% $\frac{g}{mL}$ $\frac{g}{g}$ $\frac{mL}{mL}$

$\frac{\text{mass}}{\text{Volume}}$ $\frac{\text{mass}}{\text{mass}}$ $\frac{\text{volume}}{\text{volume}}$

$\times 100$

Molarity

Big M = $\frac{\text{moles of solute}}{L \text{ of solution}}$

Molar

$M_1 V_1 = M_2 V_2$

$\%_1 V_1 = \%_2 V_2$

Solute - substance that is being dissolved

(usually is the smaller quantity of the two)

Solvent = substance that does the dissolving

Water = universal solvent

4.

$$6.6\% = 100 \times \frac{25.00\,g}{x\,mL}$$

$$\frac{.066}{1} = \frac{25.00}{x}$$

$$\frac{(.066)(x)}{.066} = \frac{25.00}{.066}$$

$$x = 378.7878\,mL$$

$$x = 380\,mL$$

8. ? g NaCl 250 mL (→ L) 0.340 M

$$M = \frac{\text{moles of solute}}{\text{L of solution}}$$

$$\frac{0.340}{1} = \frac{x}{.250\ L}$$

$$(0.340)(.250) = x$$

$$x = 0.085\ \text{mol}$$

$$.085\ \text{mol} \times \frac{58.5\ g}{1\ \text{mol}} = 4.9725\ g$$

Na = 23
Cl = 35.5
58.5

4.97 g

5.0 g

9.

$$4.5\% = 100 \times \frac{25.0}{x}$$

$$.045 = \frac{25.0}{x}$$

$$\frac{(.045)(x)}{.045} = \frac{25.0}{.045}$$

$$x = 555.55 \text{ mL}$$

$$x = 560 \text{ mL}$$

.

13. % M 33.0g .200L

$$\frac{33.0\text{g}}{200\text{mL}} \times 100 = 16.5\%$$

$$M = \frac{\text{moles of solute}}{\text{L of solution}}$$

$$\frac{33.0\text{g} \times 1\text{mol}}{180\text{g}} = .183333\text{mol}$$

C $12 \times 6 = 72$

H $1 \times 12 = 12$

O $16 \times 6 = 96$

180

$$\frac{.183333\text{mol}}{.200\text{L}} = .91666\text{M}$$

.917 M

15.

$$\%_1 V_1 = \%_2 V_2$$

$$(5.3)(125) = x(325)$$

$$\frac{1912.5}{325} = \frac{x(325)}{325}$$

$$x = 5.88461\%$$

$$x = 5.88\%$$

① .061 moles

② 230 K

11. $15.3\% = 100 \times \left(\frac{x}{150}\right)$

$\frac{.153}{1} = \frac{x}{150}$

$(.153)(150) = x$

$22.959 = x$

$23 = x$

19. $?_g NaClO_3$ 1255 mL

2.77 M

$M = \frac{\text{moles of solute}}{\text{L of soln}}$

$2.77 = \frac{x}{1.255}$

$(2.77)(1.255) = x$

$3.47635\ \text{mol} = x$

Na $23 \times 1 = 23$

Cl $35.5 \times 1 = 35.5$

O_3 $16 \times 3 = 48$

$106.5\ g = 1\ \text{mol}$

$\frac{3.47635\ \text{mol} \times 106.5\ g}{1\ \text{mol}} =$

370.231275 g

370 g

3.70×10^2 g

14.

add with

$$\%_1 V_1 = \%_2 V_2$$

$$(12.3)(15.0) = x\,(115.0)$$

$$\frac{184.5}{115.0} = \frac{x(115.0)}{115.0}$$

$$X = 1.6043\,\%$$

$$X = 1.60\,\%$$

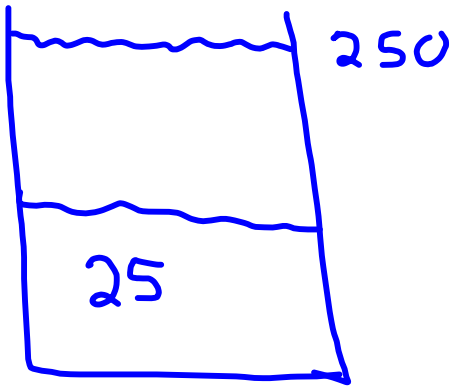
25. $M_1V_1 = M_2V_2$

$(.50)(25.0) = x(250)$

$\frac{12.5}{250} = \frac{x(250)}{250}$

.05 M

.050 M



28.

$$\%_1 V_1 = \%_2 V_2$$

$$(16.3)\,x = (10.0)(275)$$

$$\frac{(16.3)\,x}{16.3} = \frac{2750}{16.3}$$

$$x = 168.7116$$

$$x = 169\ mL$$

30.

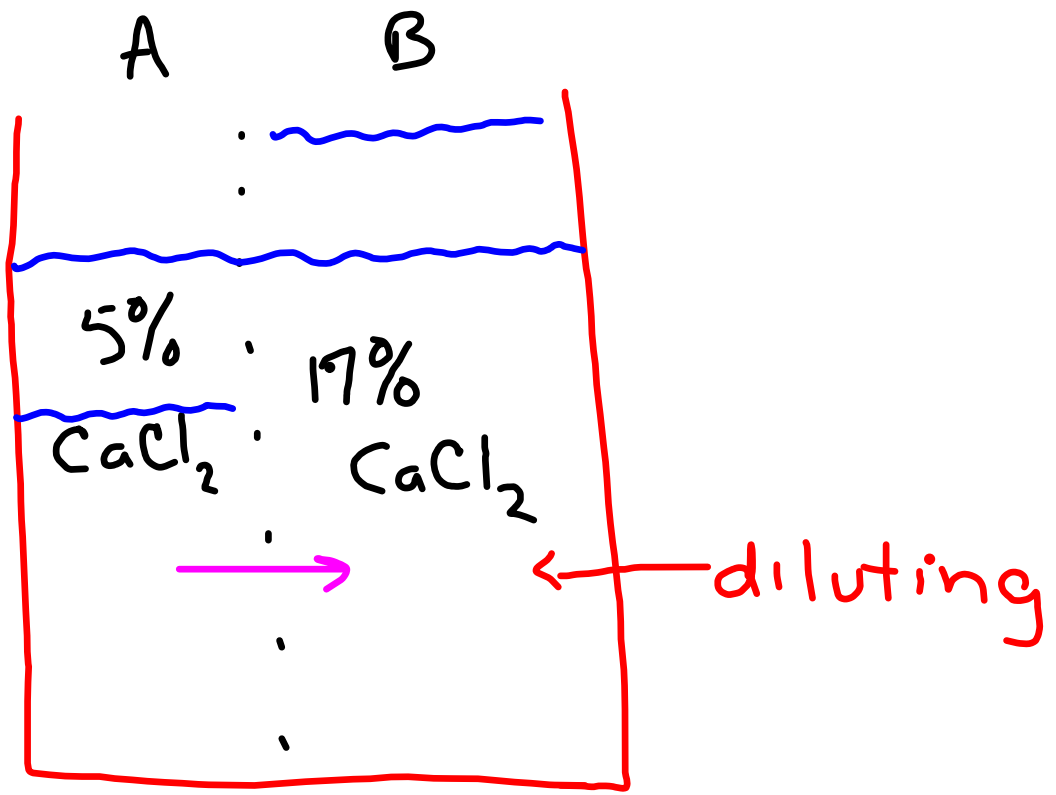
$$\frac{g}{mL} \times 100 = 5.0\%$$

$$(.05) = \frac{x}{1255\,mL}$$

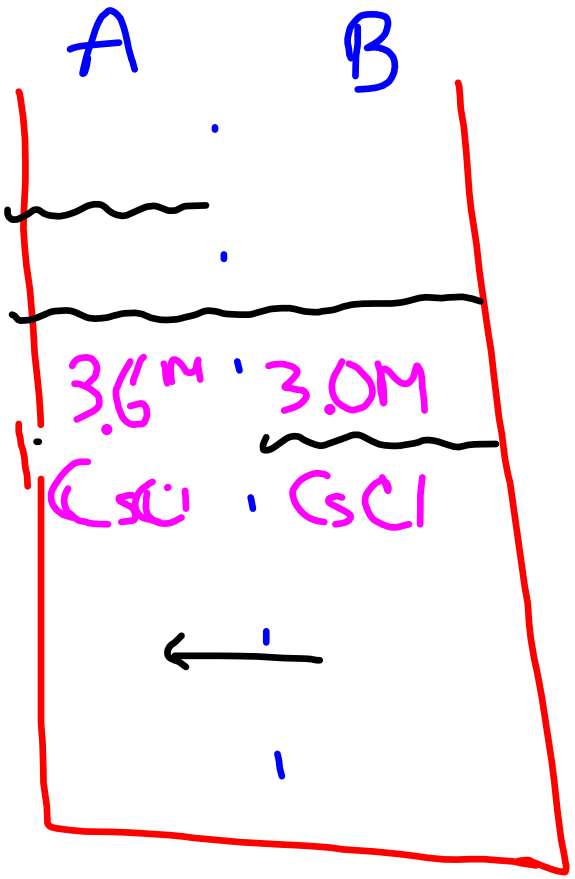
$$(.05)(1255\,mL) = x$$

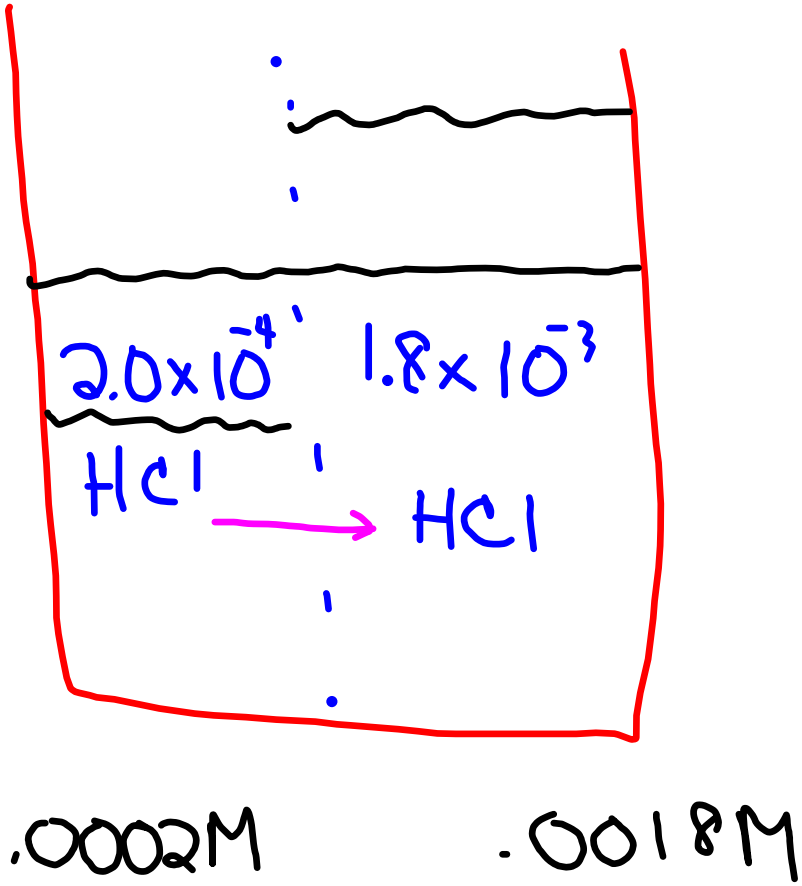
$$62.75\,g = x$$

$$63\,g$$



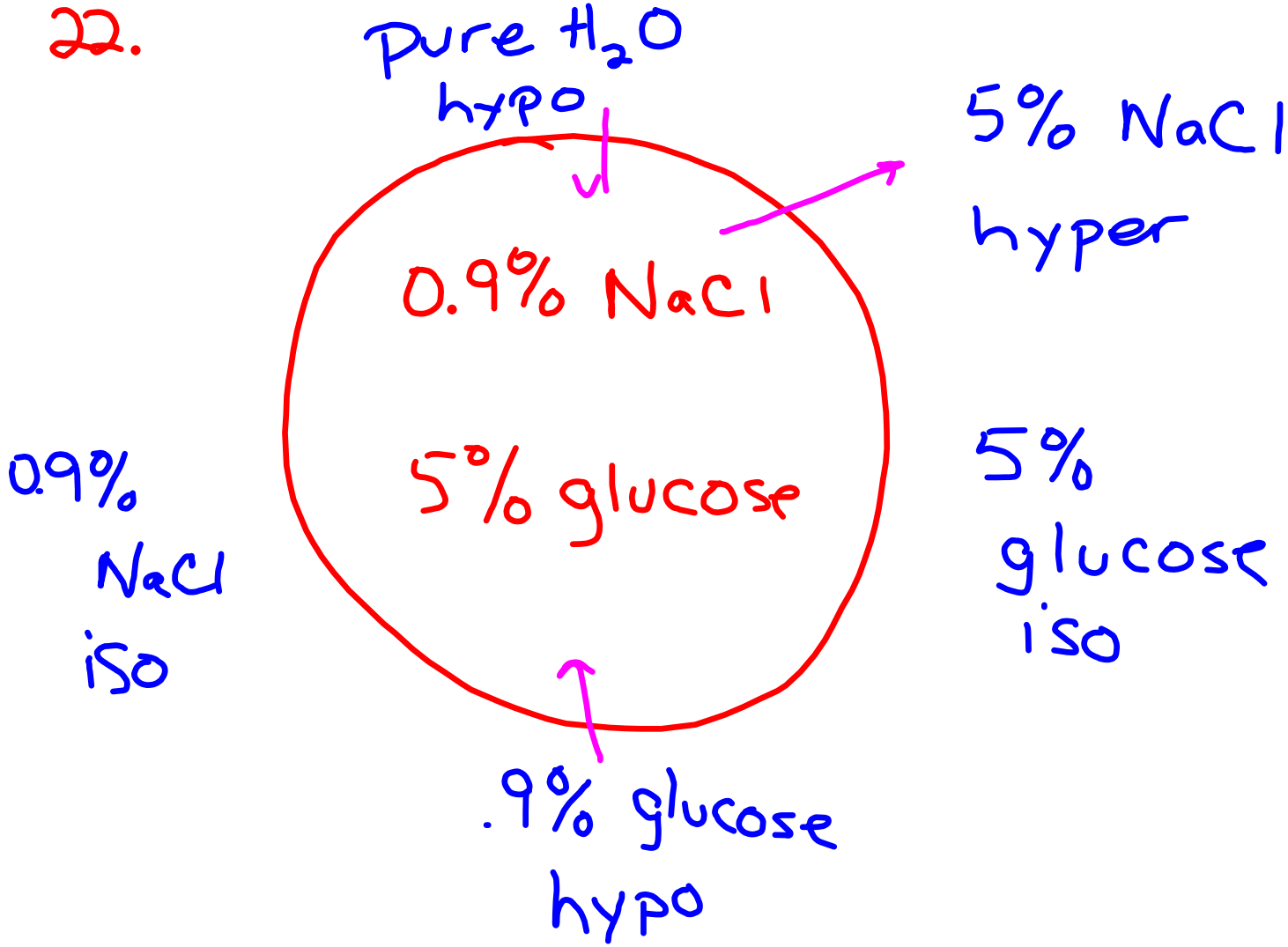
Diluting until there is an equal % on both sides.


A
B
3.6M
3.0M
CsCl
CsCl



.0002M .0018M

22.


Pure H_2O
hypo
5% NaCl
hyper
0.9% NaCl
5% glucose
0.9%
NaCl
iso
5%
glucose
iso
.9% glucose
hypo

isotonic- Same concentration on both sides

hyertonic- more concentration of one or more substances

hypotonic- less concentration of one or more substances

24.

added with

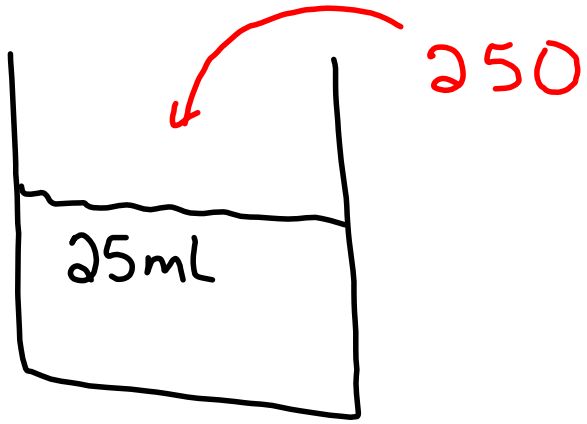
$M_1V_1 = M_2V_2$

$(.50)(25.0) = x(275)$

$\frac{12.5}{275} = \frac{x(275)}{275}$

$x = 0.04545$

$x = 0.045\ M$

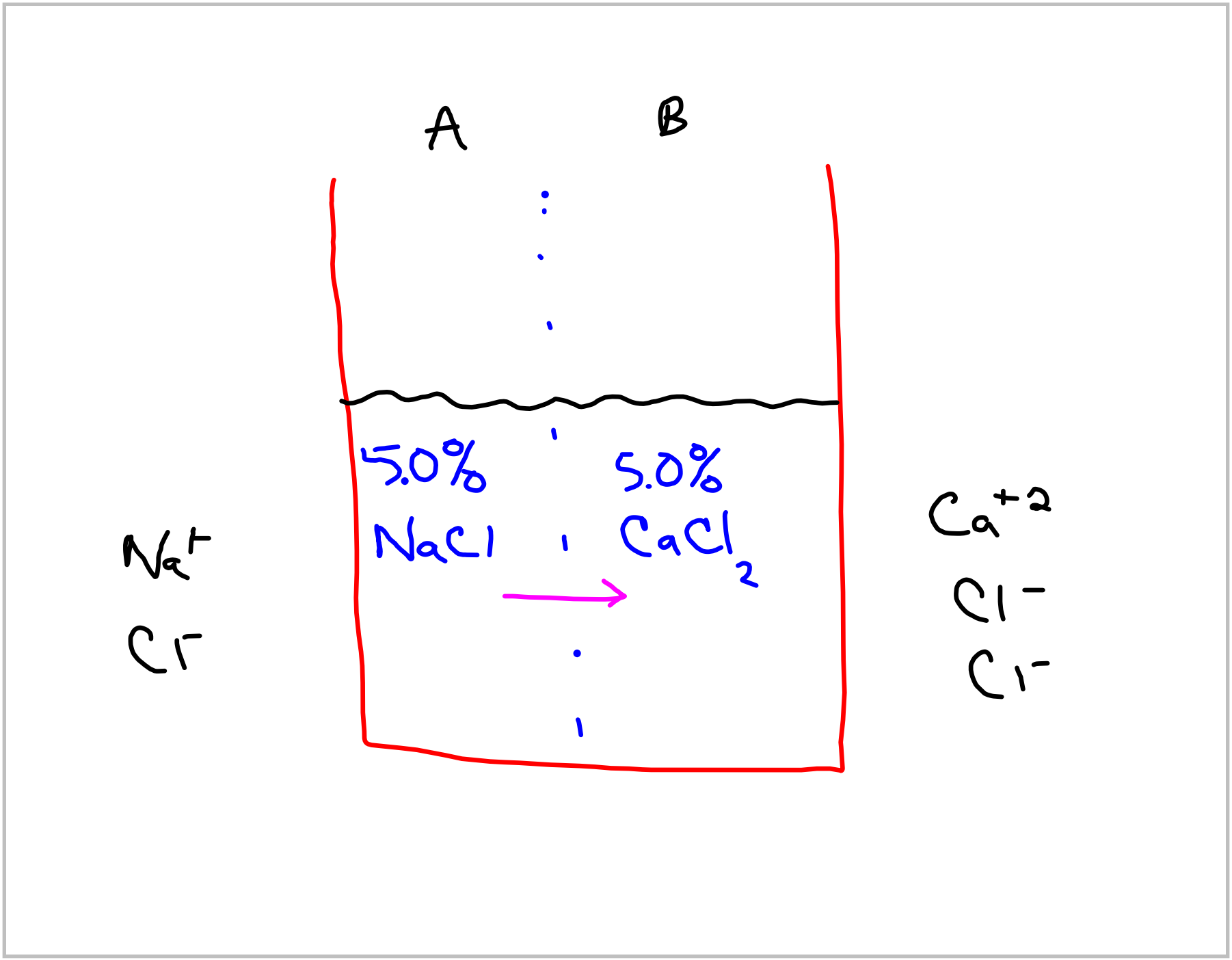


Quiz Wed

① $M_1V_1 = M_2V_2$

$\%_1V_1 = \%_2V_2$

② Concentration and Water flow


A
B
5.0%
NaCl
5.0%
CaCl2
Na+
Cl-
Ca+2
Cl-
Cl-

Test 3

Wed 23

Thurs 24