

**KWIMBA DISTRICT COUNCIL
FORM FOUR MOCK EXAMINATION 2023
031/2A PHYSICS 2AMARKING SCHEME**

1. The value of $L_o = 50\text{cm}$
(c) Table of results

Y (cm)	X (cm)
36.3	5
37.9	10
39.3	15
42.3	25
43.8	30

01 @ = 05 marks

(d) Graph: **Total score = 7.5marks**

- Title = **01 mark**
- Scale = **01marks**
- Axes = **01marks**
- Transfer of points = **2.5marks**
- Best line = **01mark**
- Slope indication = **01 mark**

(e) slope = $\frac{\Delta y}{\Delta x}$ ($\frac{1}{2}$ marks)

$$S = \frac{(44.6 - 35)\text{cm}}{(32 - 1)\text{cm}} \text{ (01 mark)}$$

$$S = \frac{9.6}{31} \text{ (} \frac{1}{2} \text{ marks)}$$

$$S = 0.31 \text{ (01 mark)}$$

(f) mass, M_o of the meter rule

$$M_o = \frac{50(1-S)}{S} \text{ (} \frac{1}{2} \text{ marks)}$$

$$= \frac{50(1-0.31)}{0.31} \text{ (01 mark)}$$

$$= \frac{50 - 15.5}{0.31}$$

$$= 111.3\text{g (01 mark)}$$

(g) value of y, when $X = 0$

The value of $y = 34.8\text{cm}$

(01 mark

Therefore $y_0 = 34.8\text{cm} = 35\text{cm}$

(h) From

$$M_o = \frac{b}{L_o}(M_o + 50)$$

$$b = \frac{M_o L_o}{M_o + 50} \text{ (} \frac{1}{2} \text{ marks)}$$

$$= \frac{111.3 \times 50}{111.3 + 50} \text{ (} \frac{1}{2} \text{ marks)}$$

$$= \frac{5565}{161.3}$$

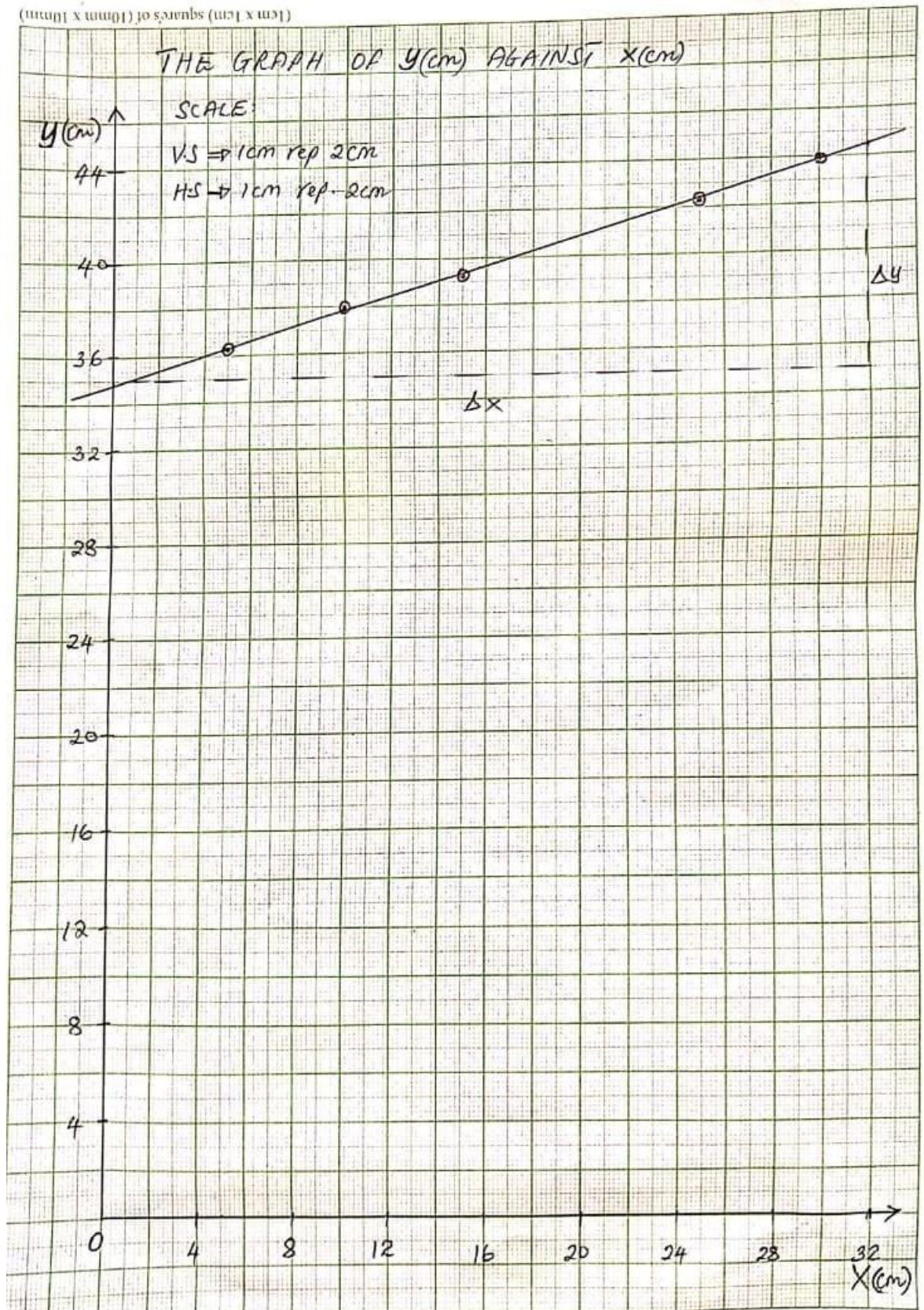
$$= 34.5\text{cm} = 35\text{cm} \text{ (01 mark)}$$

(i) Value of 'b' represents the y - intercept because they have the same value **(02 marks)**

(j) **Parallax error** in measuring lengths **(01 marks)**

Precaution: take readings from correct position perpendicular to the scale of the instrument. **(01 mark)**

(1cm x 1cm) squares of (10mm x 10mm)



2. Table of results

θ°	n	$\frac{1}{\theta}$
90	3	0.011
72	4	0.014
60	5	0.017
45	7	0.022
30	11	0.033

00½ @ = 05marks

(f) Graph: **Total score = 07½marks**

- Title = **01 mark**
- Scale = **01marks**
- Axes = **01marks**
- Transfer of points = **02½marks**
- Best line = **01mark**
- Slope indication = **01 mark**

(g) (i) slope = $\frac{\Delta n}{\Delta \frac{1}{\theta}}$ **(1 mark)**

$$= \frac{10.5 - 1.5}{(0.032 - 0.007)} \quad \text{(1 mark)}$$

$$= \frac{9.0}{2.5}$$

$$= 360^\circ \quad \text{(1 mark)}$$

(ii) when $\frac{1}{\theta} = 0.019$, $n = 6$ **(01½mark)**

(iii) the value of y – intercept = -1 **(1mark)**

(iv) Relating n and $\frac{1}{\theta^\circ}$, where slope = 360

Consider equation of form

$$Y = mx + c. \text{ then } \quad \text{(1mark)}$$

$$Y = n, x = \frac{1}{\theta^\circ}, c = -1 \text{ and } M = 360^\circ \text{(1mark)}$$

There for

$$n = 360 \times \frac{1}{\theta} - 1 \quad \text{(1 mark)}$$

$$n = \frac{360^\circ}{\theta^\circ} - 1 \quad \text{(01 mark)}$$

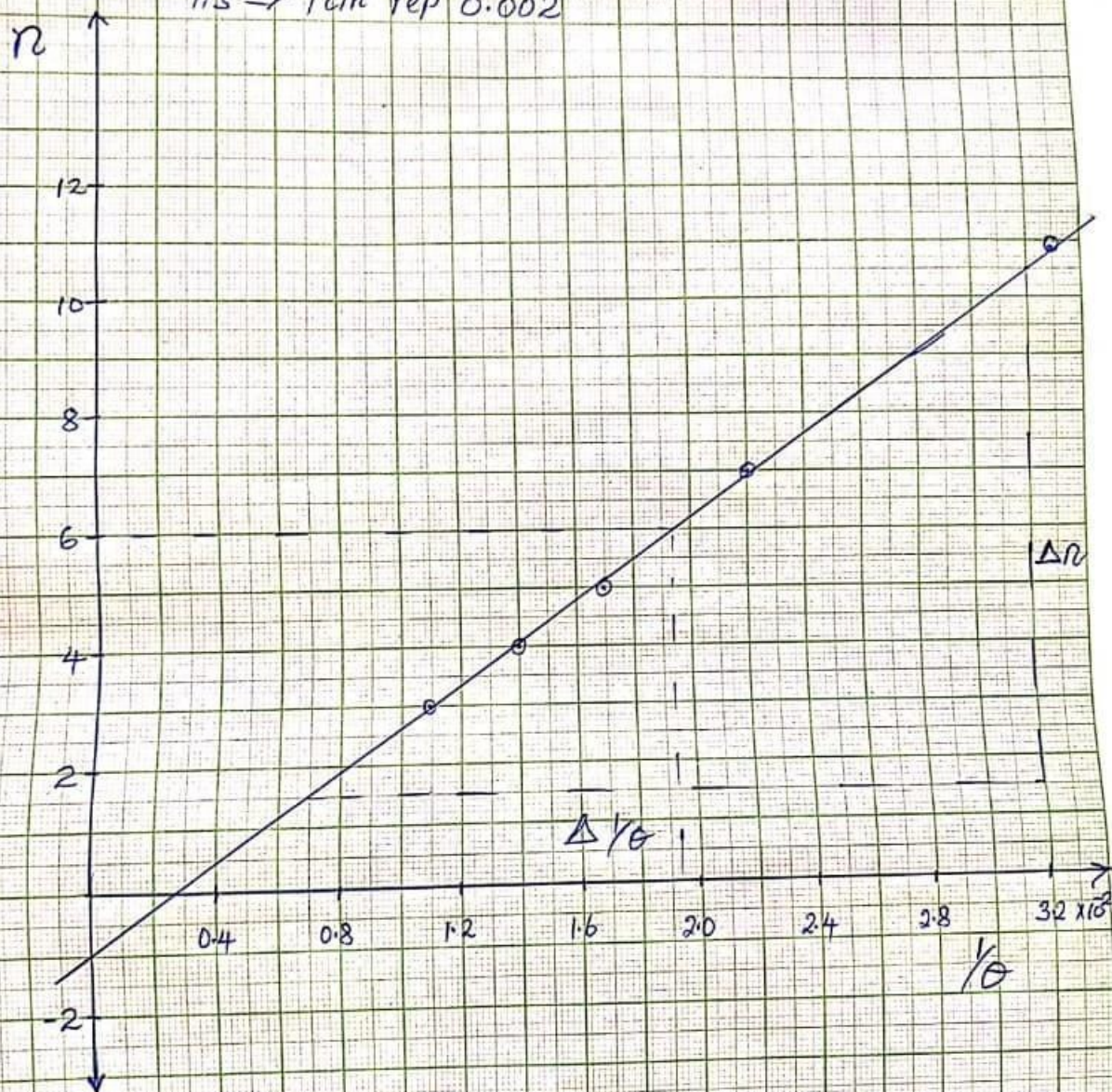
(h) (i) number of images increases **(01½ marks)**

(ii) Number of images becomes infinite **(01½ marks)**

THE GRAPH OF n AGAINST $1/\theta$ SCALE

V.S $\Rightarrow$ 1cm rep 1

H.S $\Rightarrow$ 1cm rep 0.002



1cm square's of (10mm x 10mm)