**Question 1.**

**Part A**

Angle i X (cm) Y (cm) x/y Sin i

10ᵒ 0.8 6.4 0.125 0.1736

20ᵒ 1.6 6.6 0.246 0.3420

30ᵒ 2.4 6.8 0.360 0.5000

40ᵒ 3.1 7.0 0.443 0.6428

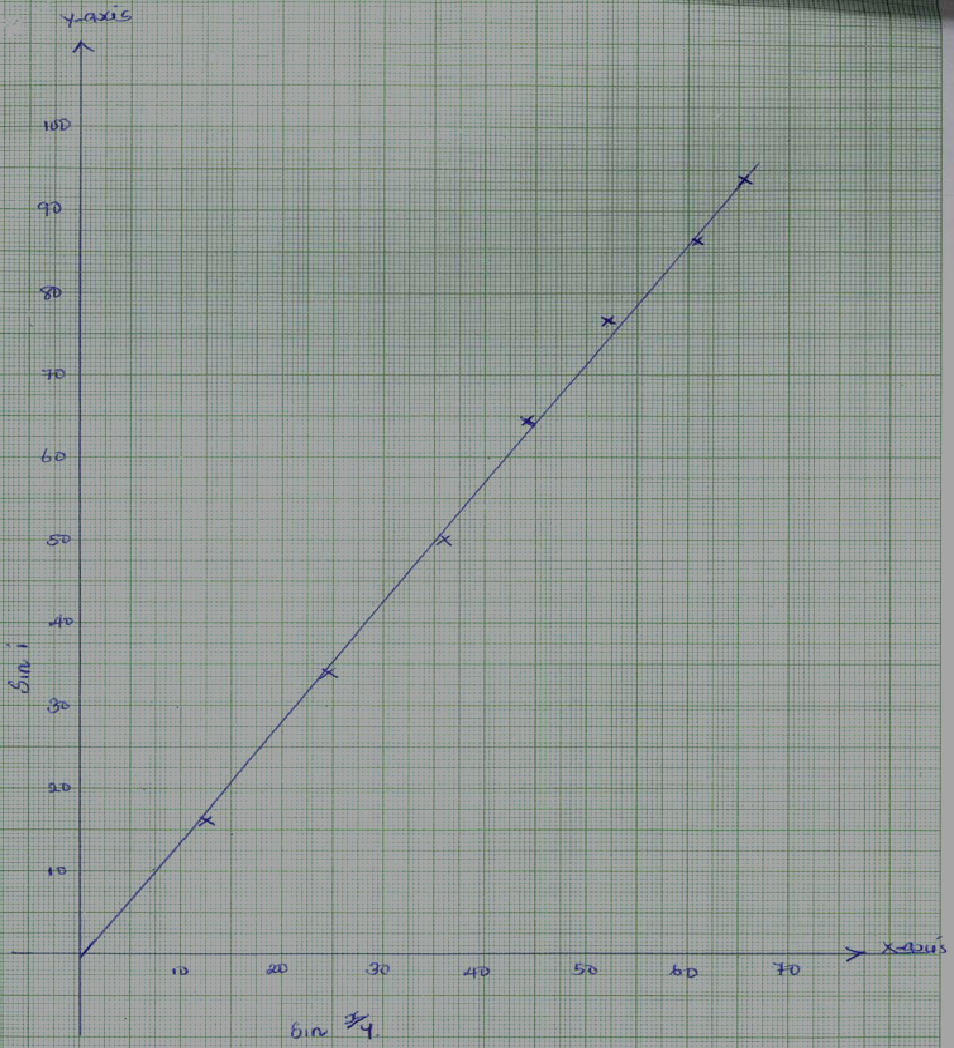
50ᵒ 3.9 7.4 0.527 0.7660

60ᵒ 4.9 8.0 0.612 0.8660

70ᵒ 5.6 8.5 0.659 0.9397

Total 2mks 2mks 2mks 2mks

i) graph



ii) slope =sin i

x/y

= 0.78 – 0.25

0.55 – 0.18

= 0.53

0.37= 1.432

**Part B**

a) E = 1.6V +/- 0.1

b) V= 1.4V +/- 0.1

I=0.1 +/- 0.1

C) E= V+ Ir

1.6=1.4+ 0.1r

r= 2Ω

**QUESTION 2**

i) a) 2.24cm ±0.1

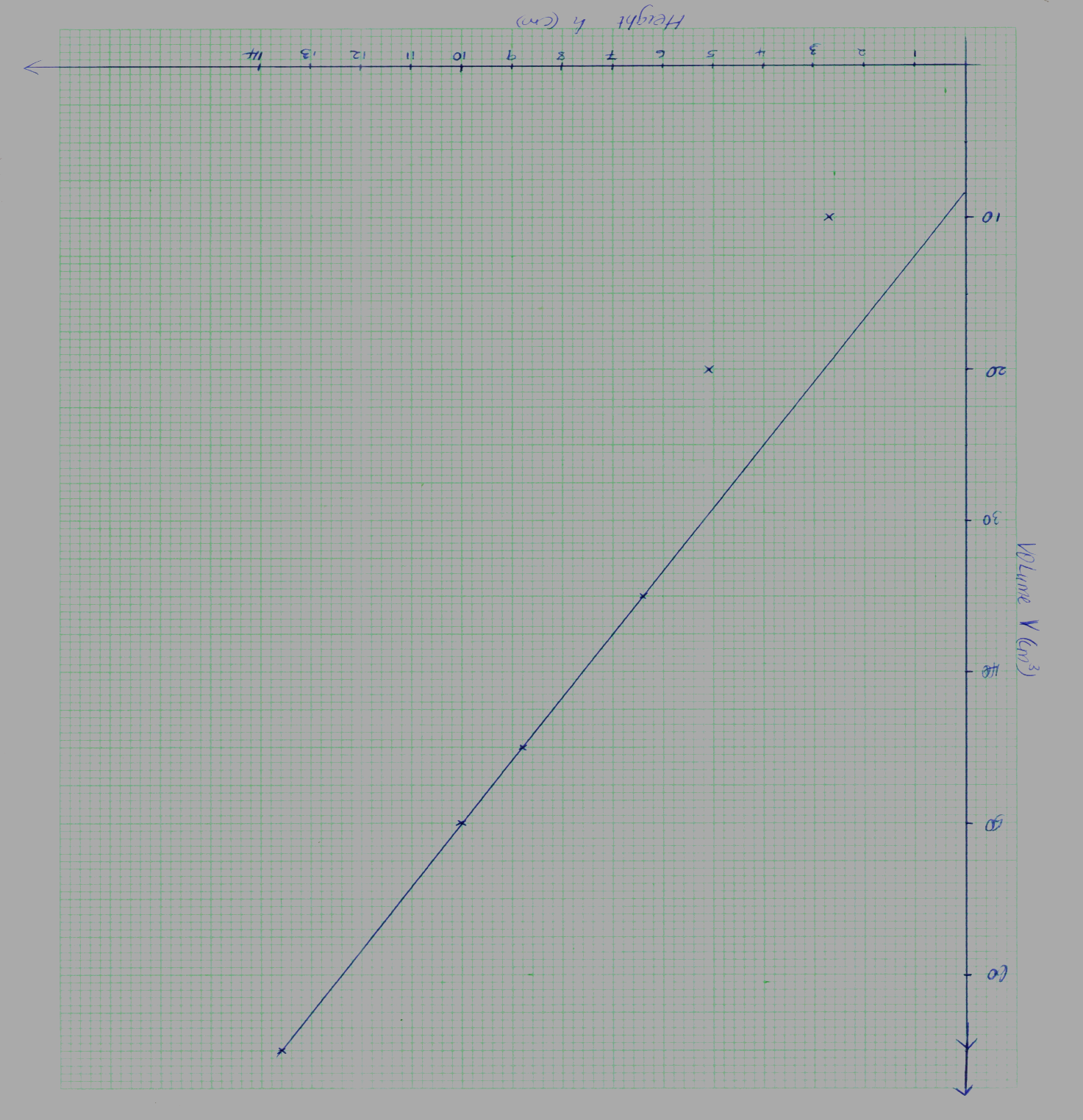
b) H=14.9cm ± 0.1

ii) 24.7g ±1

|  |  |
| --- | --- |
| **Volume of water in cm3/ml** | **Height h (cm) (**±𝟎.𝟖) |
| 10  20  35  45  50  65 | 2.7  5.1  6.4  8.8  10.0  13.6 |

Each ½mk total 3mks (3mks)

v) Graph paper



vi) Gradient = 𝑐ℎ𝑎𝑛𝑔𝑒𝑖𝑛**𝑦/𝑐ℎ𝑎𝑛𝑔𝑒** 𝑖𝑛 𝑥

= 62−**40/13**−78 √1

= 225.2√1

= 4.231cm2 without unit ½mk

vii) L= 86cm ±1.0

viii) H{ 2𝐿2/2500−5} = 14.9{ 2×(86)2 /2500−4.231

= 14.9 [14792/2500−4.231 = 149{5.9168 – 4.231}

= 14.9×1.6858 = 25.11842√1𝑚𝑘

ix) Density = 𝑚𝑎𝑠s/𝑣𝑜𝑙𝑢𝑚𝑒 = 24.7/25.11842 = 0.9833g/cm3