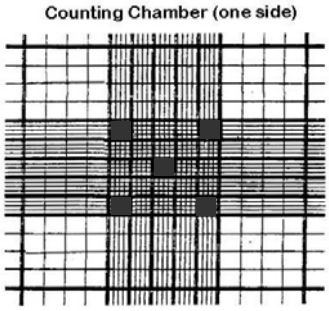
F. **Manual RBC counts** - Example only

1. Manual RBC counts are not done on EDTA whole blood, **HOWEVER**, cell counts on bloody body fluids (spinal fluid) may require making a RBC dilution of 1:200 with isotonic saline (which prevents lysis of RBCs). Red cells in the RBC counting area of 0.4mm^2 are counted (5 small squares in the center square of the hemocytometer on each side).

2. Procedure
   a. MIX EDTA whole blood specimen. Make a 1:200 dilution with saline and mix.
   b. Plate dilution on each side of chamber and allow cells to settle 3 mins.
   c. Count **4 outer squares** of **center sqmm** and the **center square of center sqmm** (shaded squares on chamber) on each side of the hemocytometer using 40x objective and low light.
   d. ●Total area counted = **0.4 mm^2 → RBC counting area**.



Center sqmm is divided into 25 squares; each square in center square is 1/25mm^2;

5/25mm^2 counted on each side = 10/25mm^2
OR 1/5mm^2 + 1/5mm^2 = 2/5mm^2 = **0.4mm^2**.

   e. Calculations:

$$\text{RBC/cmm} = \frac{\#\text{cells (both sides)} \times 200}{0.1 \text{ mm} \times 0.4 \text{ sqmm}} \quad \text{or} \quad \frac{\text{total } \#\text{cells} \times 200 \times 10 \text{ mm}}{0.4 \text{ sqmm}}$$

Report to nearest **hundreth**.

   f. Example:
Side 1 305
Side 2 315

$$\frac{620 \times 200 \times 10}{0.4} = 3.10 \text{ million/cmm or } 3.10 \times 10^6\text{/uL}$$

or 3.10 M/uL
or 3.10 x 10^{12}/L (SI units)

SEE Calculations sheet for formulas, calculation examples and reporting units.

Complete Blood Count with Differential

CBC parameters

WBC	8.8	thousands/uL
RBC	5.01	millions/cmm
HGB	15.0	g/dl
HCT	44.9	%
MCV	86.6	fl
MCH	29.0	pg
MCHC	33.5	%
RDW	11.5	%
PLT	211	thousands/cmm

Differential (WBC types)

Neutrophils	56	%
Lymphocytes	34	%
Monocytes	8	%
Eosinophils	1	%
Basophils	1	%

Equivalent, Conventional (preferred) & SI Units

Equivalent units
•cmm (cubic millimeters) = mm^3 = uL (microliters) = mcL (conventional units)

•thousands/uL = x10^3/cmm = x10E3/uL = K/cmm
Examples:
WBC 6,400/uL = 6.4 x10^3/cmm = 6.4 x10E3/uL = 6.4 K/cmm
PLT 250,000/uL = 250 x10^3/cmm = 250 x10E3/uL = 250 K/cmm

•millions/uL = x10^6/cmm = x10E6/uL = M/cmm
Example:
RBC 3.45 million/uL = 3.45 x10^6/cmm = 3.45 x10E6/uL = 3.45 M/cmm

To convert conventional units (cmm or uL) to SI units (L), use a **factor of x10^6**
Examples:
WBC 6.4 x10^3/uL (**x10^6**) = 6.4 x10^9/L (SI units)
RBC 3.45 x10^6/uL (**x10^6**) = RBC 3.45 x10^{12}/L (SI)
PLT 250 x10^3/uL (**x10^6**) = 250 x10^9/L (SI = System of International)