# HOW PLOT GRAPH

## HOW TO PLOT A GRAPH IN MEDICAL PHYSICS LAB

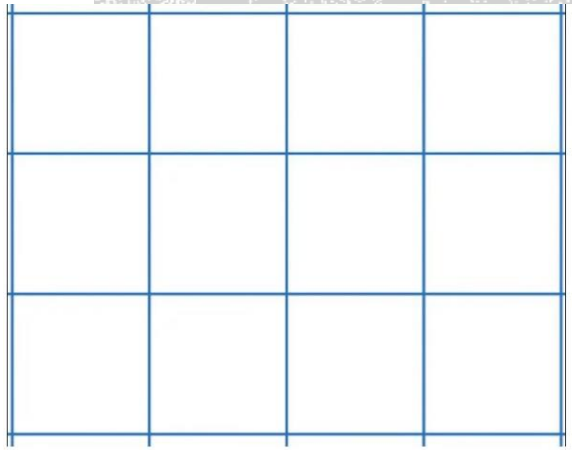
# TYPYS OF GRAPH PAPER

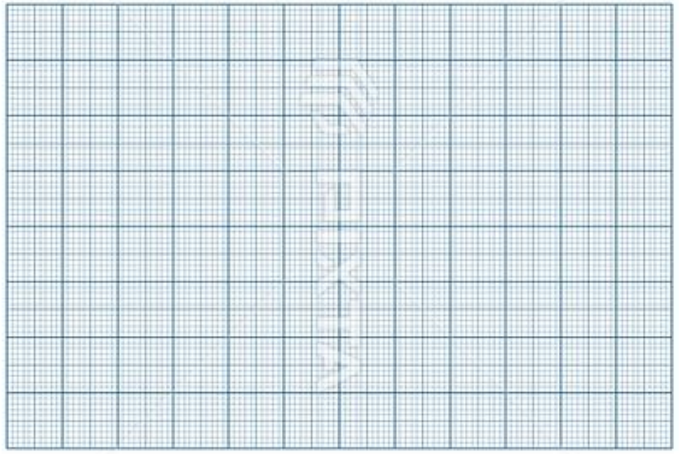
1 - Statistical  graph paper.

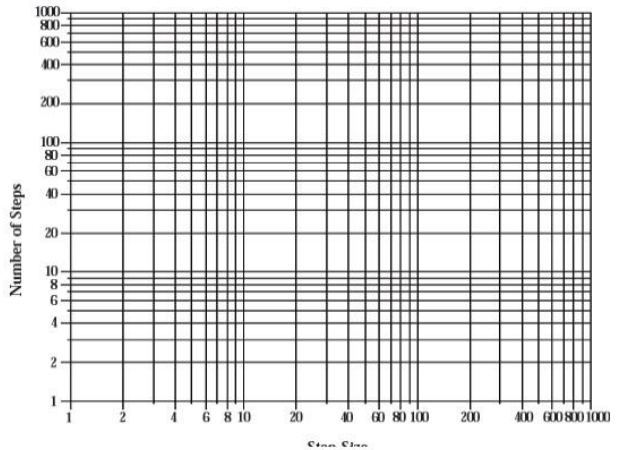
2 – Normal graph paper.

3 - Logarithmic graph paper.

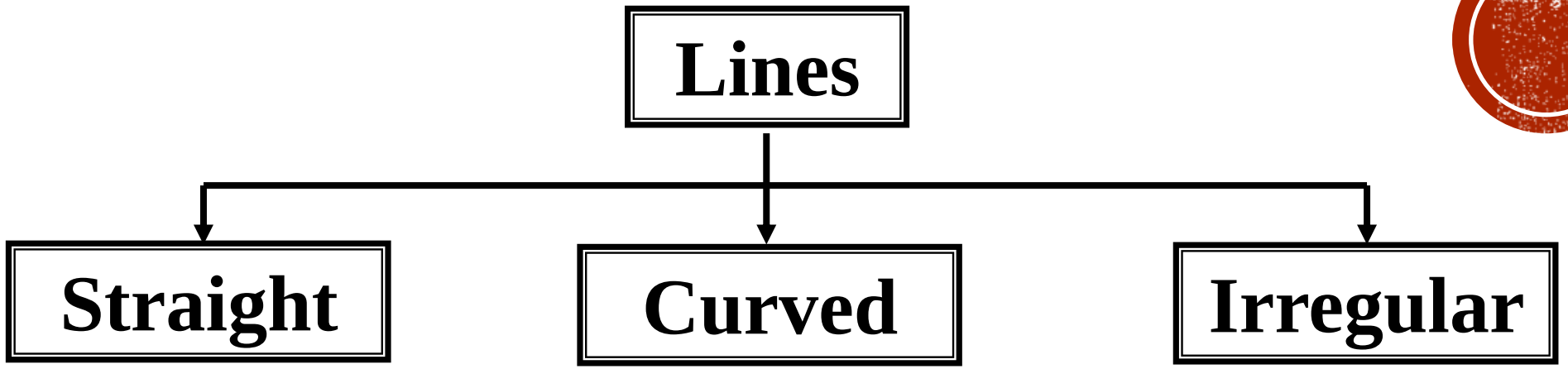
# SHAPES OF GRAPH PAPERS







# TYPES OF LINES



# LINE TYPES EQUATIONS

1 - STRAIGHT LINE EQUATION ( Y= mX±C ).

2 - CURVED LINE EQUATION ( $Y = mX^2$ ) .

3 -IRREGULAR LINE EQUATION ( x^2y'' + (8x - 1)y' - (8x – 2y) = 0)

- **Straight Lines**

The straight lines occur when there is an increase or a decrease in both X-values and Y-values where the power of variables all time equal 1 in equation.

- **Curved Lines**

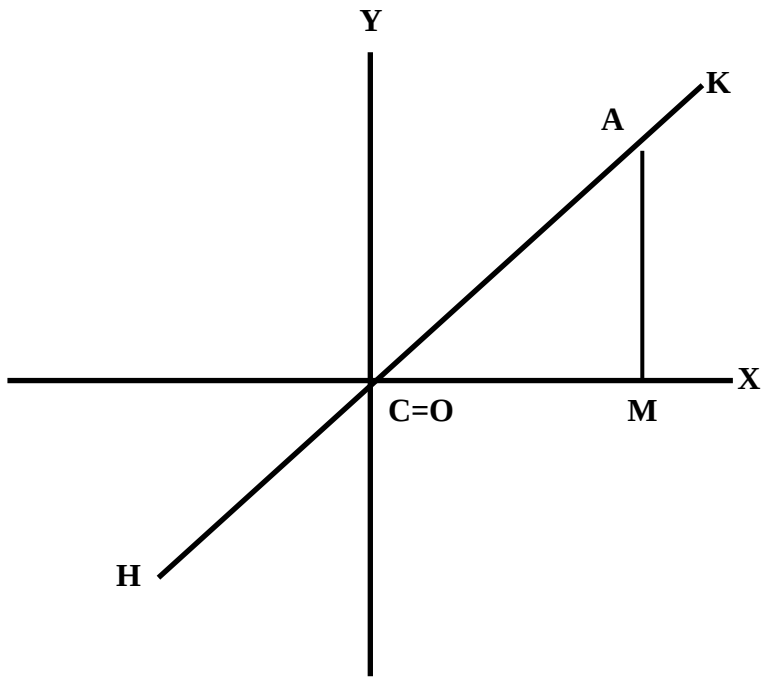
The line where the power of X and Y variables are not equal 1 in equation.

- **Irregular Lines**

The irregular lines occur when there is an increase or a decrease in X-values and Y-values randomly.

# 1. Intersection through the original point (0.0).

**When the line intercepts the original point (0.0) as represent in the following graph: -**




**The equation of this line is: -**

$$Y = mX$$

**Because of: -**

In $\Delta AMC$, $\tan A\hat{C}M = AM/CM$

But $A\hat{C}M = \theta$

$AM = Y$

$CM = X$

Hence $\tan\theta = Y/X$

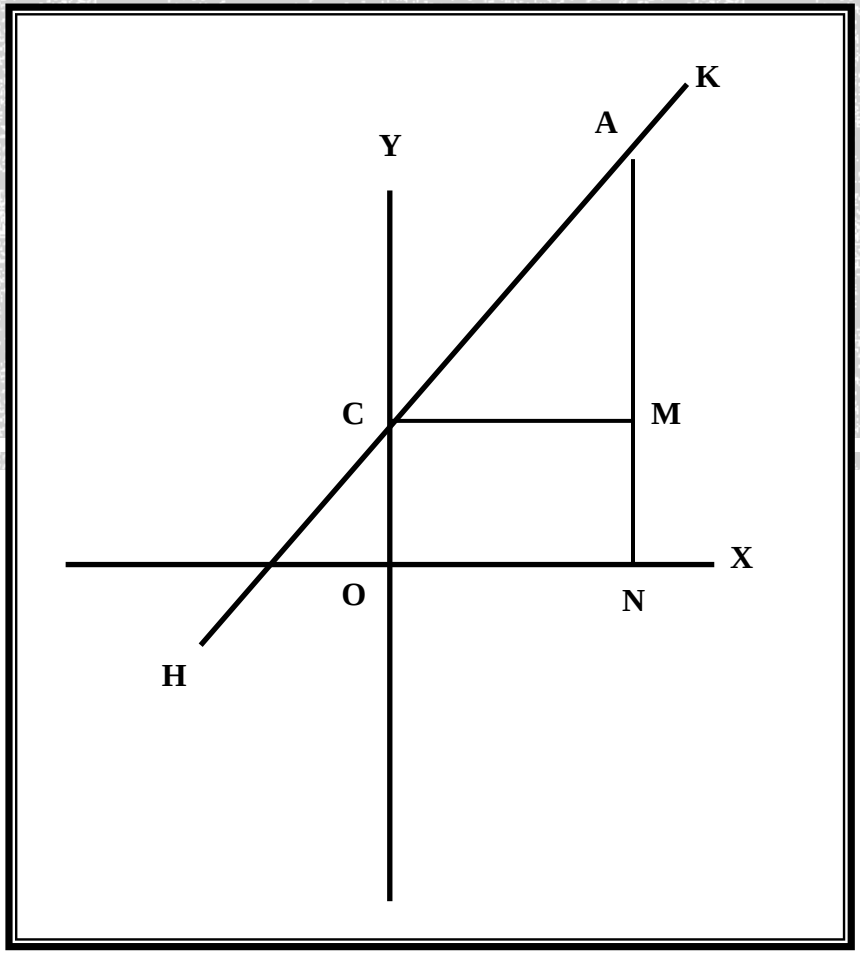
$Y = X\tan\theta$

Writing m for $\tan\theta$,

$Y = mX$

# 2. Intersection through the Y+ axis.

**When the line intercepts the Y+ axis as represent in the following graph: -**




**The equation of this line is: -**

$$Y = mX + C$$

**Because of: -**

In $\Delta AMC$, $\tan A\hat{C}M = AM/CM$

But $A\hat{C}M = \theta$

$AM = AN - MN$

$AM = AN - OC$

$AM = Y - C$

$CM = ON$

$CM = X$

Hence $\tan\theta = (Y-C)/X$

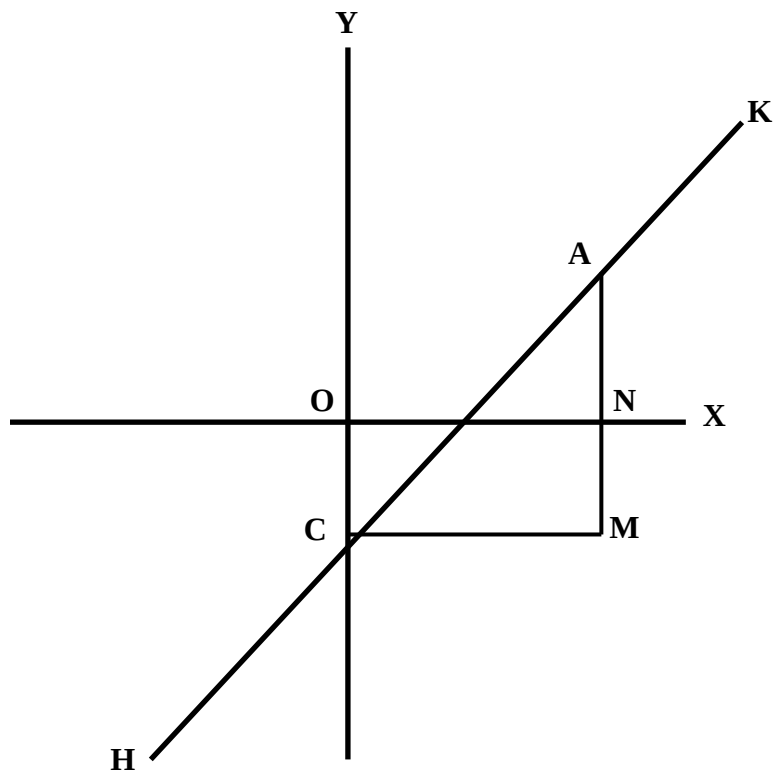
$Y = X\tan\theta + C$

Writing m for $\tan\theta$,

$Y = mX + C$

# 3. Intersection through the Y- axis.

**When the line intercepts the Y- axis as represent in the following graph: -**




**The equation of this line is: -**

$$Y = mX - C$$

**Because of: -**

In $\Delta AMC$, $\tan A\hat{C}M = AM/CM$

But $A\hat{C}M = \theta$

$AM = AN + MN$

$AM = AN + OC$

$AM = Y + C$

$CM = ON$

$CM = X$

Hence $\tan\theta = (Y+C)/X$

$Y = X\tan\theta - C$

Writing m for $\tan\theta$,

$Y = mX - C$

# HOW TO GET DATA TO DRAWING GRAPH

1- Data tables.

2- Equations.

3- By reading & recording from instruments & tools that are used in measuring.

# STEPS TO DRAWING GRAPH

1- Choose axes.

2- Draw axes.

3 - Give the names to axes.

4- Give suitable SI system Units to axes.

5 - Give weight to axes.

6 - Divide the axes depending on the recorded data from the **measuring tools & instruments.**

7 – Draw points on graph paper by use rular to drop x –axes on y-axes

8 –Drawing the line that take the average of geometric positions of drawed points .

9 – Find the slope of the curve .

10 – Find error percentage.

.

# IMPORTANT EQUATIONS

**1 – Slope equation : ( Slope =** $\frac{\Delta y}{\Delta x} = y_2 - y_1 / x_2 - x_1$ **).**

**2 - Error percentage equation:**

$$\frac{|Theoretical\ value - Practical\ value|}{|Theoretical\ value|} \times 100\%$$

# IMPORTANT TOOLS TO DRAW GRAPH

1- Book of drawing paper.

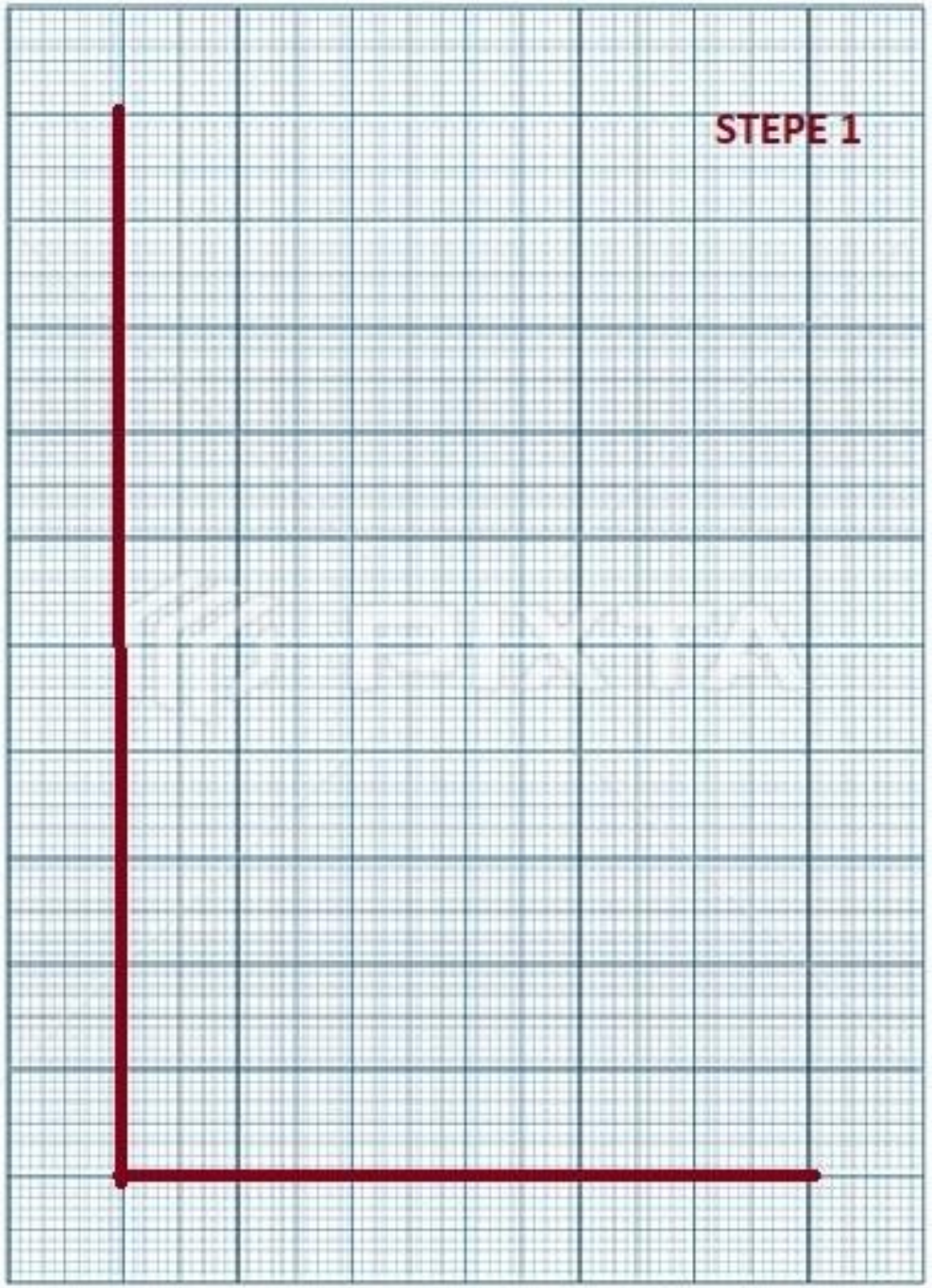
2 – Transperant Ruler (30cm).

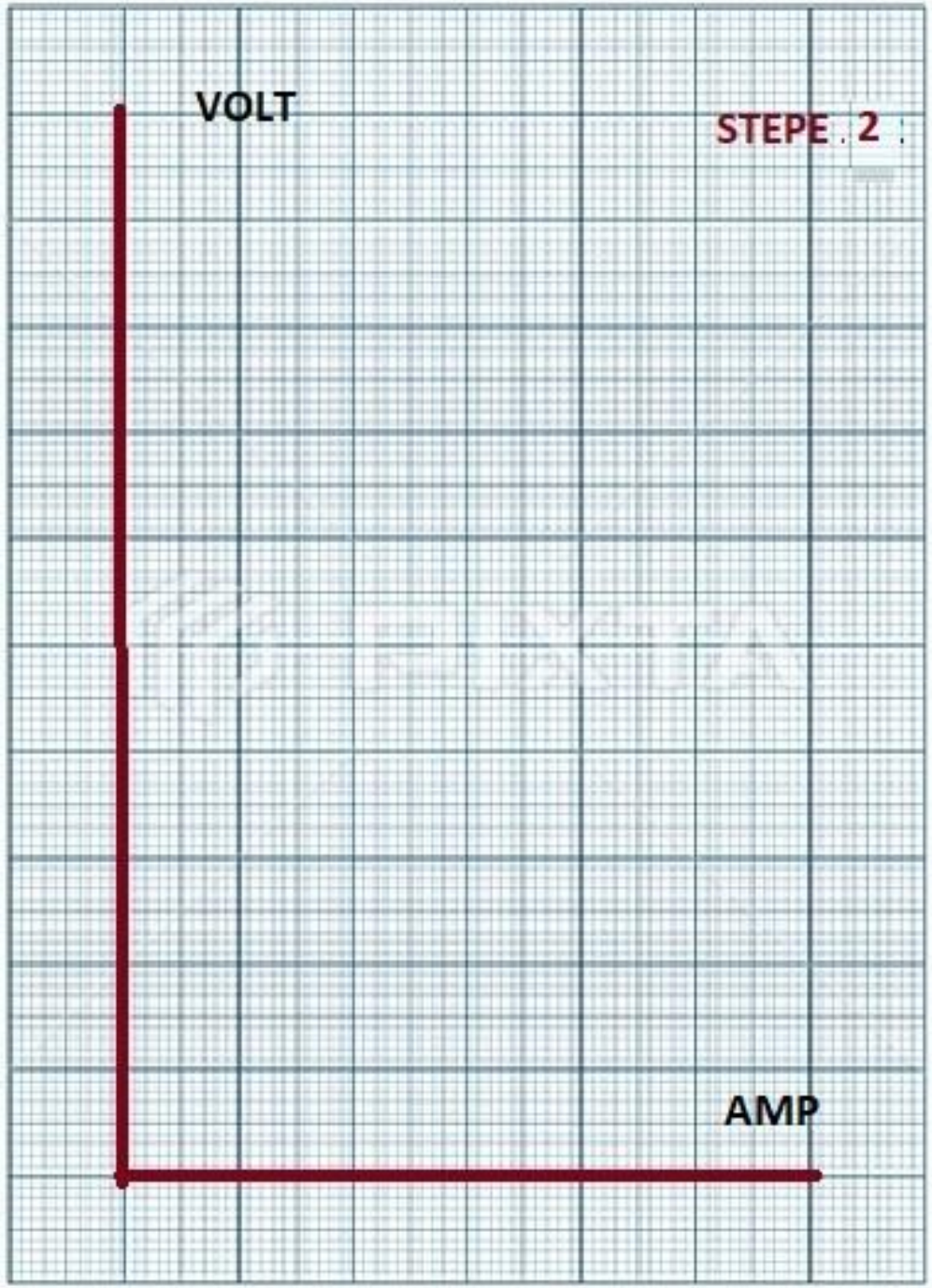
3 – pencils.

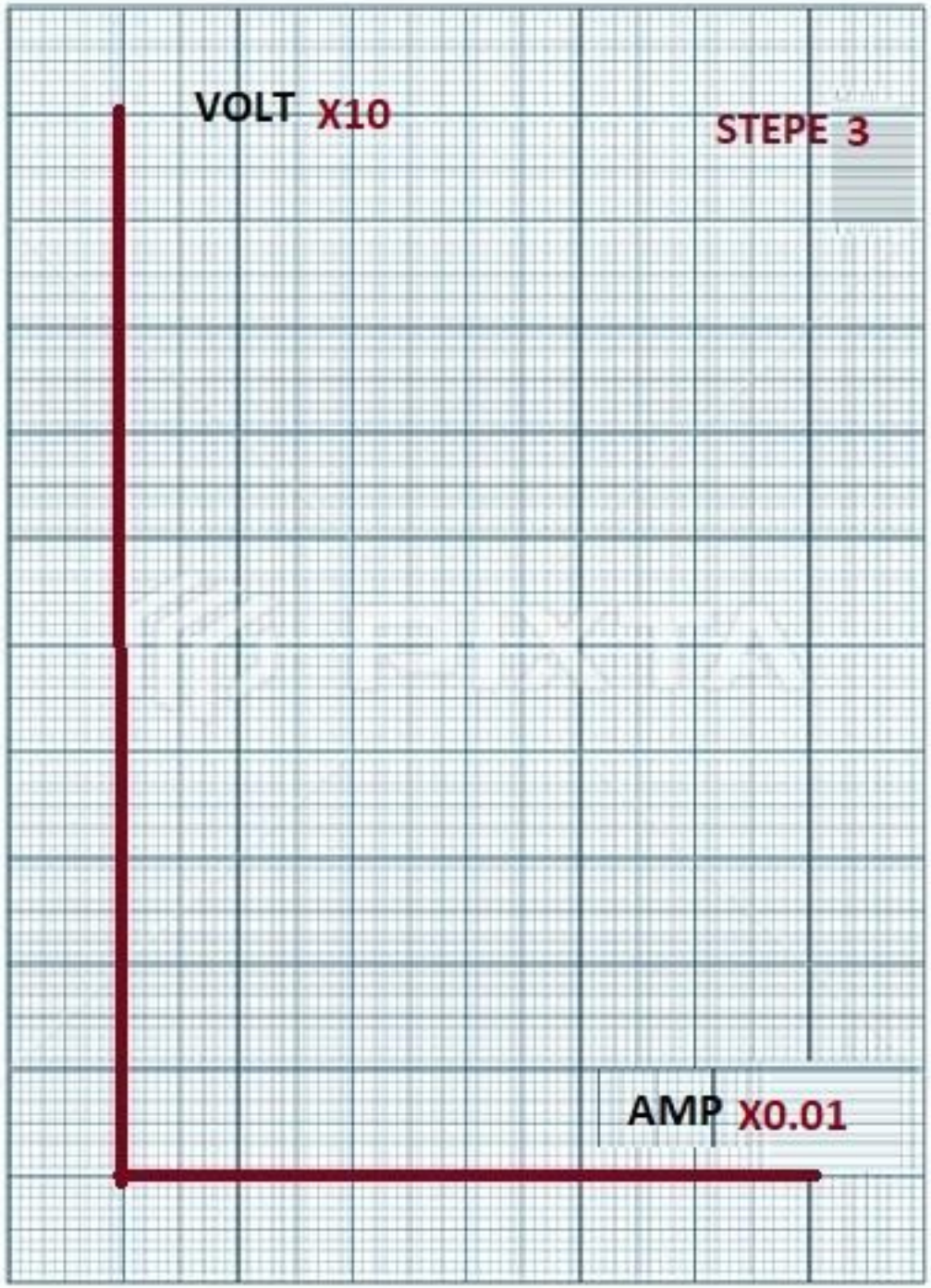
4 – Eraser.

5 – pencils Sharpener.

6 – Simple electronic calculat.


STEPE 1


VOLT
STEPE 2
AMP


VOLT X10
STEPE 3
AMP X0.01


VOLT X10
STEPE . 4
9
8
7
6
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1
AMP X0.01
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40
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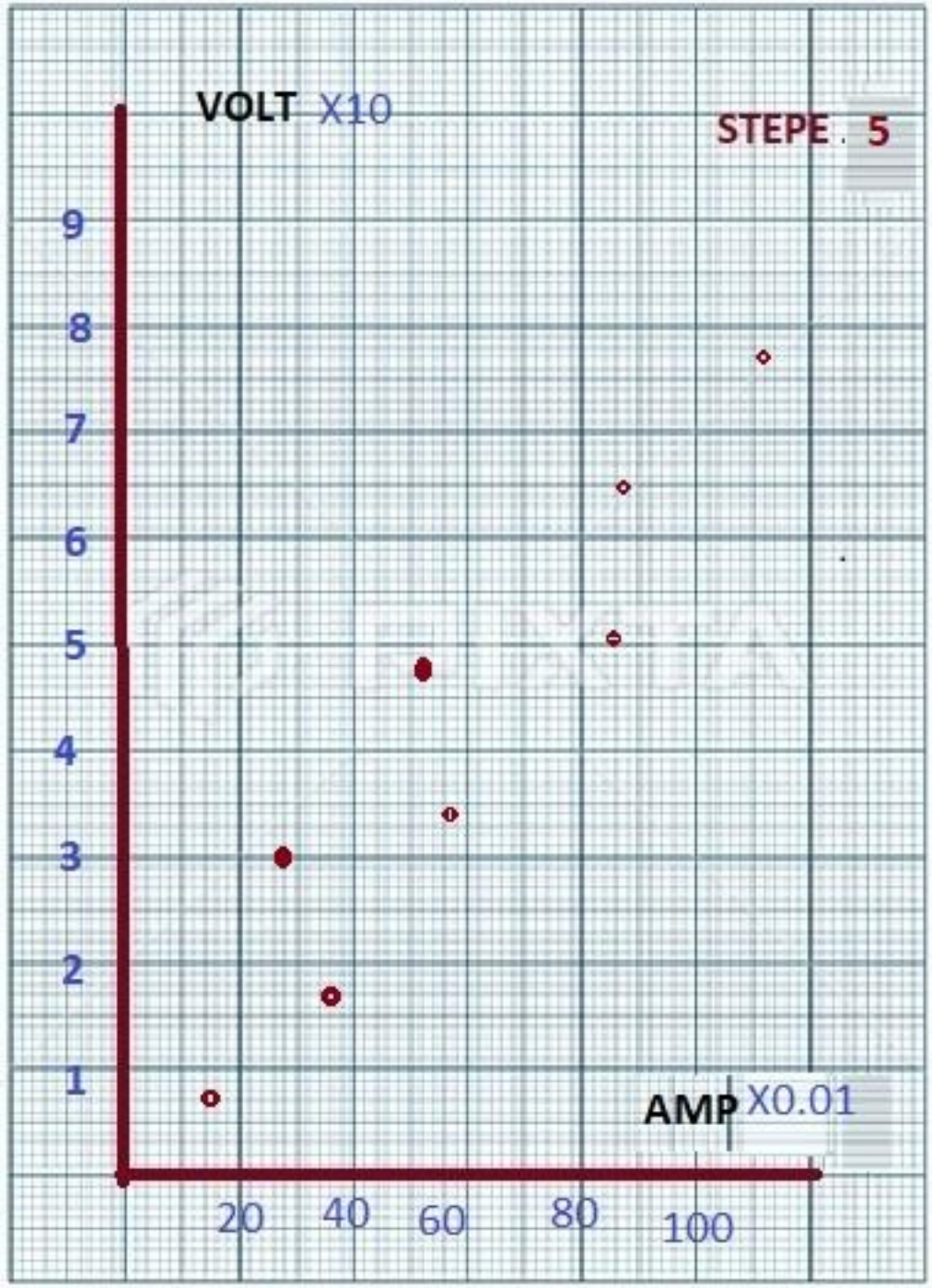
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STEPE 5
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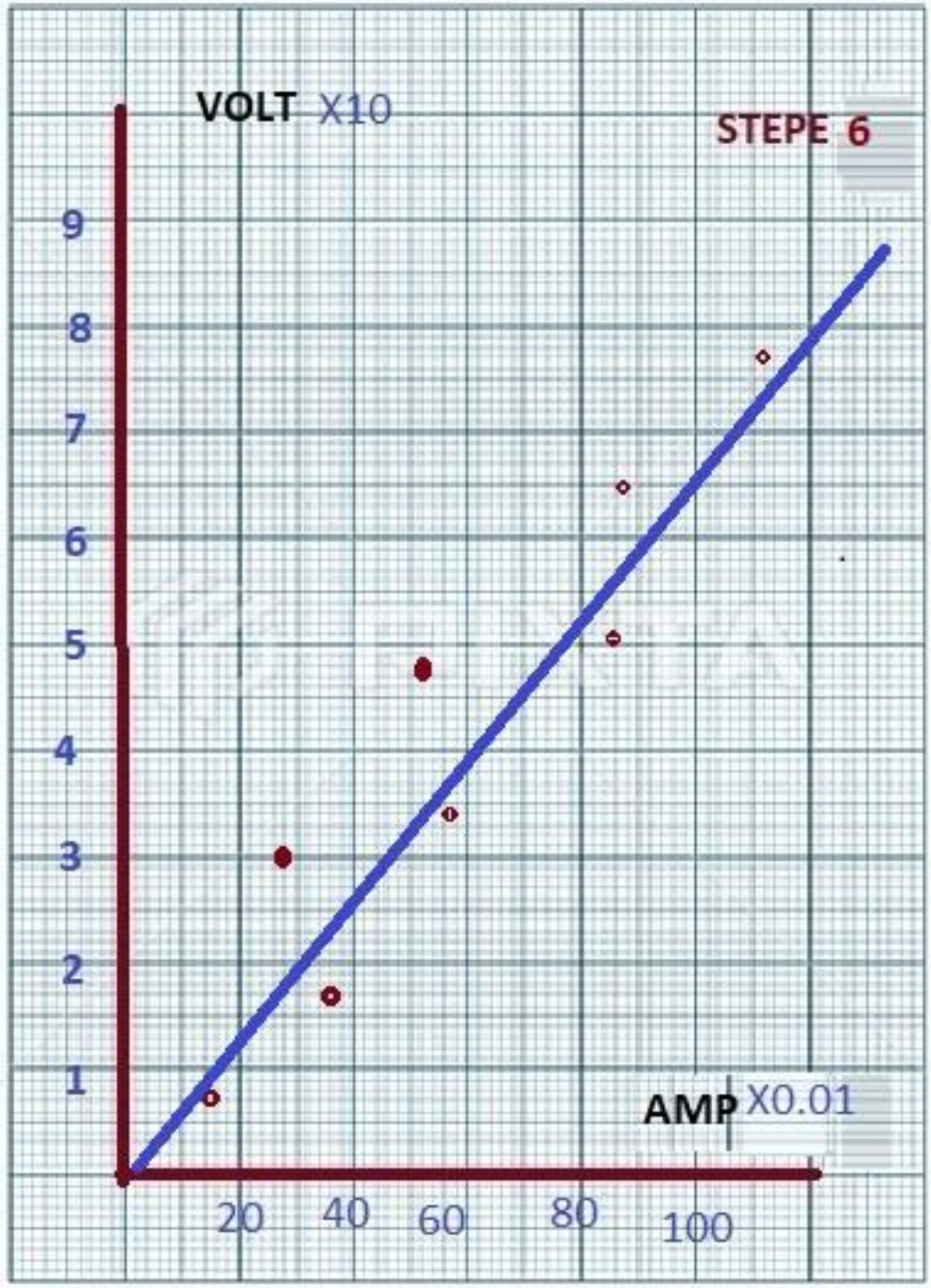
VOLT X10
STEPE 6
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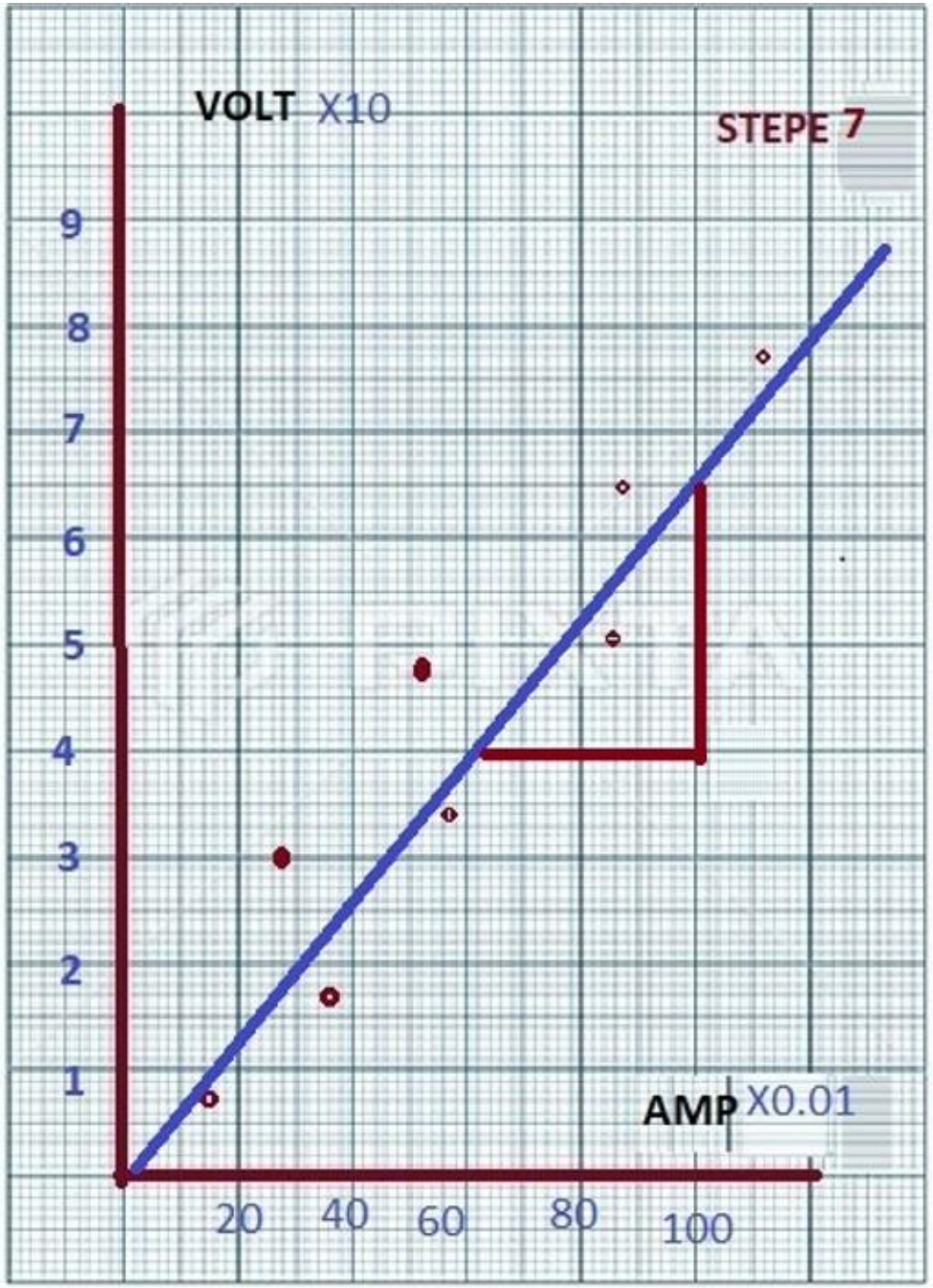
VOLT X10
STEPE 7
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AMP X0.01
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100

# THANK YOU FOR LISTENING