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Std. VII Div. D

WORKSHEET Chapter 1

1. Write true or false for each statement

a) $1\ g\ cm^{-3} = 1000\ kg\ m^{-3}$. True

b) The density of water is maximum at 4°C. True

c) The speed $5\ ms^{-1}$ is less than $25\ km\ h^{-1}$. True

d) The S.I unit of speed is ms^{-1}. True

2. Fill in the blanks.

a) The S.I unit of density is $kg\ m^{-3}$.

b) $1\ g\ cm^{-3} =$ 1000 $kg\ m^{-3}$.

c) $36\ km\ h^{-1} =$ 10 ms^{-1}.

d) Distance travelled $d =$ speed v x time t.

3. Short answer type questions

1) Define the term measurement.

Ans) The terms measurement means the comparison of a

given unknown ~~unknown~~ quantity with the fixed known quantity of a same kind called the unit.

2) Define the term length. What is its S.I unit?

Ans) Length is the measurement between two points. Its S.I unit is metre (m).

3) Define the term mass. What is its S.I unit?

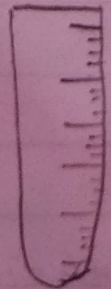
Ans) Mass is the measurement ~~between~~ of a contained quantity. Its S.I unit is kilogram.

4) How will you determine the volume of a cuboid? Write the formula you use.

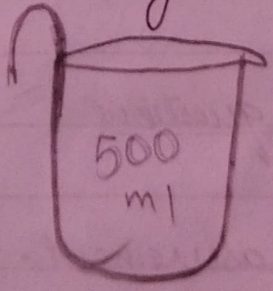
Ans) Volume of a cuboid = length × breadth × height.

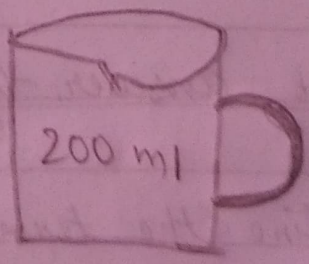
5) Name two devices which are used to measure the volume of an object. Draw their neat diagrams.

Ans)

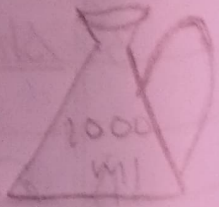


Measuring cylinder





Measuring beakers



The two devices which are used to measure are measuring cylinders and measuring beaker.

6) Find out the relation between m^3 and cm^3?

Ans) $1\ m^3 = 1\ m \times 1m \times 1m$
$= 100\ cm \times 100\ cm \times 100\ cm$
$= 1,00\ 0,000\ cm^3$
$= 10^6\ cm^3$.

7) The density of a ~~bar~~ brass is 8.4 g cm^3." What do you mean by the statement?

Ans) The statement means one cubic centimetre volume of brass has mass of 8.4 g.

8) Arrange the following substances in order of the increasing density:
a) iron b) cork c) brass d) water e) mercury.

Ans) b) cork
d) water
a) iron
c) brass
e) mercury.

9) How does the density of water changes when:
a) it is ~~water~~ heated from 0°C to 4°C
b) it is heated from 4°C to 10°C.

(Ans) a) water contracts on heating from 0°C to 4°C and expands on heating above 4°C.
b) The density of water is maximum at 4°C. It decreases when it is cooled from 4°C to 0°C. or heated above 4°C.

10) A car travels with a speed 12 ms^{-1} while a scooter travels with a speed 36 $km\,h^{-1}$. Which of the two travels faster?

(Ans) Speed of car = 12 ms^{-1}.
Speed of scooter = 36 $km\,h^{-1}$.

1 km = 100 m
1 hour = 3600 s.

$$\text{speed of scooter} = \frac{36 \times 1000}{3600} = 10\ ms^{-1}$$

∴ As speed of car is 12 ms^{-1}
Speed of scooter = 10 ms^{-1}
Car travels faster than scooter.

11) Find out the relation between m/s and km/h.

~~1 km = 1 km / 1h~~

Ans) $1\ km\ h^{-1} = \frac{km}{1h} = \frac{1000m}{3600s} = \frac{5\ m}{18\ s}$

$= \frac{1}{3.6}\ m\ s^{-1}$ or

$3.6\ km\ h^{-1} = 1\ ms^{-1}$.

12) What is the S.I unit of volume and density? State other two ~~similar~~ smaller units of volume?

Ans) S.I unit of volume = cubic meter (m^3)
S.I unit of density = kg/m^3.
Two smaller units of volume are cubic centimeter and cubic decimetre.

13) Covert 72 km/h to m/s.

Ans) $1\ km\ h^{-1} = \frac{1km}{1h}$

$72\ km\ h^{-1} = \frac{72km}{1h} = \left(\frac{7200\ m}{3600\ s}\right) = 20\ m/s$.

14) A rectangular park is of length 30 m and breadth 5 km. Find the area of the rectangular park.

Ans) Area = $l \times b$
= 30 m × 5 km (5 km = 5000 m)
= 30 m × 5000 m
= 1,50,000 m = 150 km

15) By what apparatus can we measure volume. Name any two.

Ans) Measuring cylinder and measuring beaker are the apparatus by which we can measure the volume.

4. Long Answer type questions:

1) Describe the method in steps to find the area of an irregular lamina using a graph paper.

11) How can you determine the volume of an irregular solid (say a piece of brass)? Describe in steps with neat diagrams.

111) The mass of a lead piece is 115 g. When it is immersed into a measuring cylinder, the water level rises from 20 ml mark to 30 ml mark.

Find :- 1) the volume of the lead piece.
4) the density of the lead in kg m^{-3}.

IV) How to determine the density of a liquid?

Answer

1) • Place an irregular object (lamina) on a graph sheet.
• First count the no. of squares which are full and mark with (✓).
• Then count the no. of squares which are half or more than half and mark with (•).
• Ignore the less than half squares.
• The sum of the full and half or more than half gives the approximate area of the lamina.

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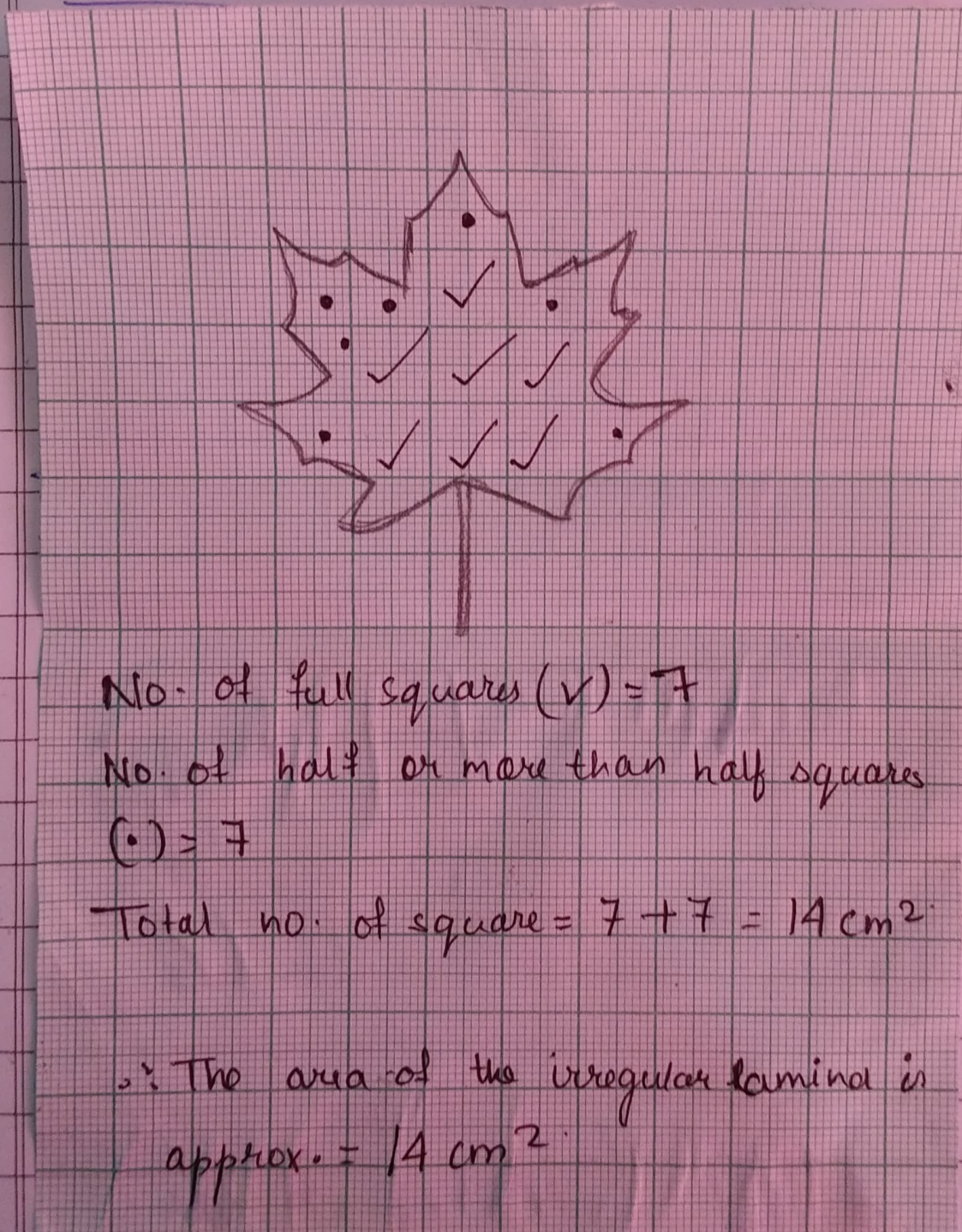
Find:- 1) the volume of the lead piece.
4) the density of the lead in kg m^{-3}.

iv) How to determine the density of a liquid?

Answer

i)



No. of full squares (✓) = 7

No. of half or more than half squares (•) = 7

Total no. of square = 7 + 7 = 14 cm^2.

∴ The area of the irregular lamina is approx. = 14 cm^2.

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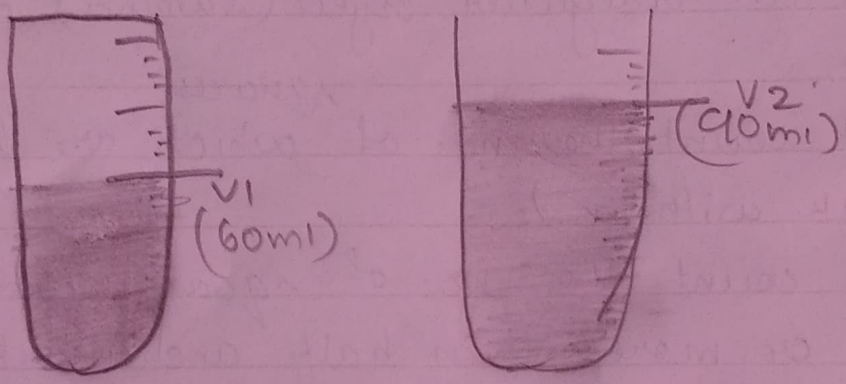
ii) Aim: To measure the piece of brass.

Materials: piece of brass, measuring cylinder, thread, water.

Procedure: Place a measuring cylinder with water filled in half. Note the measurement V_1. Tie the piece of brass with thread and put it in the cylinder. ~~Note~~ Note the reading as V_2.



$V_1 = 60\ ml$

$V_2 = 90\ ml$

Water displaced $= V_2 - V_1$

$= 90\ ml - 60\ ml$

$= 60ml\ /\ 60\ cm^3.$

iii) i) Given, $M = 115\ g$

$V_1 = 20\ ml \quad V_2 = 30\ ml$

$V = V_2 - V_1$

$= 30\ ml - 20\ ml$

$= 10\ ml\ /\ 10\ cm^3$

ii) Density of lead piece $d = \frac{M}{V}$

$= \frac{115}{10\ cm^3} = 11.5\ gm^{-3}$ $(1 gm^{-3} = 1000 kg^{-3})$

$= 11.5 \times 1000 = 11500\ kgm^{-3}$ $(1 gm^{-3} = 1000 kg^{-3})$

iv) Mass the fluid, find its volume and divide mass by volume.

Apparatus:- Measuring cylinder, beam balance

Procedure = Measure the mass of the empty cylinder. Pour water into it and take the readings. Measure the mass of the cylinder with water in it. Calculate the mass = ~~m2 m1~~ $m_2 - m_1$

Calculate the ~~desi~~ density of liquid = mass of liquid / volume.