Difficult ↑

Alligation or Mixture

☆ Important Facts and formulae,

1. Alligation : It is the rule that enables us to find the ratio in which two or more ingredients at the given price must be mixed to produce a mixture of a desired price.

2. Mean Price : The cost price of a unit quantity of the mixture is called the mean price.

3. Rule of Alligation : If two ingredients are mixed, then

$$\left(\frac{\text{Quantity of cheaper}}{\text{Quantity of dearer}}\right) = \frac{(\text{C.P of dearer}) - (\text{Mean price})}{(\text{Mean price}) - (\text{C.P of cheaper})}$$

Representation ⇒

C.P of unit quantity of cheaper (C)

C.P of a unit quantity of dearer (d)

Mean price (m)

(d - m) : (m - C)

∴ (cheaper quantity) : (Dearer quantity) = (d - m) : (m - C)

4. Suppose a container contains x units of liquid from which y units are taken out and replaced by water. After n operations, the quantity of pure liquid $= \left[x\left(1-\frac{y}{x}\right)^n\right]$ units.

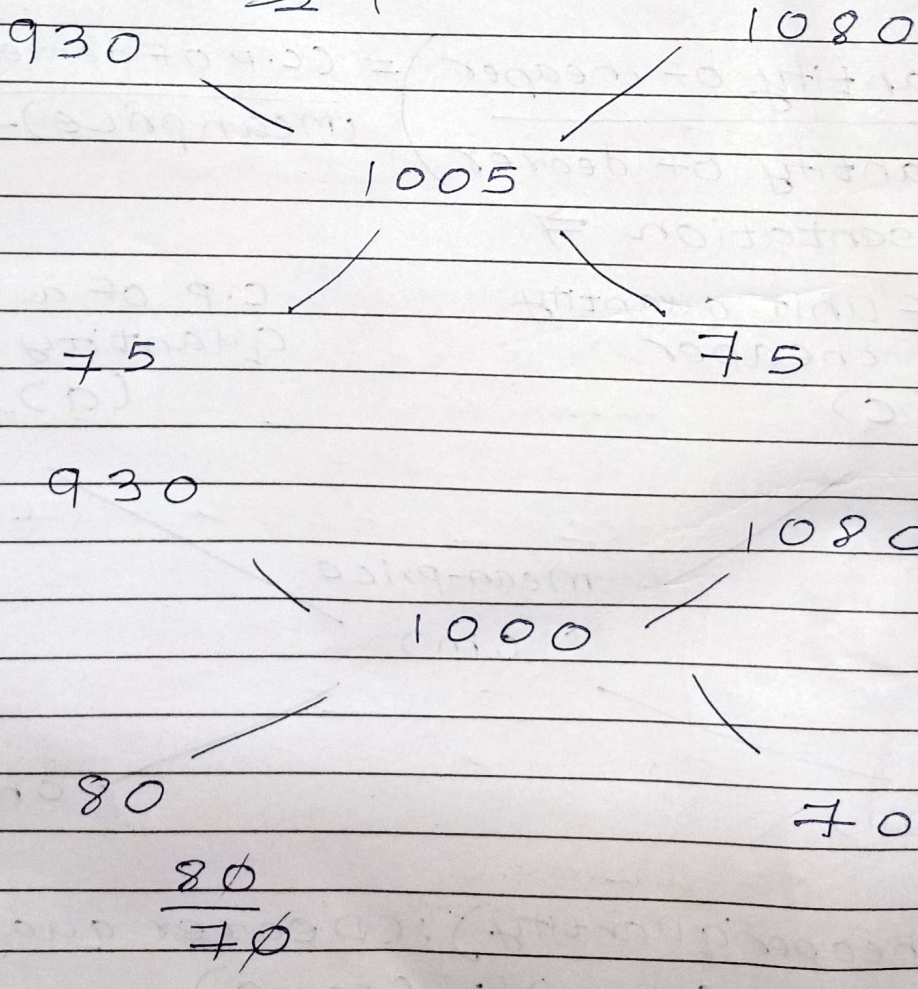
★ Problems.

Q.1)

1080
930
2010

$\frac{1080+930}{2}$

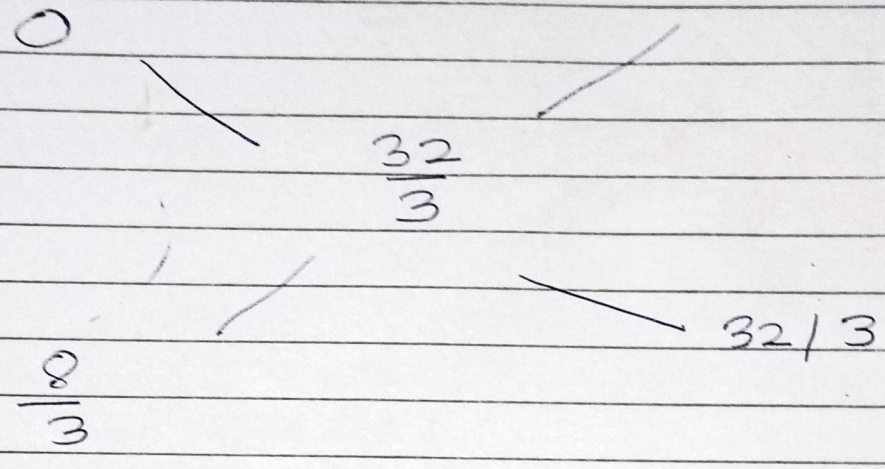
1005
2010
2



80
70

Q.2)

C.P of milk $= 20 \times \frac{2}{3} = \frac{40}{3}$



$$\frac{8/3}{32/3} = \frac{1}{4}$$

$\frac{1}{4} \times 60 = 15$ Litres of water.