

Ch-2 Book Q/A



Q1 What is measurement? How is a measurement expressed?

ans Measurement is a comparison of an ~~unknown~~ unknown quantity & a known fixed quantity of the same kind.

The value obtained on magnitude. The magnitude of a quantity is called magnitude. The magnitude of a quantity ~~of the~~ is expressed as number in its unit.

2. State two characteristics of a unit

ans Two characteristics of a unit are

1. It should be a convenient size.
2. It must be universally accepted & its value should stay same at all places at all times.

3. Name four basic measurement in our daily life.

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

- 1 Length
- 2 Mass
- 3 Time
- 4 Temperature

Q.4 What are the SI unit of Mass, length, time and temp. write their names & 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

Q5 Define one meter, the S.I. unit of length. State its one multiple and one sub multiple.

ans Define one metre, the S.I. unit of length. State its one multiple & sub multiple

ans One metre is defined as the distance travelled by light in air in $\frac{1}{299792458}$ of a second.

Multiple of metre = kilometre
sub multiple of metre = centimetre

Q6 Convert the following quantities as indicated:

a) 12 inch = 1 ft formula = $\frac{x}{12} = \frac{12}{12} = 1$ foot

b) 1 ft = 30.48 cm formula = ft = 30.48 cm

c) 20 cm = 0.2 m 1 m = 100 cm = 20 cm = 0.2 m

d) 4.2 m = 420 cm 1 m = 100 cm = 4.2 m = 420 cm

e) 0.2 km = 200 m 1 km = 1000 m = 0.2 km = 200 m

f) 0.2 cm = 2 mm 1 cm = 10 mm = 0.2 cm = 2 mm

g) 1 yard = 0.91 m 1 yard = 0.91 m = 1 yard = 0.91 m

Q7a Describe in steps how would you measure the length of a pencil using a metre ruler. Draw a diagram if necessary.

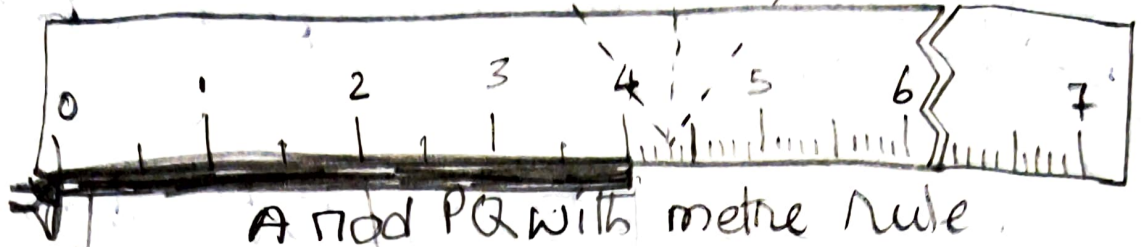
b) Explain with an how you will use the

7a)

Wrong position
4.2 cm

Correct position
4.3 cm

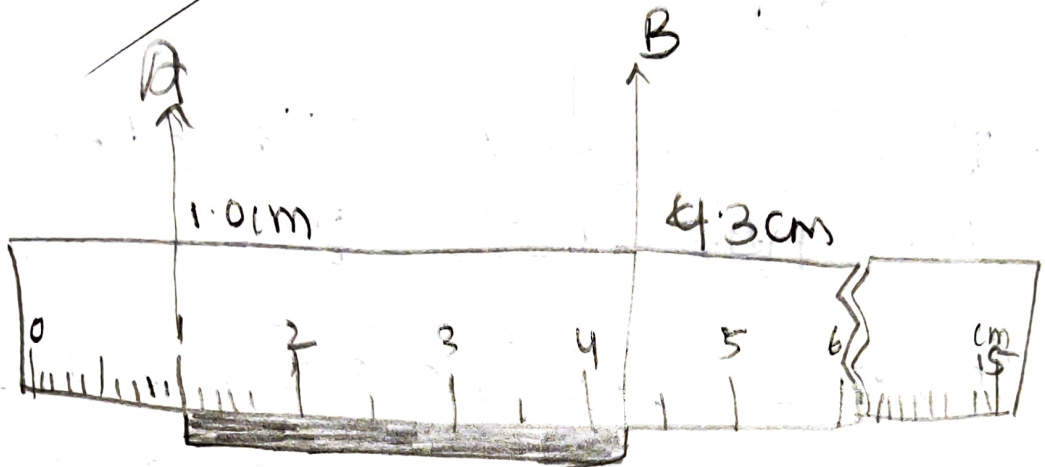
Wrong position
4.4 cm



PENCIL

A rod PQ with metre rule

7b



x = one end - 1.0 cm

y = other end - 4.3 cm

Length of rod = 4.3 cm - 1.0 cm = 3.3 cm

metre ruler in part (a) if the ends of ruler are broken.

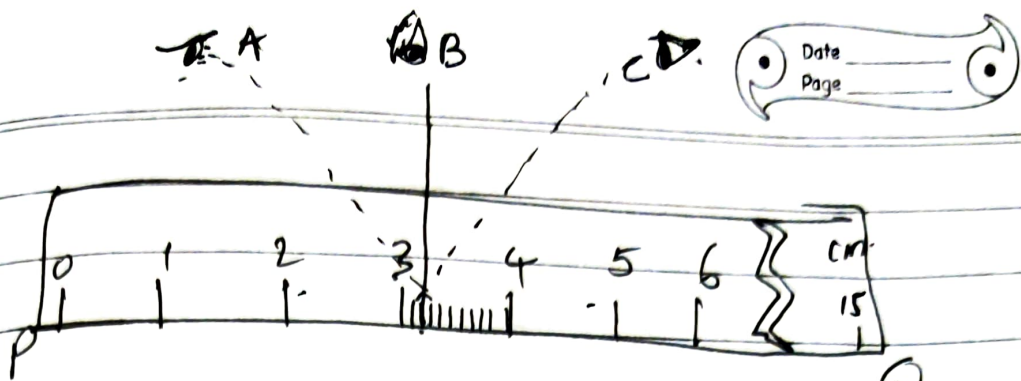
Ans (a) To measure the length of pencil with the metre ruler place the ruler & pencil by side & measure it.

(b) If the ruler is broken then we will use it from the next cm from the broken ends.

Q8 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 measuring tape to measure the perimeter of our playground. The tape is spread along the length of the curved area.

Q9 The diagram below shows a stick placed along a metre ruler. The length of the stick is measured keeping the eye at position A, B and C.



Q
 (a) write the length of stick PQ as observed for each position of the eye. Are they all same?

ans ~~write~~ length of stick PQ from
 position (a) 3.4 cm
 position (b) 3.2 cm
 position (c) 3.0 cm

(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 is = 3.2 cm

Q10. Define mass. State its (i) SI (ii) CGS and (iii) FPS units. How are they related

Ans The mass of a body is the quantity of matter contained in it. The SI unit of mass is kilogram. In short

form it is known as 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)

Q11 ~~Convert~~ Convert the following quantities as indicated

a) $2500 \text{ kg} = \underline{2.5} \text{ metric tonne / tonne} = 1000 \text{ kg}$

b) $150 \text{ kg} = \underline{1.5} \text{ quintal / quintal} = 100 \text{ kg}$

c) $10 \text{ lb} = \underline{4.53592} \text{ kg}$ or $0.453592 \text{ kg} = 1 \text{ lb}$

d) $250 \text{ g} = \underline{0.25} \text{ kg}$ $1000 \text{ g} = 1 \text{ kg}$

e) $0.01 \text{ kg} = \underline{10} \text{ g}$ $1 \text{ kg} = 1000 \text{ g}$

f) $5 \text{ mg} = \underline{5 \times 10^{-6}} \text{ kg}$ $1 \text{ mg} = 10^{-6} \text{ kg}$

Q12 Name the instrument which is commonly used to measure the mass of a body. State how it is used?

Ans Instrument 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

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 standard weights give the mass of the given body.

Q13 Define one kilo gram the S.I. unit of mass how is it related to quintal, metric tonne & gram.

ans The mass of 1 litre of water at 4°C is taken as 1 kilogram

quintal = 100 kg
metric tonne = 1000 kg
gram = 10^{-3}

Q14 Name & define the S.I. unit of time. How is it minute, hour, day & year

ans The S.I. unit of time is second. In short form we write it as 's'. One second is the time between two consecutive ticks that you hear from

per day/10ms.

1 min = 60s

1 hour = 60 min = 3600s

1 day = 24 h = 86400s

1 year = 365 days = 3.15×10^7 s

Q15 Name two devices used to measure the short time interval of an event

ans 2 devices used to measure the time interval of an event are

① stop watch

② stop clock

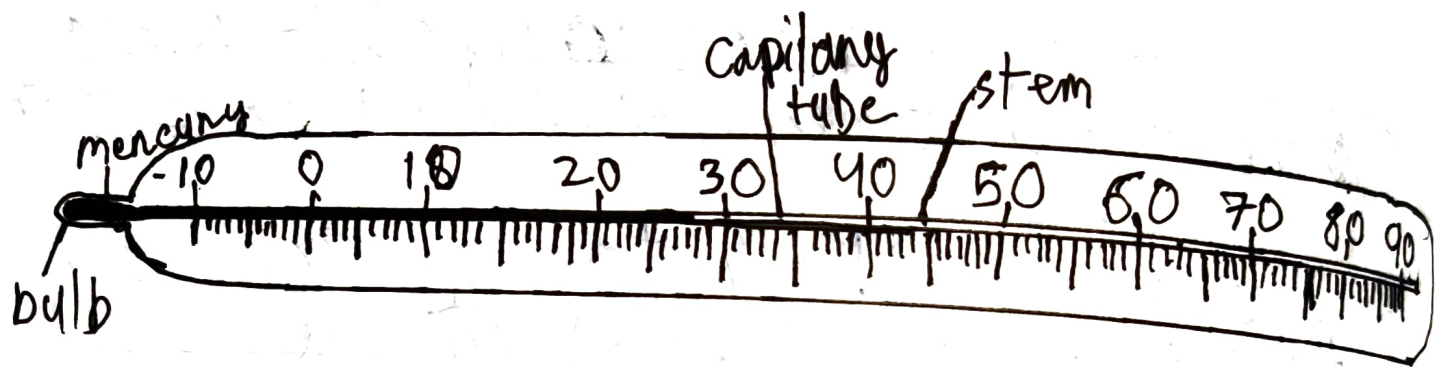
Q16 Express in seconds

a) 3 min 15 sec

b) 5 hours 2 min 5 sec

ans a) 3 min = 180 sec
+ 15 sec

195



$$\begin{aligned} \text{⑥} \quad \text{Shawn} &= 18000 \\ \text{Zmin} &= 120 \\ &\quad \underline{\quad \quad 5} \\ &= 18125 \end{aligned}$$

Q17 What does temperature measure?

Ans Temperature measure the degree of hotness or coldness of a body.

Q18 Name the

1. S.I. unit &

2. one common unit of temperature.

Ans The S.I. unit is kelvin (K)

The common unit is degree centigrade or (°C)

Q19 Name the instrument used for measuring of the temperature of a person. draw its neat labelled diagram.

Ans The temperature of a person is measured by a thermometer.

Q20 Write the temperature of (i) melting ice
(ii) boiling water.

Ans The temperature of

① melting ice = 0°C

② boiling water = 100°C

Q21 What is a clinical thermometer? state its special features, draw a neat diagram of it showing the range of temperature.

Ans Doctors use a special thermometer called the clinical therm for measuring the temperature of the patient's body. This thermometer has the mark from ~~38 $^{\circ}\text{C}$ - 43 $^{\circ}\text{C}$~~ 35°C - 42°C . It has a slight bend or kink in the patient's stem just above the bulb. This kink is called a constriction. This constriction prevents temperature is marked by a red column.

Q22 What is the normal temperature of a human body? How is it indicated in clinical thermometers?

ans Normal temperature of a human body is 37°C or 98.6°F . Temperature of a patient body is measured by placing it under the arm pit or under the tongue then it's taken out & the reading is taken.

Q23 Can a clinical thermometer be used to measure boiling water temperature?

ans No, clinical thermometer can't be used to measure boiling water because it has

- 1) low temperature range
- 2) it can break on excess cooling & heating.

Q24 Explain the term area of a surface.

Q25 The S.I. unit of area is meter square total surface occupied by an obj; it is called area or surface area

Q25 Name the S.I. unit area is square for fine it

ans The S.I. unit of area is square metre of m^2 which in short form is written as m^2 .

Q26 How are the units

1 yard²

2 hectare

3 km²

4 cm²

5 mm²

related to the S.I. unit of area?

ans ① 1 yard \times 1 yard = 0.9144 m \times 0.9144 m
= 0.836 m²

② 10000 m²

③ 1000 m \times 1000 m = 10⁶ m²

④ 100 m \times 100 m = 10000 m² = 10⁴ m²

⑤ 1 mm² = 10⁻⁶ m²

Q27 Explain how you will measure the
measure the area of (a) square (ii) ~~area~~
a leaf.

ans) The area of a square can be calculated
by using the following formula = side x side
side x side = side²

② The area of a leaf is obtained by
using a graph paper. By tracing
its outline on the paper & counting
all full, half & more than half squares
consider all full, half & more than half squares
as 1 square of 1mm. & ignore less than half squares
So Area = (no of complete half +
more than half squares) x area of 1
square.