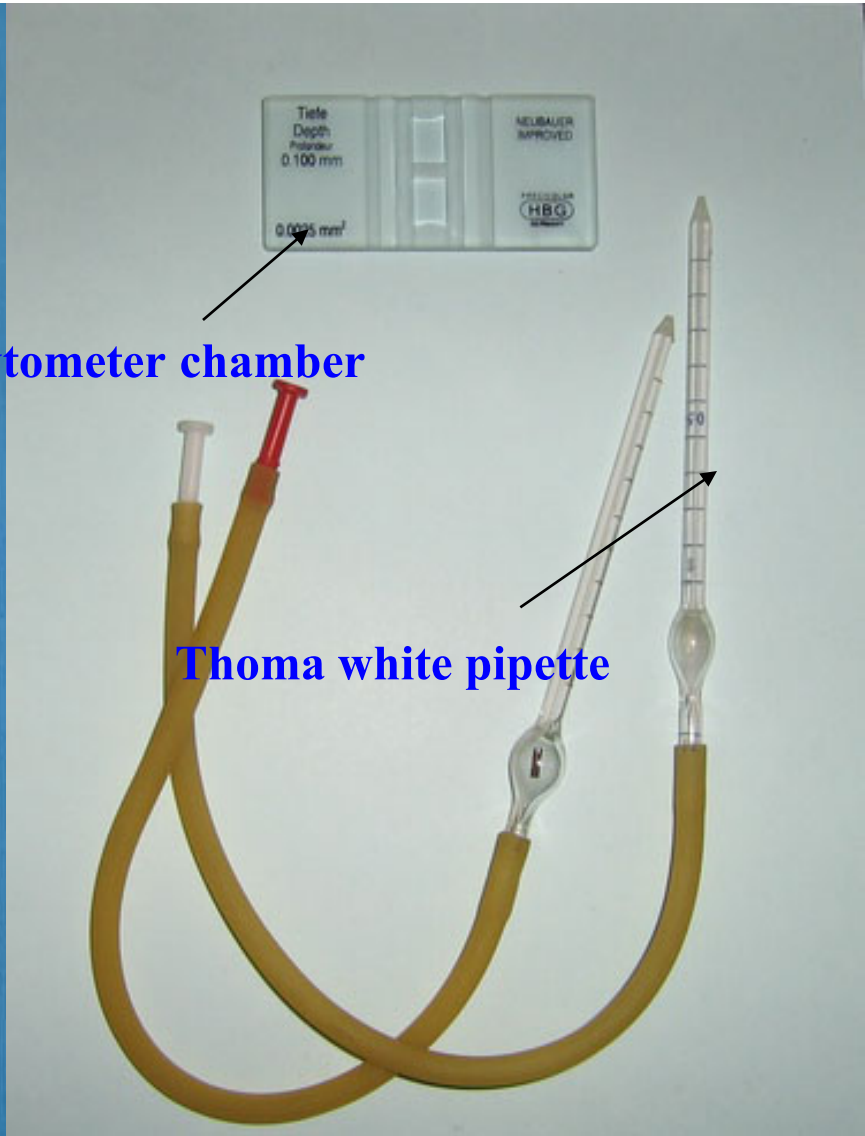


# HEMOCYTOMETER

*Mr. Govardhan Joshi*



haemocytometer chamber



# HEMOCYTOMETER

**Hemo: blood**

**Cyto: cell**

**Meter: measurement**

**Thus, it is an instrument used to count the blood cells.**

**It includes:**

- a) Neubauer's slide**
- b) Cover slip**
- c) Diluting pipette**
- d) Cover glass**



# Different types Counting chamber

- Ordinary Neubauer counting chamber
- Improved Neubauer counting chamber
- Levy's counting chamber
- Fuch's Rosenthal chamber

## NEUBAUER'S SLIDE

- Thick glass slide with two ruling area on centre
- Ruled area are separated by H-shaped gutter/trough
- Beyond the two vertical arm of trough there are two raised shoulder(ridge) which support cover glass
- lining is coated by shining metal or rhodium

Figure 1a. Side view of Haemocytometer

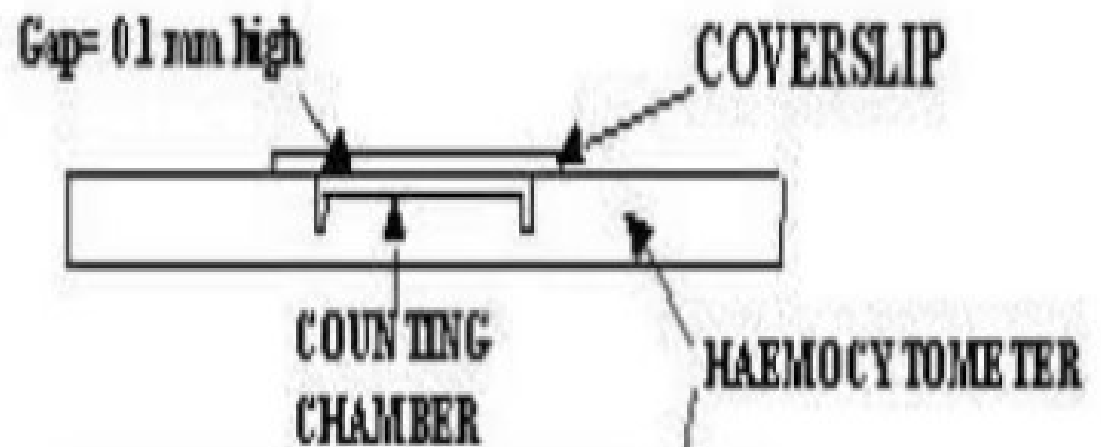
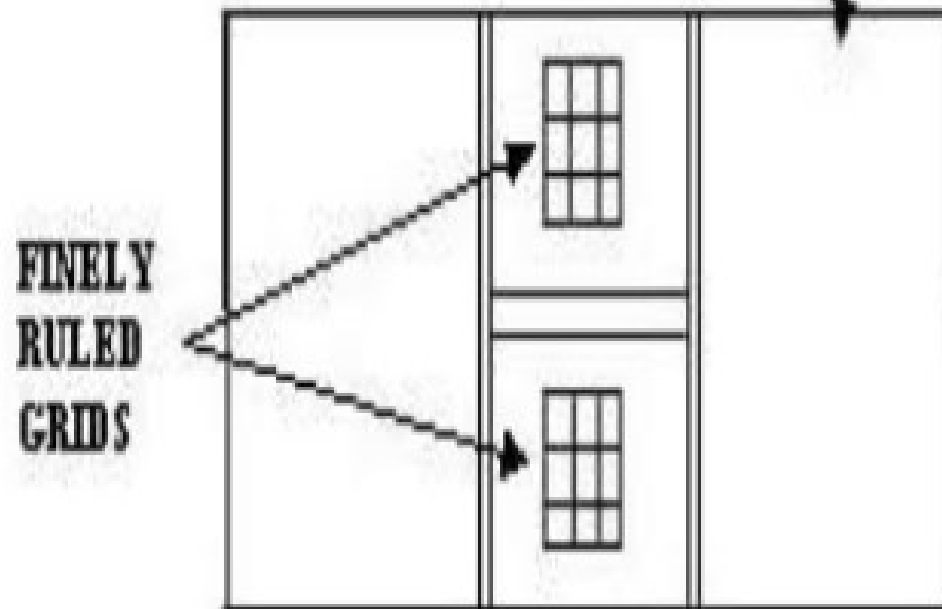


Figure 1b. Top view of Haemocytometer

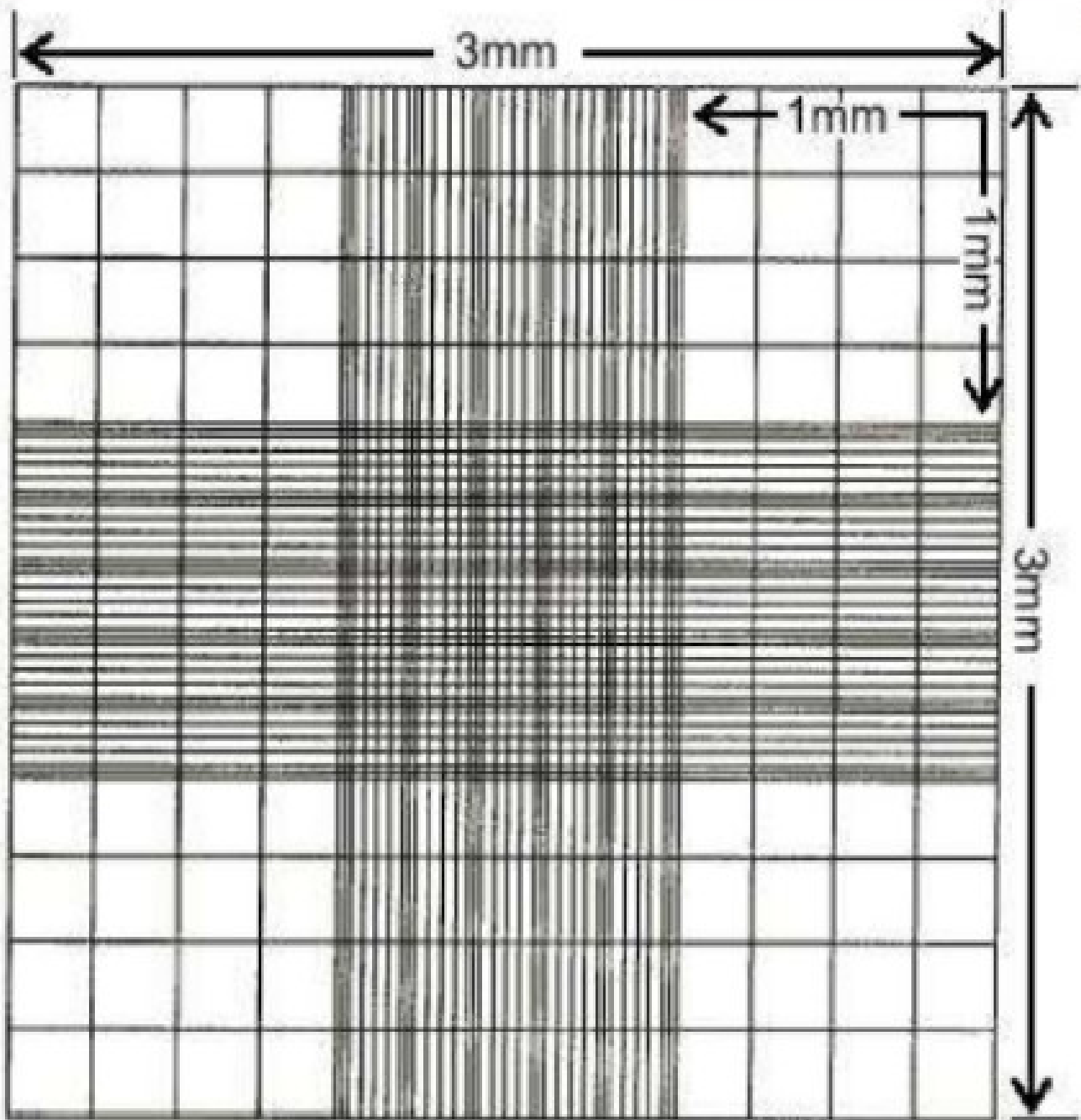


- Each scale is 3mm wide and 3mm long.
- Depth of the chamber is 0.1mm
- The whole scale is divided into 9 big squares.
- Each square is 1mm long and 1mm wide.

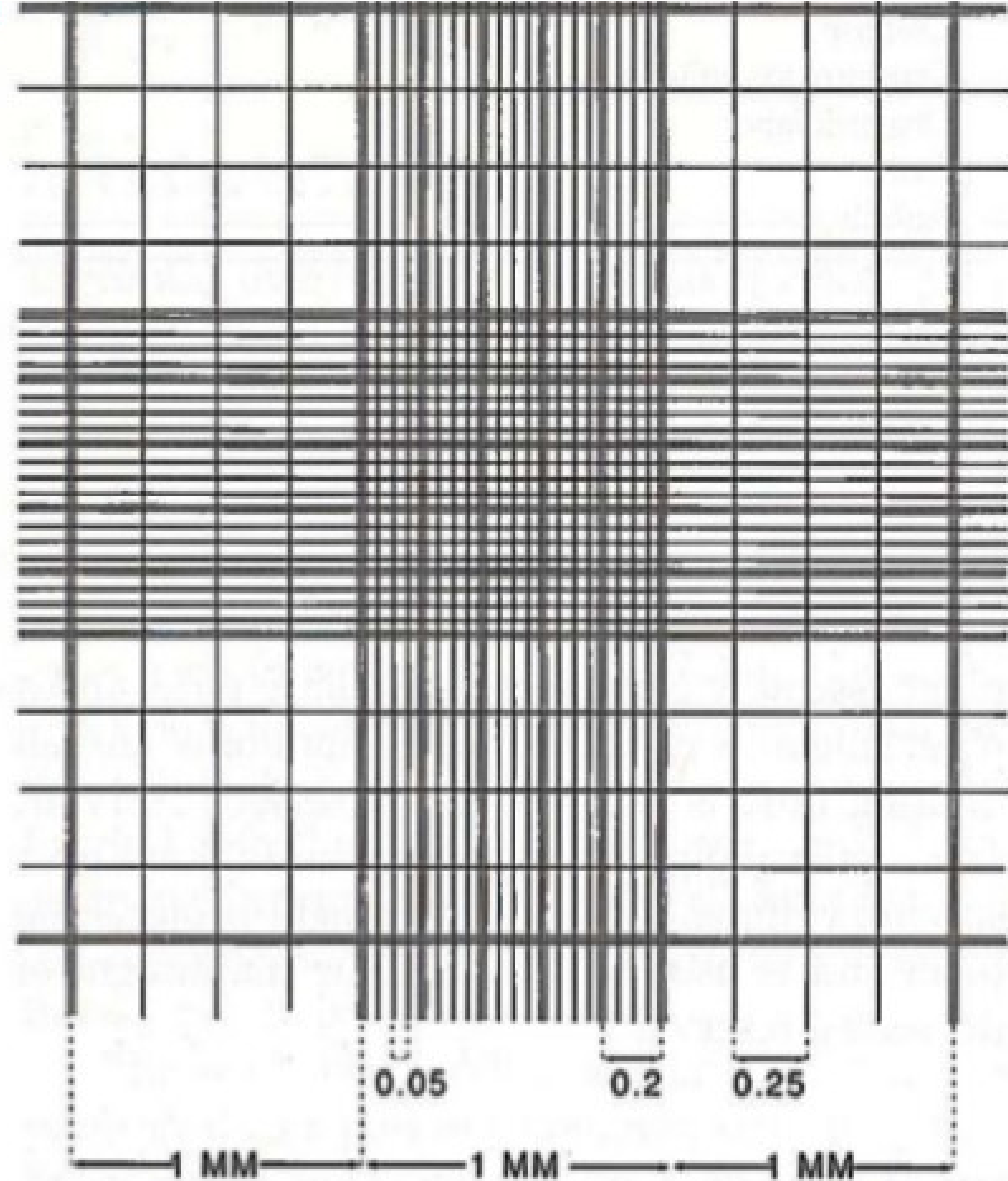






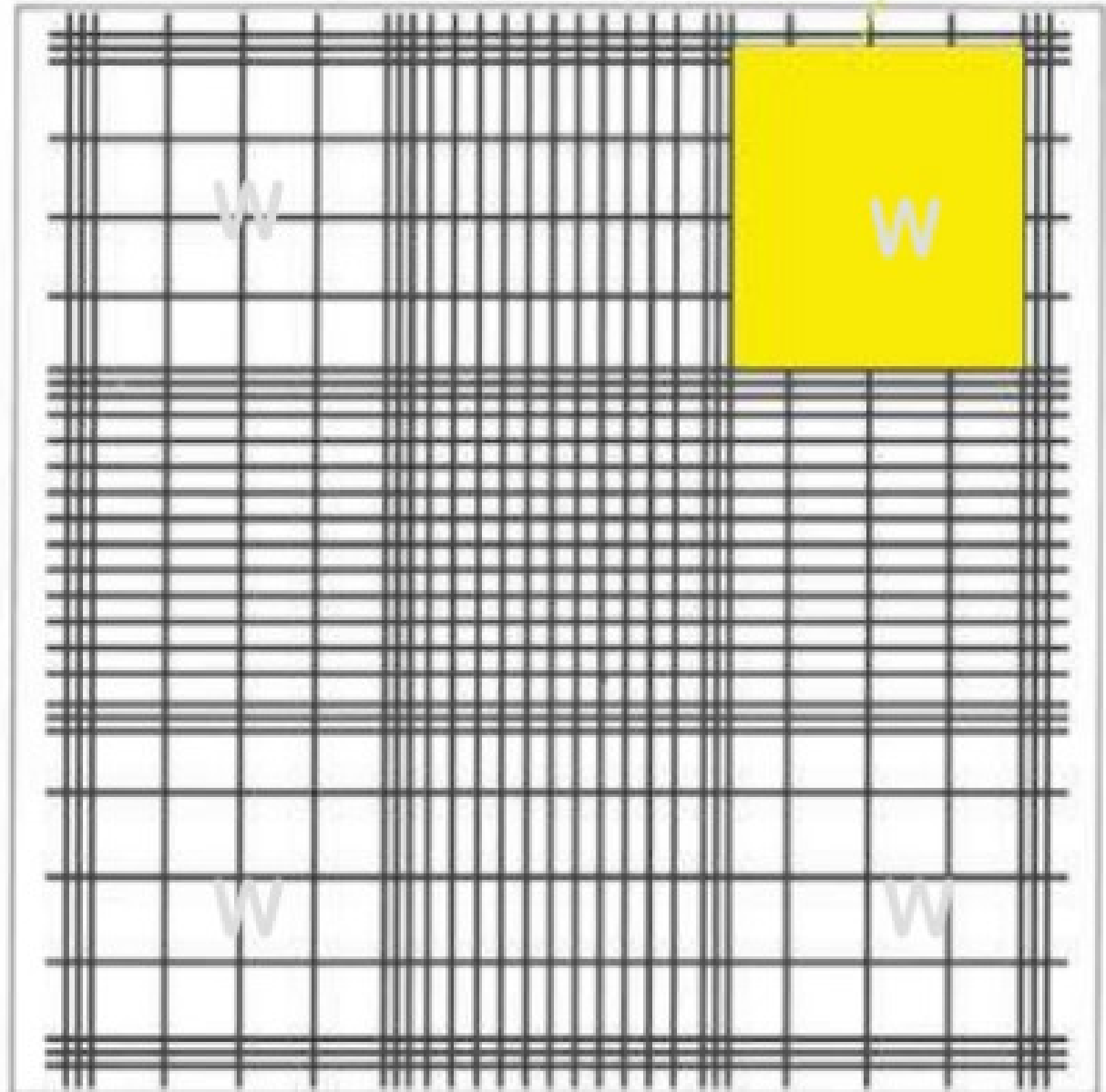


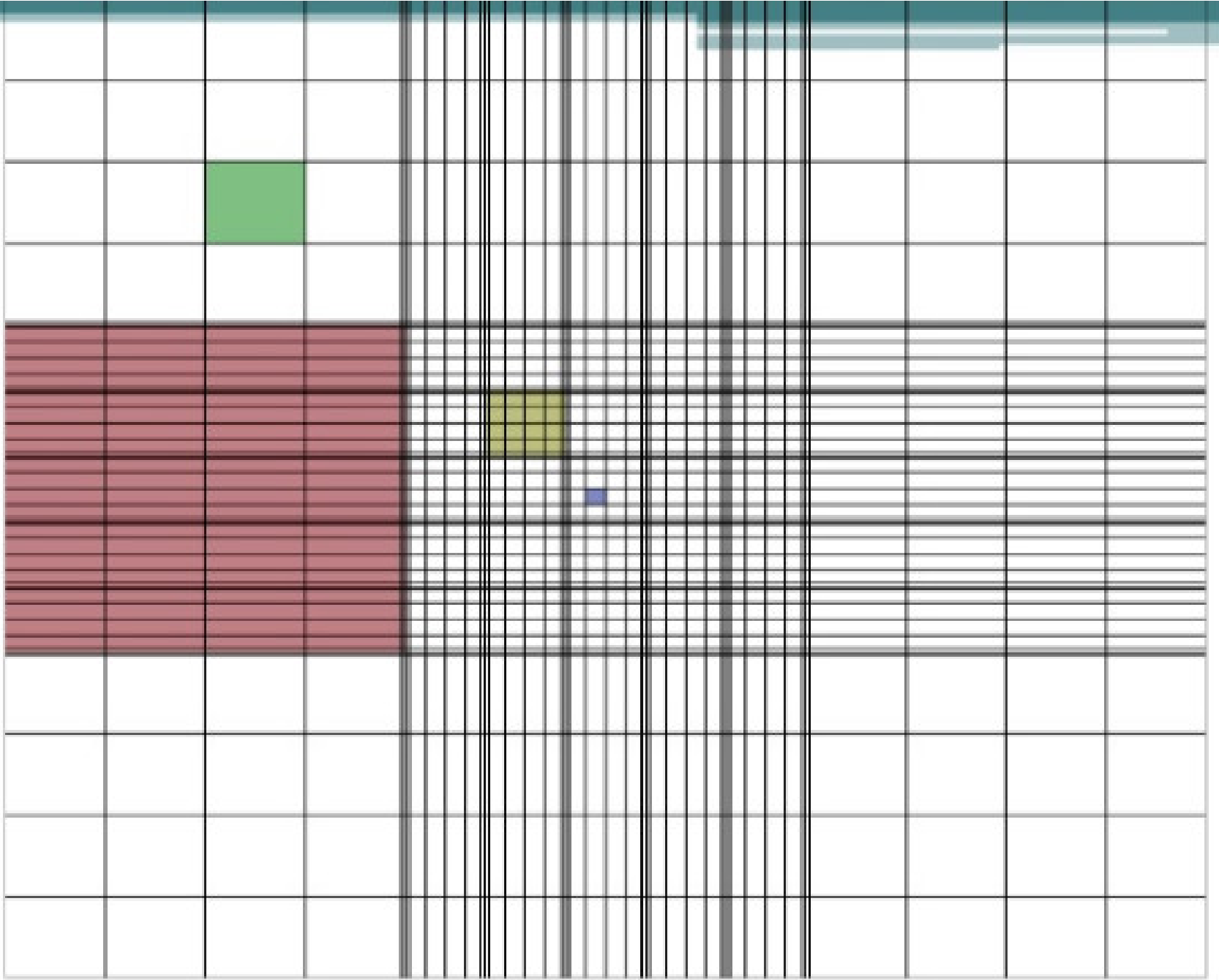
# Hemocytometer Chamber



**The four corner squares are further divided into sixteen smaller squares and are used for WBC counting.**

Four  
corner  
squares  
are  
meant  
for WBC  
counting.  
Total =  
64 small  
squares



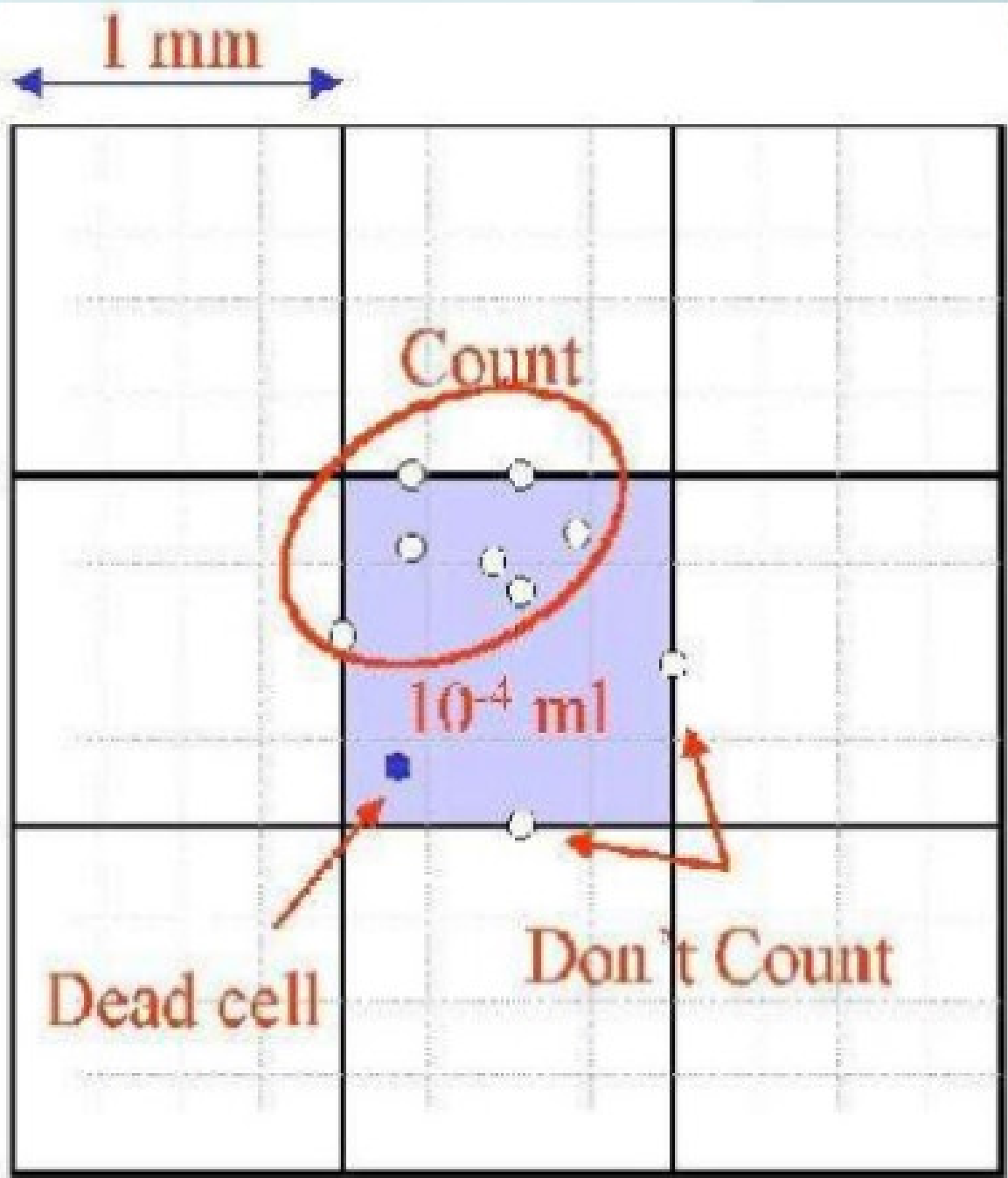


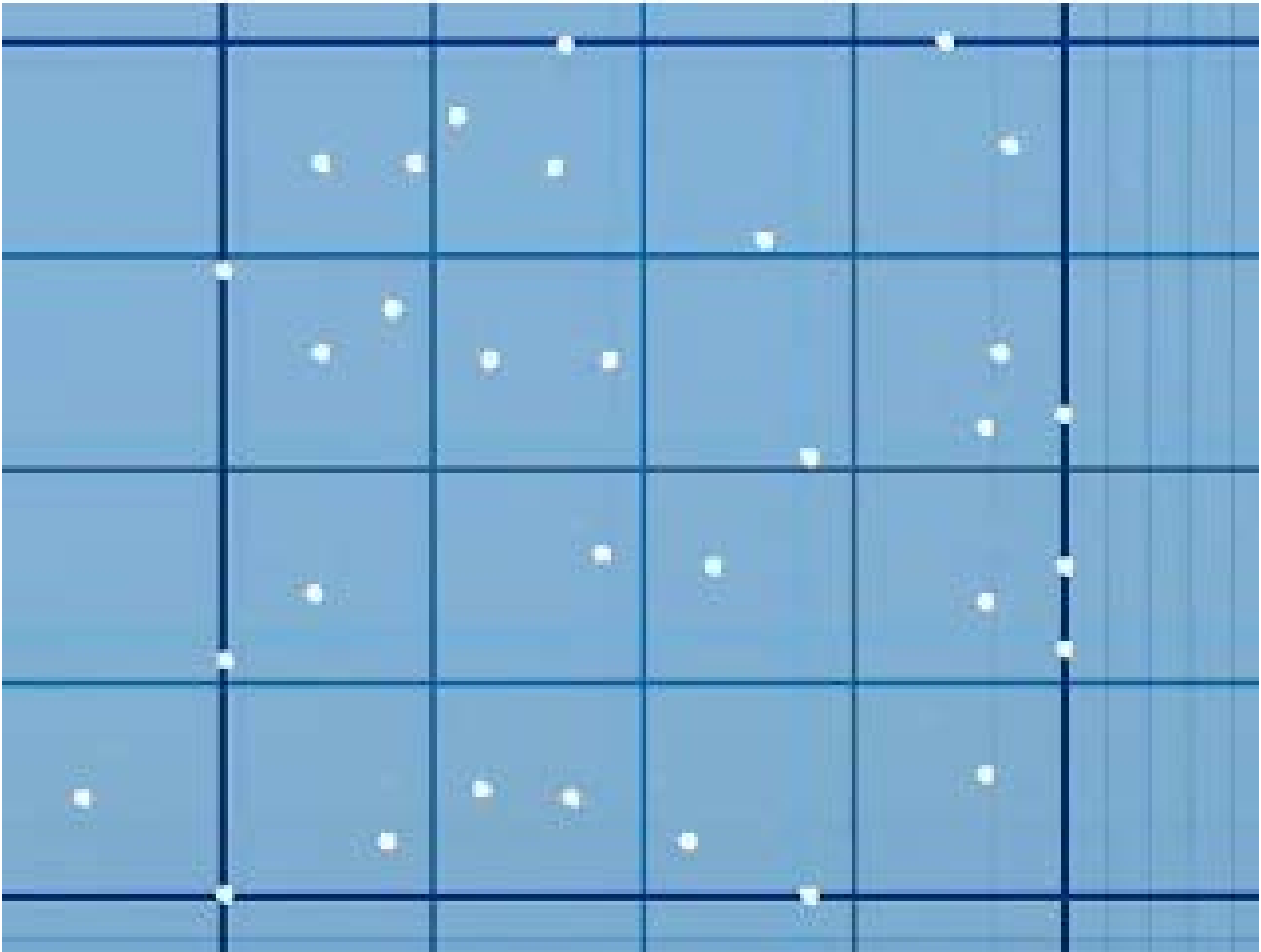


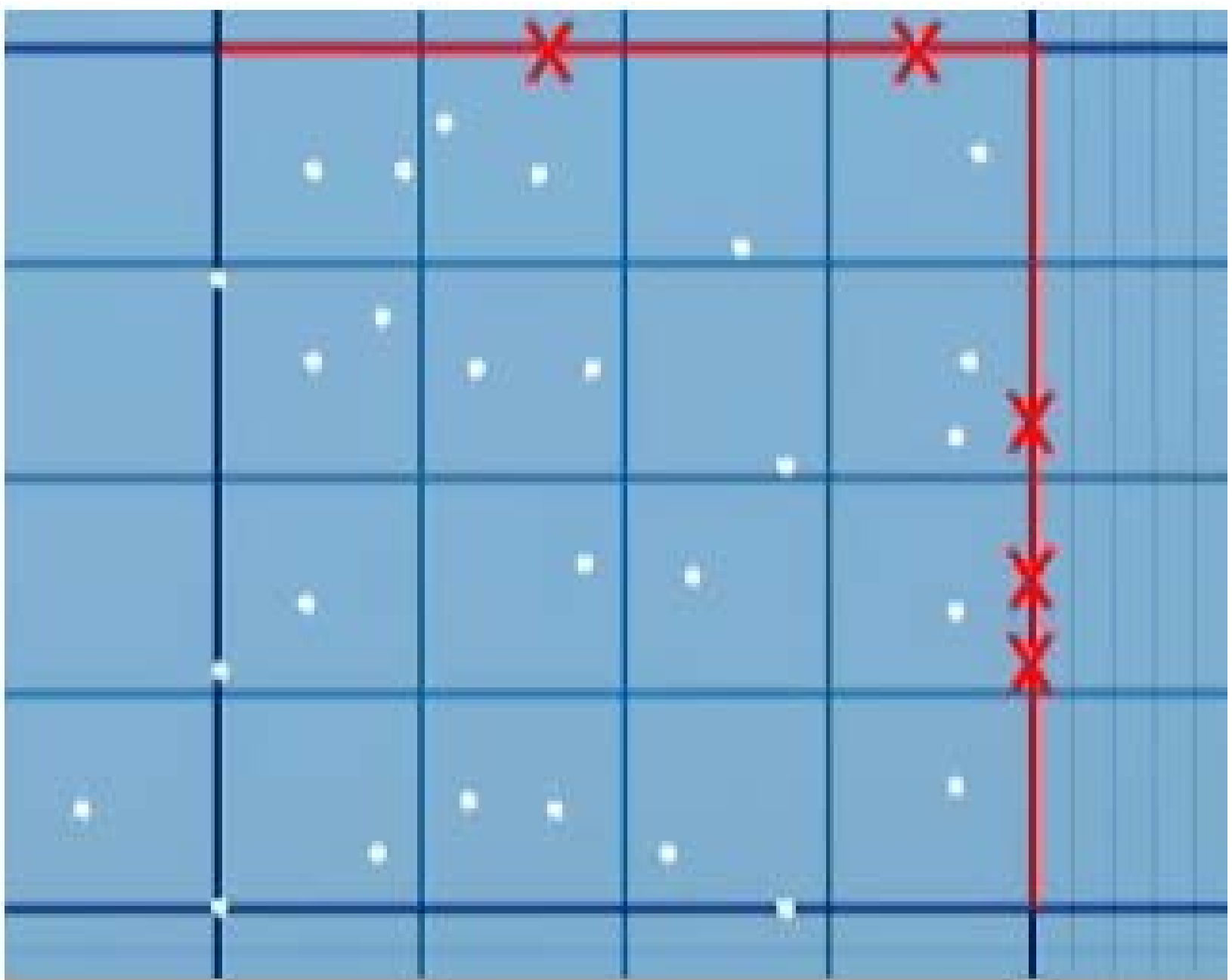


- **Central square is divided into 25 medium sized square and are separated by triple line**
- **The medium sized square are further divided into 16 small square(tiny)**
- **The four corner and central square are used for platelet and RBC count.**

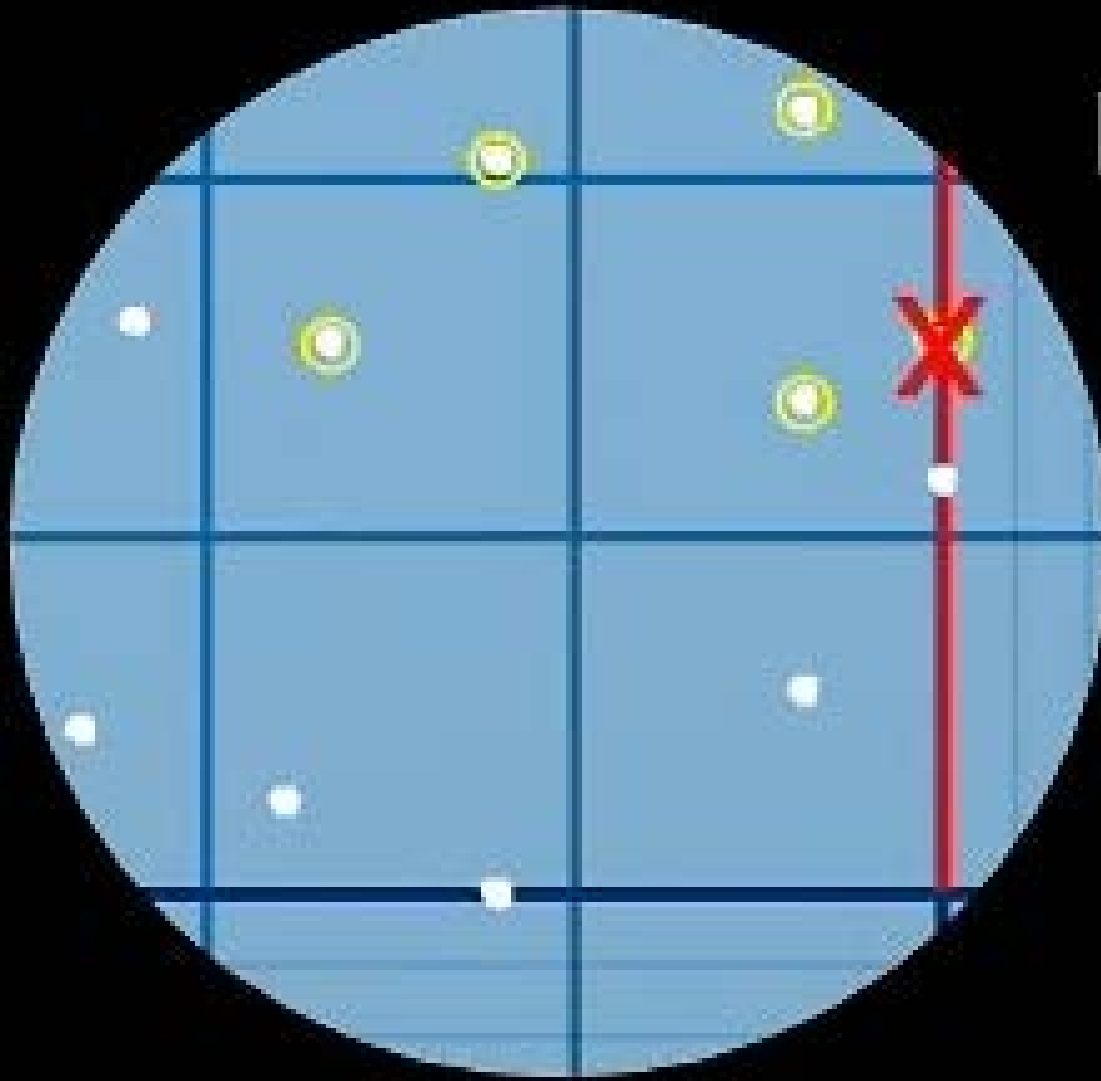




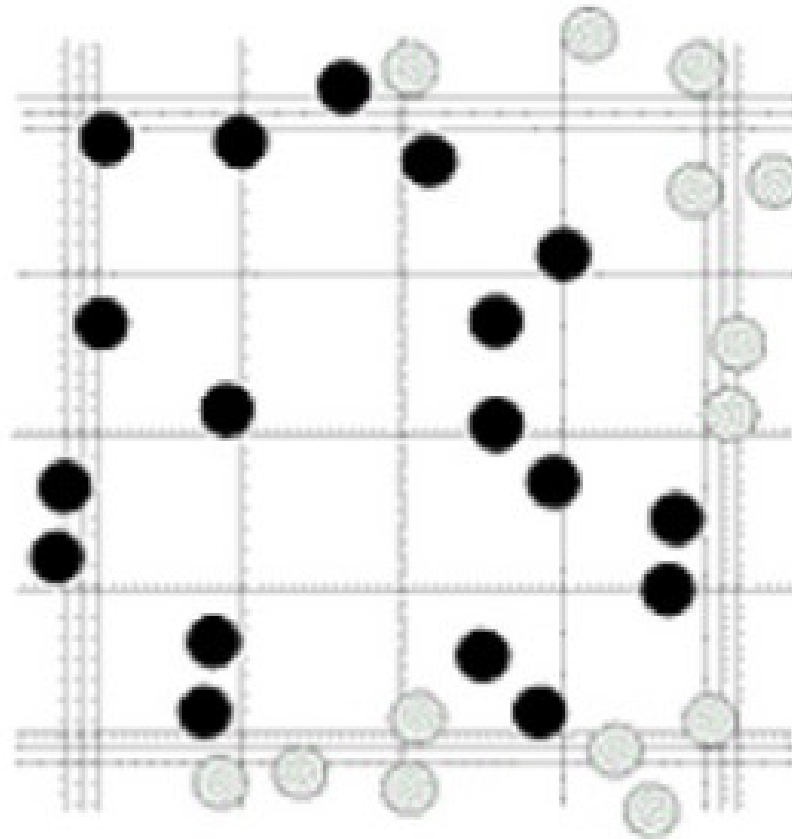




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# Counting rule



# Thomas pipette

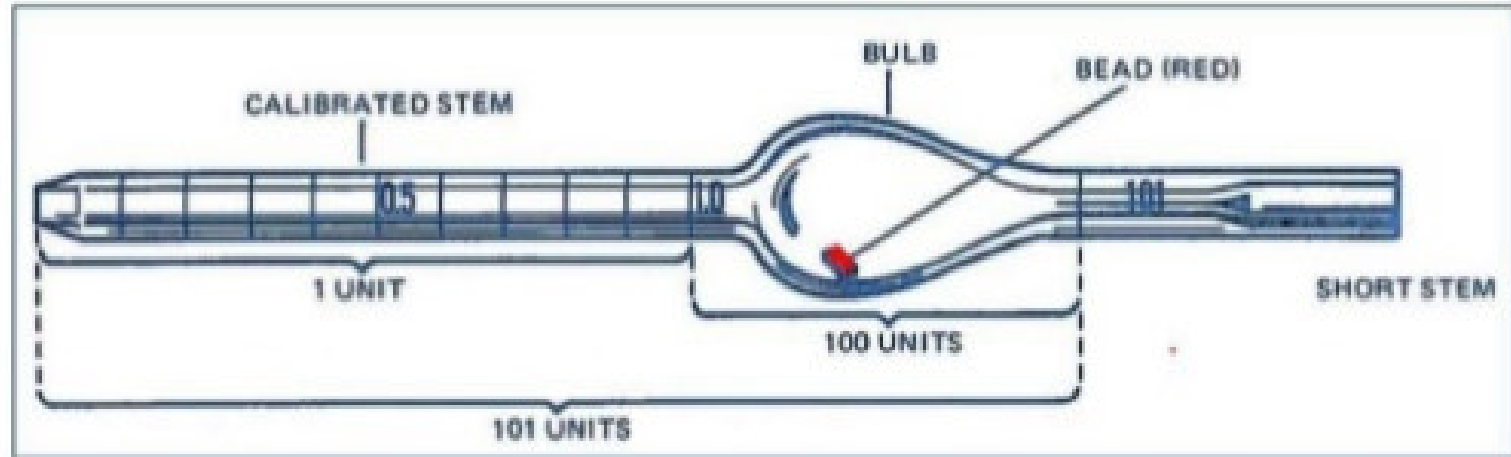
- Consist of graduated capillary tube, mixing bulb with glass bead and aspirating tube
- Parts: stem, bulb, rubber tube
- Thomas pipette are: WBC pipette and RBC pipette



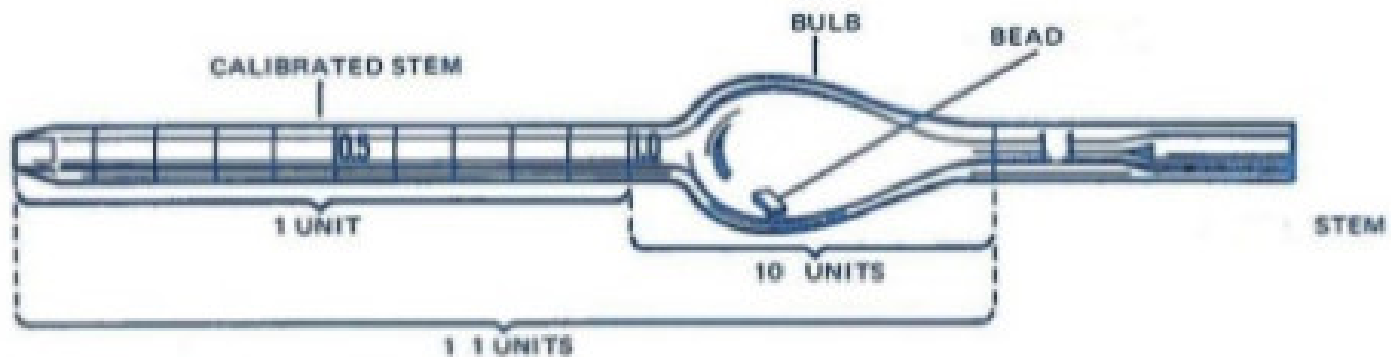
# DIFFERENCES BETWEEN RBC AND WBC PIPETTE

	<b>RBC pipette</b>	<b>WBC pipette</b>
1)	It has a red bead	It has a white bead
2)	It has graduations upto mark 101	It has graduations upto mark 11
3)	Size of bulb is larger	Size of bulb is smaller
4)	Size of lumen is smaller	Size of lumen is larger

# RBC PIPETTE



# WBC PIPETTE

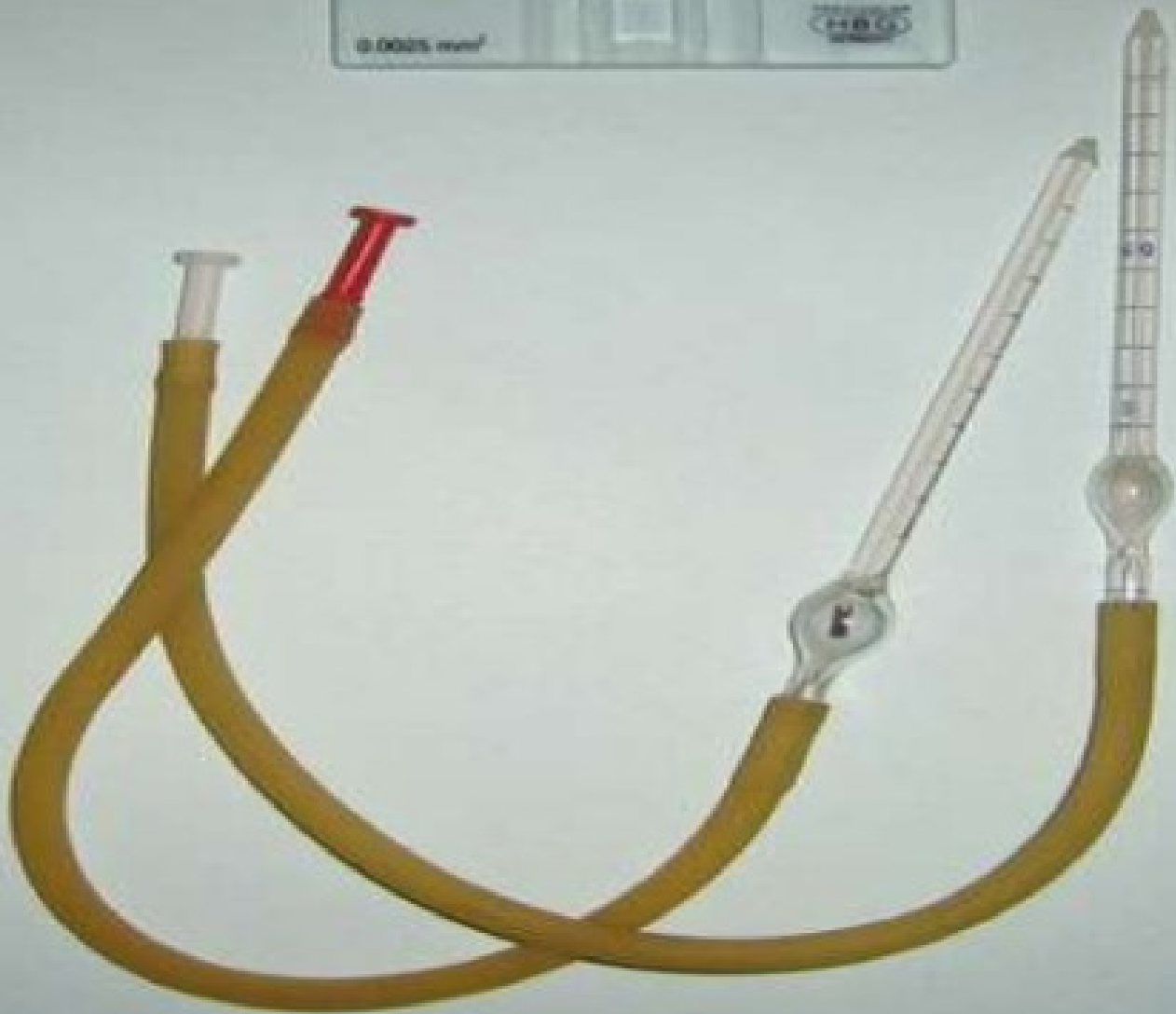


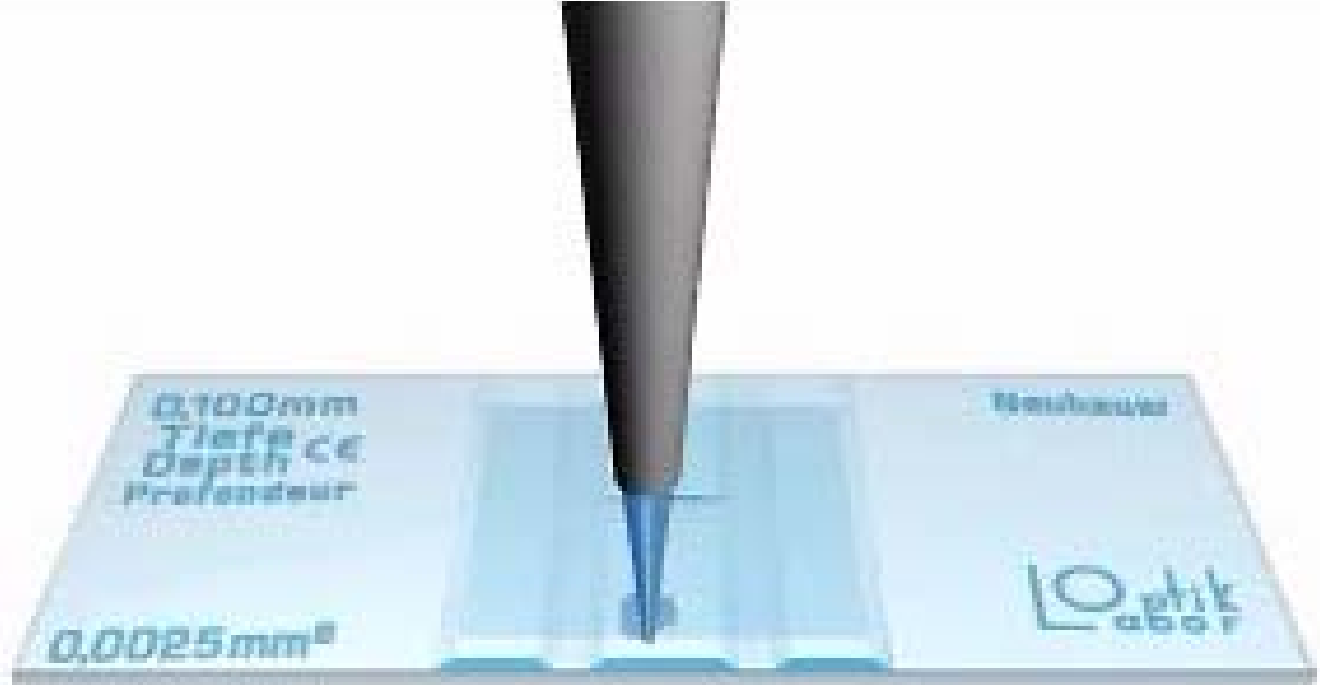
Tiefe  
Drehen  
Profil  
Ø 100 mm

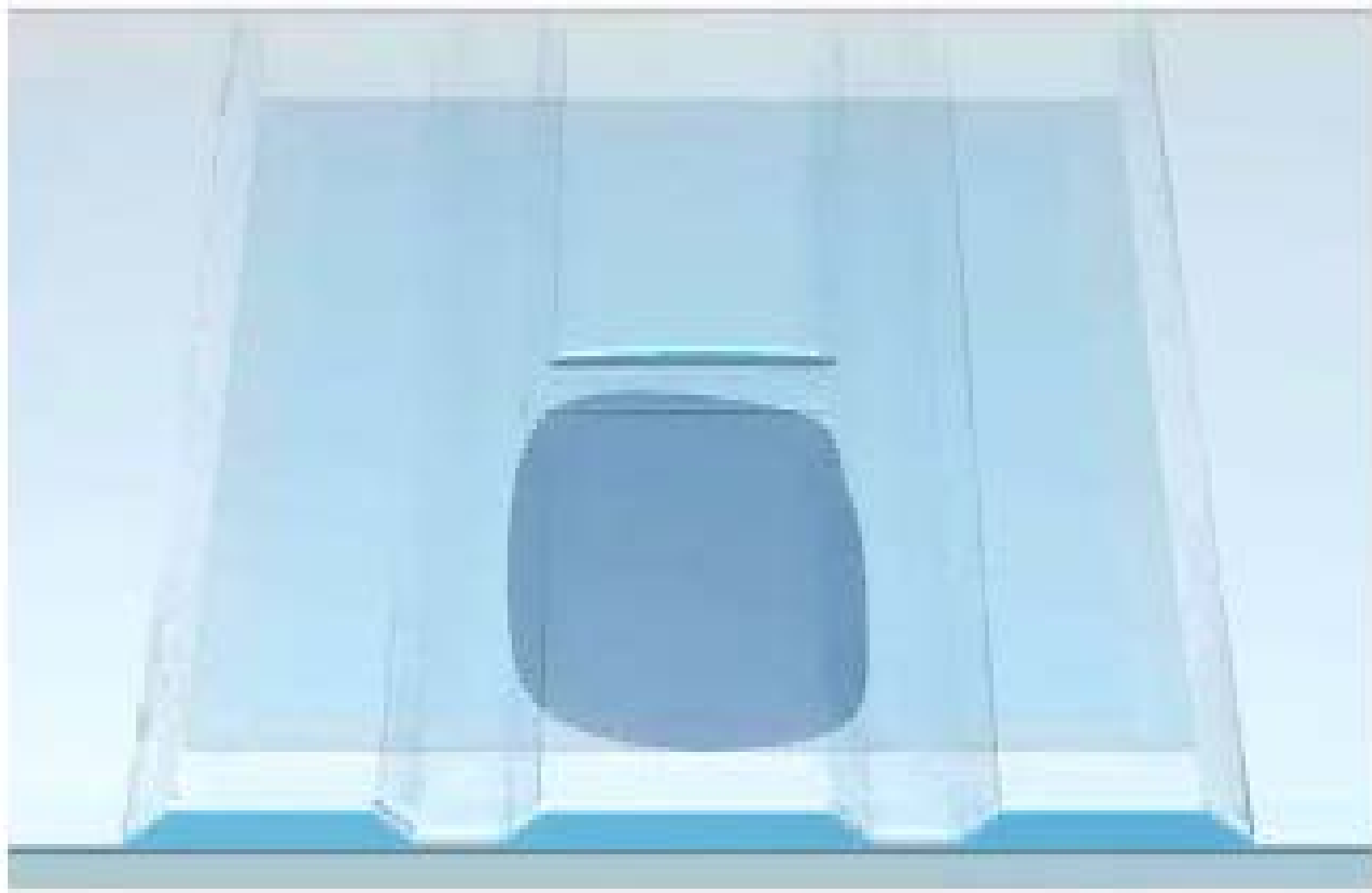
HELMOLD  
APPROVED

HELMOLD  
H.B.G.

Ø 0025 mm







# Cover slip

- Special cover glass with smooth surface and even thickness
- Thickness= 0.3, 0.4, 0.5 mm
- Length= 16x22mm, 22x23mm

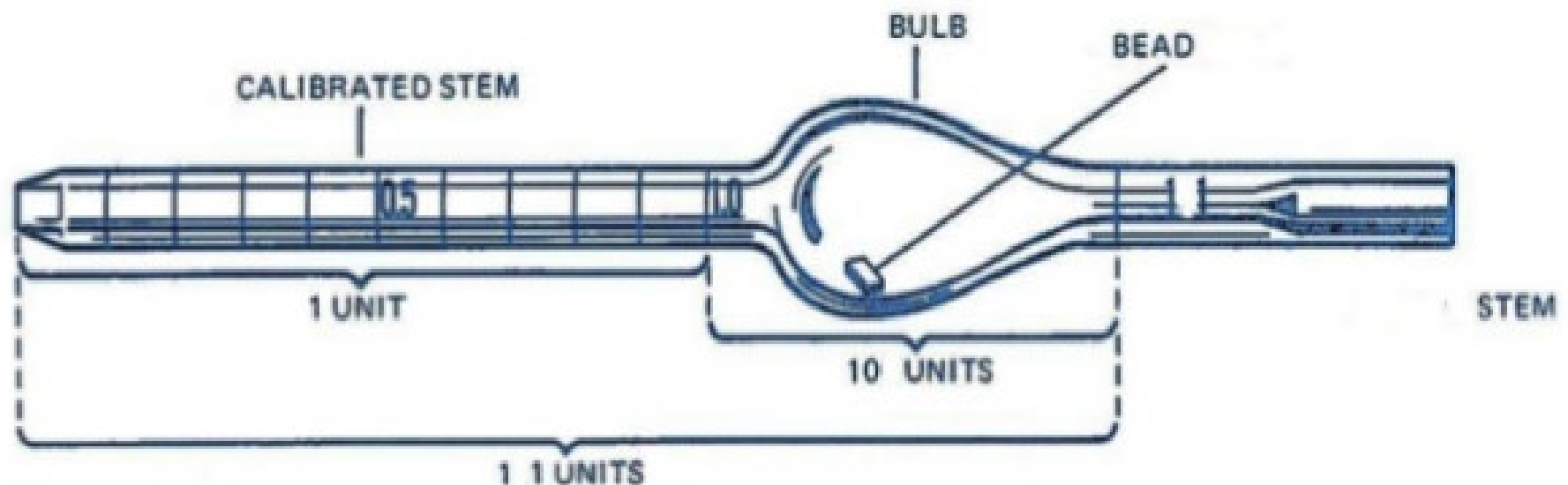
## For WBC counting

0.5 part of blood is mixed in 10 parts of fluid

So, 1 part of blood is in 20 parts of fluid

Thus, dilution factor for WBC counting is

**20.**



# Principle

- Dilution of blood
- Sampling of diluted suspension into measured volume
- Counting of cell in that volume



# FOCUSING

- 4X to see the general formation of slide.
- 10X for WBC counting
- 40X for RBC/Plt. counting



# Calculation

Cell count =  $N \times \text{dilution factor} \times \text{depth factor} / \text{area counted}$

# Source of error

## False high count

- Improper mixing
- Uneven distribution of cell
- Error in pipetting
- Error in calculation
- Blood taken from area of hemo concentration
- Yeast, dirt and leucocyte are counted as RBC

## False low count

- Blood diluted with tissue fluid
- Undue delay in counting of cell
- Clumping of cell(AIHA)
- Uneven distribution of cell
- Faulty technique of counting
- Improperly standardized counting chamber

Thank you