uniform concentration. To the given unknown solution, add double distilled water and shake well. Switch on the instrument; turn the gas supply on and light the gas at the burner. Adjust the air supply from the compressor to 10 lbs/sq inch using pressure regulator knob. Place the sodium filter (589nm) in position. Now dip the capillary tube in a cell containing double distilled water. The stream of air atomized as a fine mist draws up the liquid. Regulate the gas supply so that the colour of the flame completely turns to blue. Adjust the flame photometer to zero by means of zero control knob. Feed the various sodium solutions prepared, through the flame one by one including the unknown solution. Note down the flame photometer readings. Plot a graph of flame photometer readings against the volume of the solution get the calibration curve. Using the curve obtained find out the volume of the unknown solution containing sodium and calculate the amount of sodium in it.

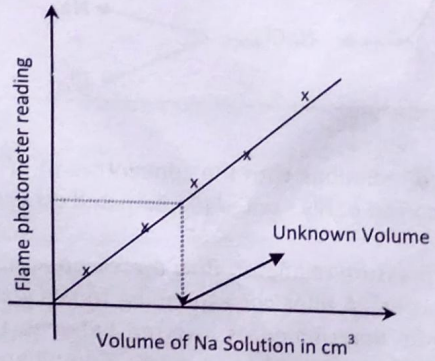
Calculation:

Amount of NaCl in the given 100cm^3 solution= 2.5 g

58.5 g of NaCl contains 23 g of Na.

Therefore, 1 cm^3 of the given stock solution contains = $\frac{wx23}{58.5x100}$ = 'A'g of Na

From the graph calculate the volume of unknown solution and amount of sodium present in the unknown solution.



Model Procedure /Flow Chart:

(1) Transfer 2, 4, 6, 8, and 10 cm^3 of standard sodium solution into different 25 cm^3 Volumetric flasks from burette

(2) makeup all solution upto mark using double distilled water

(3) Add double distilled water to given sol and shake all the flasks well

(4) Test all the solutions one by one using the flame photometer including the unknown solution

(5) plot a graph for the flame photometer readings against vol. of solution and using it find Vol. of unknown sol'n

(6) and find amount of Na in it.

Model Calculation:

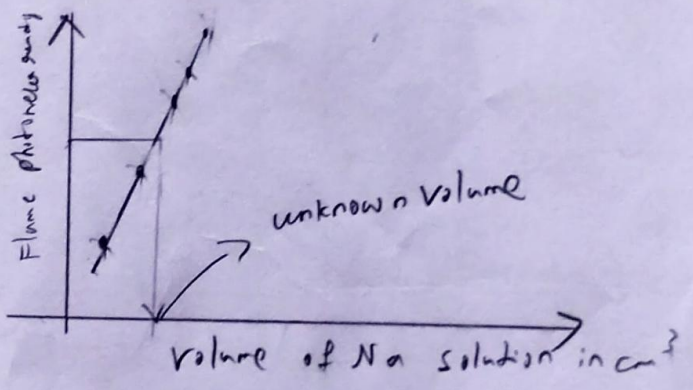
Amount of NaCl in given 100cm³ solution = 2.5g

58.5g of NaCl → 23g of Na

$1\,cm^3$ of NaCl = $\frac{23 \times 2.5}{58.5 \times 100} = 0.00983g$ of Na

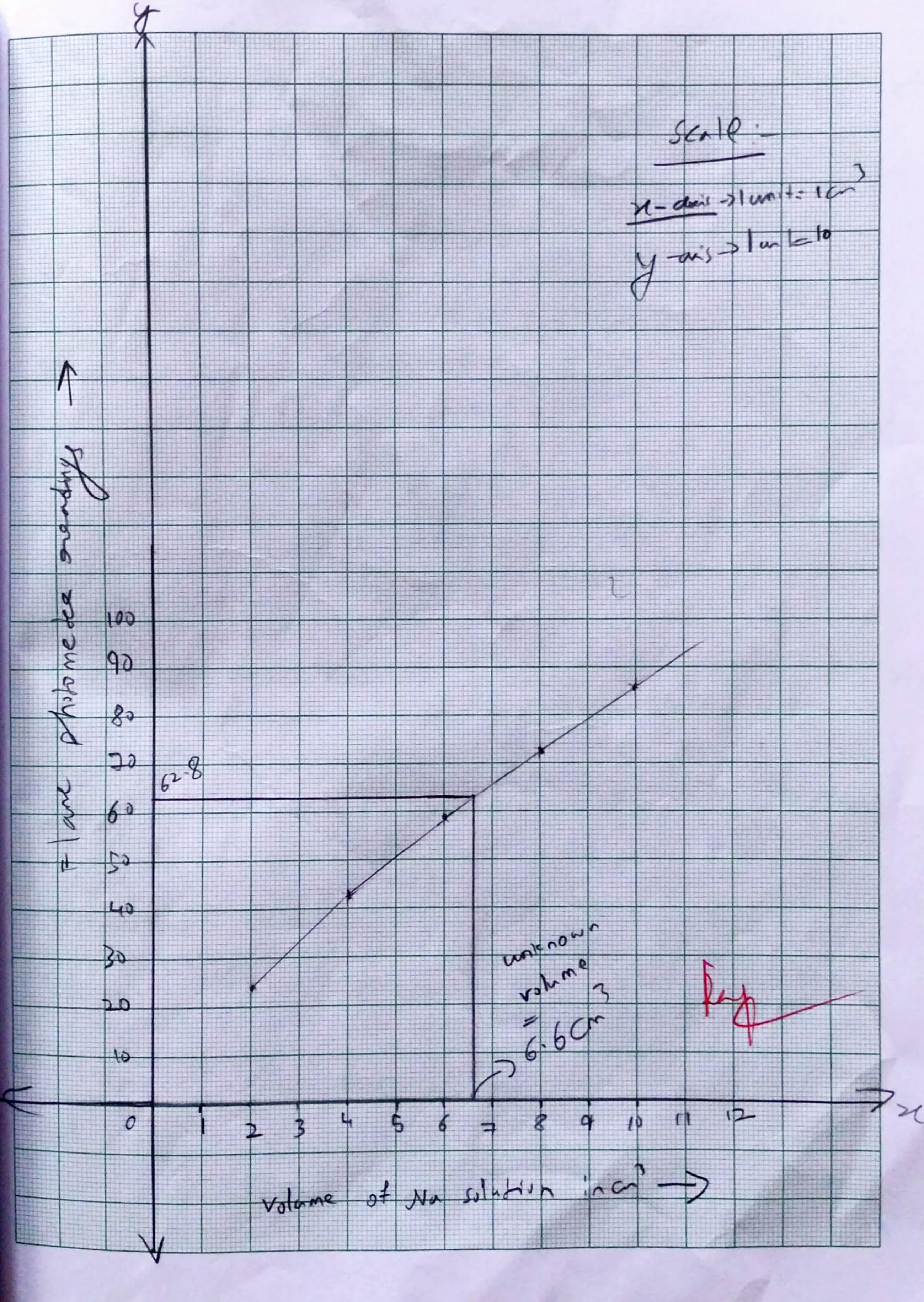
from the graph find volume of unknown solution and multiply by 0.00983g to get weight of Na in it

Model graph:



Tabulation:

Sl. No.	Vol. of NaCl in cm^3	Flame Photometer Reading	Wt. of Sodium in mg	
1.	2	24.0	0.0196	19.6 mg
2.	4	42.8	0.0393	39.3 mg
3.	6	58.1	0.05897	58.97 mg
4.	8	72.7	0.0786	78.6 mg
5.	10	85.2	0.09829	98.29 mg
6.	Unknown	62.8	0.06487	64.87 mg



Scale :-
x-axis → 1 unit = 1 cm³
y-axis → 1 unit = 10
Flame photometer readings →
Volume of Na solution in cm³ →
62.8
unknown volume = 6.6 cm³
0
1
2
3
4
5
6
7
8
9
10
11
12
10
20
30
40
50
60
70
80
90
100
y
x

Calculation:

Amount of Nacl in given $100cm^3$ solution = 2.5g

68.5g of Nacl → 23 g of Na

$1cm^3$ of solution → 9.8298 mg of Na

$2cm^3$ of Nacl = 2 × 9.829 = 19.6 mg

$4cm^3$ of Nacl = 4 × 9.829 = 39.3 mg

$6cm^3$ of Nacl = 6 × 9.829 = 58.97 mg

$8cm^3$ of Nacl = 8 × 9829 = 78.6 mg

$10cm^3$ of Nacl = 10 × 9829 = 98.29 mg

$6.6cm^3$ of Nacl = 6.6 × 9.829 = 64.87 mg

Inference:

The Concentration of sodium in the given solution is comparatively high and the given solution also contains good amount of sodium which can be extracted Lasmiz and be used.

Relevance to Society & Environment:

· It is a very simple method and effective. It can also be done using very low concentration. It is used to estimate elements which are analysed. It is used in various industries like chemical, soil, ceramic, agro, bio industries. Hence this is used in estimation of various metals like Li, Caete

Report:

1. Volume of unknown solution = 6.6 .... cm^3
2. Amount of Sodium in the given unknown solution = ~~0.0649~~ 64.9 mg ..... mg.

Evaluation of experiment - 07		
Components	Marks	
	Max	Obtained
Model Procedure, Model Graph & Calculation	16	16
Expected Volume & Execution	20	19
Inference & Societal Relevance	04	03
Total	40	38
Signature of Teacher		