = 1 km × 1 km = 1000 m × 1000 m = 1,000,000 m^2
= 10^6 m^2

iv) $cm^2 = 1\,cm^2 = \frac{1}{100} \times \frac{1}{100}\,m^2 = \frac{1}{10,000}\,m^2$

v) $mm^2 = 1\,mm^2 = \frac{1}{1000} \times \frac{1}{1000}\,m^2 = \frac{1}{1,000,000}$ (10^{-6} m^2)

27. Explain how you will measure the area of i) a square, ii) a leaf.

Ans- (i) The area of a square can be calculated by using the following formula-
1) Area of a square of side 1.
= side × side
= 1 × 1 = L^2.

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

Procedure: Place the leaf on graph paper. Draw the outline on the paper and remove it. Now count the number of complete squares. To this, add the number of incomplete squares, 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) = area of ~~the leaf one square~~ the leaf (approximate)

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