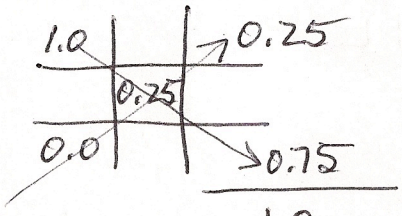
Alligations Practice Solutions

1. 

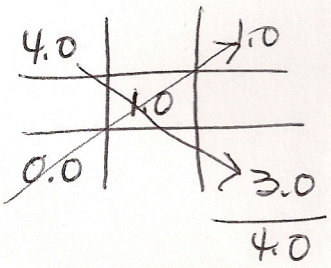
1 L = 1000 ml

$1000\,ml \times \frac{0.25}{1.0} = 250\,ml$ of 1%

$1000\,ml \times \frac{0.75}{1.0} = 750\,ml$ of water

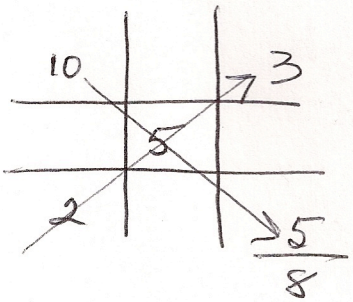
2. $1:25 = \frac{1}{25} = 0.04 = 4\%$ on hand stock

$Rx = 1:100 = \frac{1}{100} = 0.01 = 1\%$ 1 L



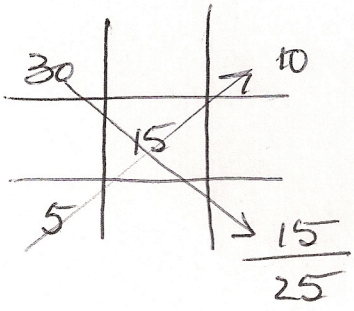
$1000\,ml \times \frac{1.0}{4.0} = 250\,ml$ of 1:25 stock

$1000\,ml \times \frac{3.0}{4.0} = 750\,ml$ of water

3. 

$120\,g \times \frac{3}{8} = 45\,g$ of 10%

$120\,g \times \frac{5}{8} = 75\,g$ of 2%

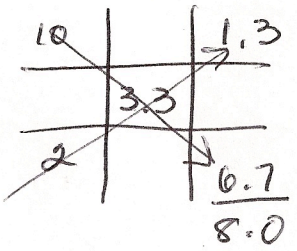
4. 

$454\,g \times \frac{10}{25} = 181.6\,g$ of 30%

$454\,g \times \frac{15}{25} = 272.4\,g$ of 5%

5. $1:30 = \frac{1}{30} = 0.0\overline{3} = 3.3\%$ $\quad 1:50 = \frac{1}{50} = 0.02 = 2\%$

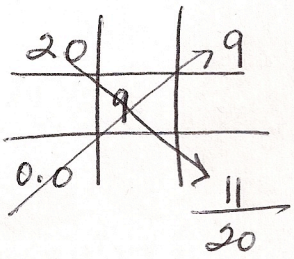
$1:10 = \frac{1}{10} = 0.10 = 10\%$



$480\,ml \times \frac{1.3}{8.0} = 78\,ml$ of 10% or 1:10

$480ml \times \frac{6.7}{8.0} = 402\,ml$ of 2% or 1:50

6.



$80\,g \times \frac{9}{20} = 36\,g$ 20% stock

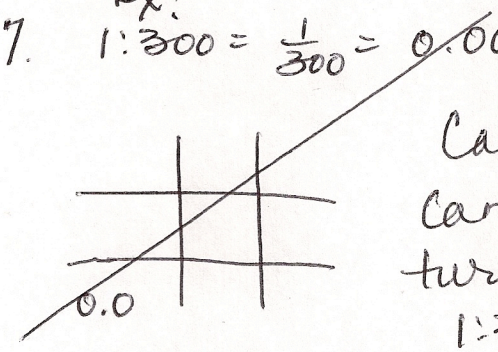
$80\,g \times \frac{11}{20} = 44\,g$ cream base

7. Rx:

$1:300 = \frac{1}{300} = 0.00\overline{3} = 0.33\%$

Stock:

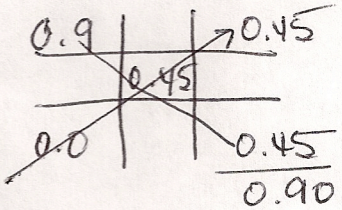
$1:500 = \frac{1}{500} = 0.002 = 0.2\%$



Can't do this as written

Can't dilute a 1:500 stock and turn it into a more concentrated 1:300 solution

8. SWFI = Sterile water for injection = 0.0



0.9% need $\frac{0.45}{0.90}$ parts $= \frac{1}{2}$

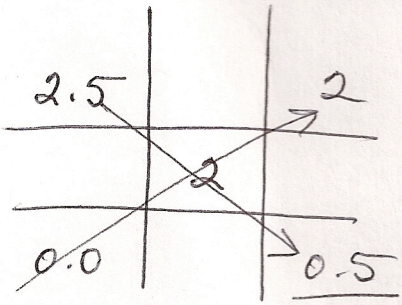
SWFI need $\frac{0.45}{90}$ parts $= \frac{1}{2}$

∴ For total = 2 parts,
1 = 0.9% 1 = SWFI

∴ For 500 ml 0.9% need same amount of SWFI to make 0.45
So add 500 ml SWFI to dilute

9.

10. petroleum = inactive base = 0.0



2.5 total parts

$\frac{2}{2.5}$ = parts 2.5% = $\frac{4}{5}$

$\frac{0.5}{2.5}$ = parts 0.0% = $\frac{1}{5}$

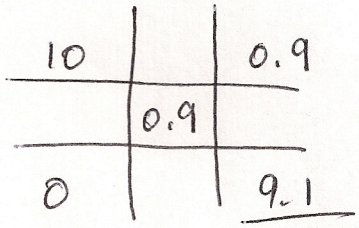
Starting with 20 g of 2.5 must equal 4/5 of final mix

∴ each $5^{th} = \frac{20}{4} = 5$ g.

So add 5 g of petroleum

($5 \times 5^{th} = 25$ g total final mix)

11. normal saline 0.9% need ? ml H_2O to dilute
Stock saline 10% →



10.0

$\frac{0.9}{10.0}$ = parts 10% stock = 0.09 = $\frac{9}{100}$

$\frac{9.1}{10.0}$ = parts H_2O to dilute 0.91 = $\frac{91}{100}$

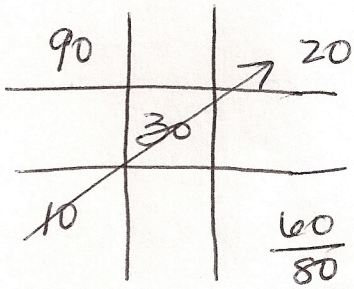
$\frac{9}{100}$ means for every 9 mls of stock 10% you need 91 ml of H_2O per 100 mls

~~500 ml stock x 91~~ $\frac{91}{9} = 10.11$ as much H_2O is needed

Starting with 500 mls of 10%

So 500 mls × 10.11 = 5055.56 ml needed

9.



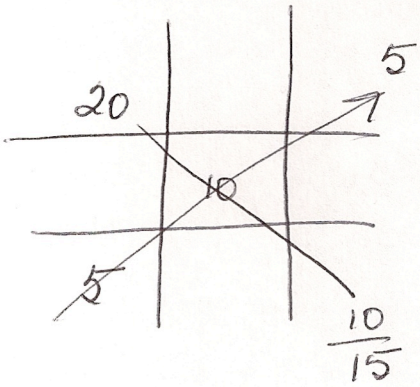
$\frac{20}{80}$ parts 90% $\frac{20}{80} = \frac{1}{4}$

$\frac{60}{80}$ parts 10% $\frac{60}{80} = \frac{3}{4}$ = starting with 25 ml = 3/4

So $\frac{25 \text{ ml}}{4}$ = 6.25 ml each $\frac{1}{4}$

add 6.25 ml of 90%

14.



$45g \times \frac{5}{15} = 15g$ 20%

$45g \times \frac{10}{15} = 30g$ 5%