

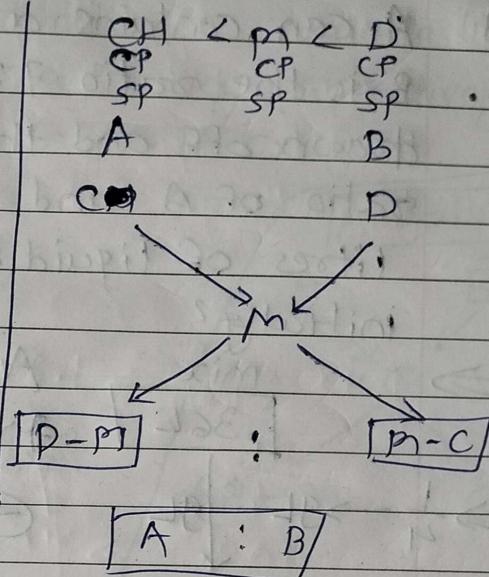
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9. Misc Alligation

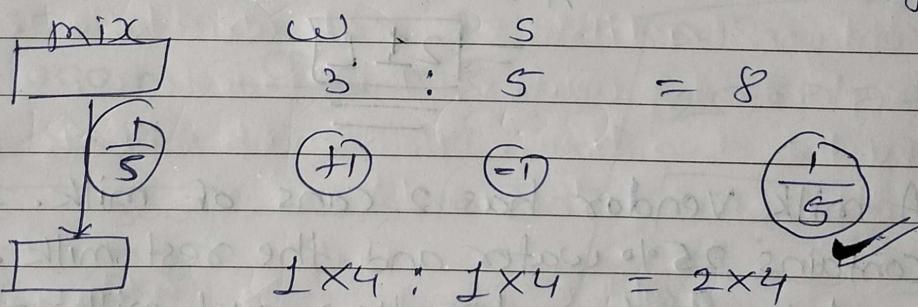
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Misc	Alligation
G & C	B. G : C
m & w	m : w
A & w	A : w
m & F	m : F
B & G	B : G
P & F	P : F



- 1] A Vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?



- 2] Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1:1:2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be:



A	B	C	Mix	Price of C 1kg =
1kg	1kg	2kg	4kg	175.5 ₹
↓ 126	↓ 135	↓ 175.5 ₹	↓ 153 ₹	
126 ₹	135 ₹	175.5 ₹	153 ₹	175.5 ₹
↓ 261			↓ 612	

③ A can contains a mixture of two liquids A and B in the ratio 7:5. When 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7:9. How many litres of liquid A was contained by the can initially?

$$\begin{array}{ccccccc}
 \Rightarrow & \text{mix} & & A & & B & \\
 & [36L] & & 7 \times 4 : 5 \times 4 & & 12 \times 4 = 48 & \\
 & \frac{7}{28} \rightarrow \frac{1}{4} \rightarrow 9L & \downarrow 9L & \textcircled{-} & \textcircled{+} & & \\
 & \underline{1 \rightarrow 36L} & & 7 \times 3 : 9 \times 3 & & 16 \times 3 = 48 &
 \end{array}$$

A initially contained :-

$$36L \xrightarrow{?} 12$$

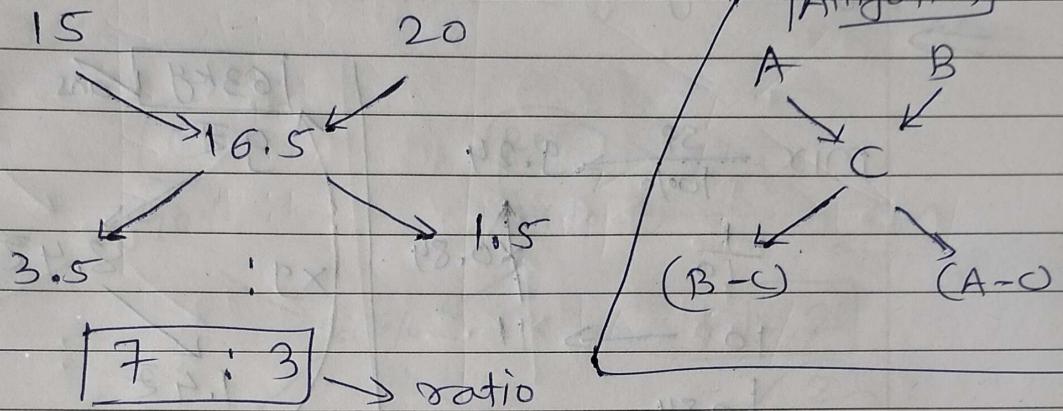
$$A = 7 \times 3$$

$$= [21L]$$

④ A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 litres of milk such that the ratio of water to milk is 3:5?

$$\begin{array}{ccccc}
 \Rightarrow & 6L + 6L \rightarrow 12L \rightarrow \frac{w}{m} & & & \\
 & \swarrow \quad \nwarrow & & & \\
 & [m \& w] \quad [m \& w] & & & \\
 & 25\% & 50\% & & \\
 & \text{equal quantity} & & & \\
 & \swarrow \quad \searrow & & & \\
 & 12.5 & 37.5\% & 12.5 & \\
 & & \text{1:1} & &
 \end{array}$$

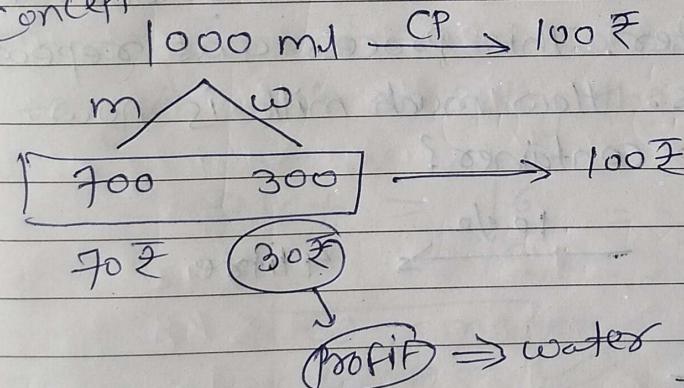
5) In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 per kg?



6) A dishonest milkman professes to sell his milk at cost price but he mixes it with water and thereby gains 25%. The percentage of water in the mixture is:



Concept:-



Soln

$$25\% P = \frac{1}{4-m}$$

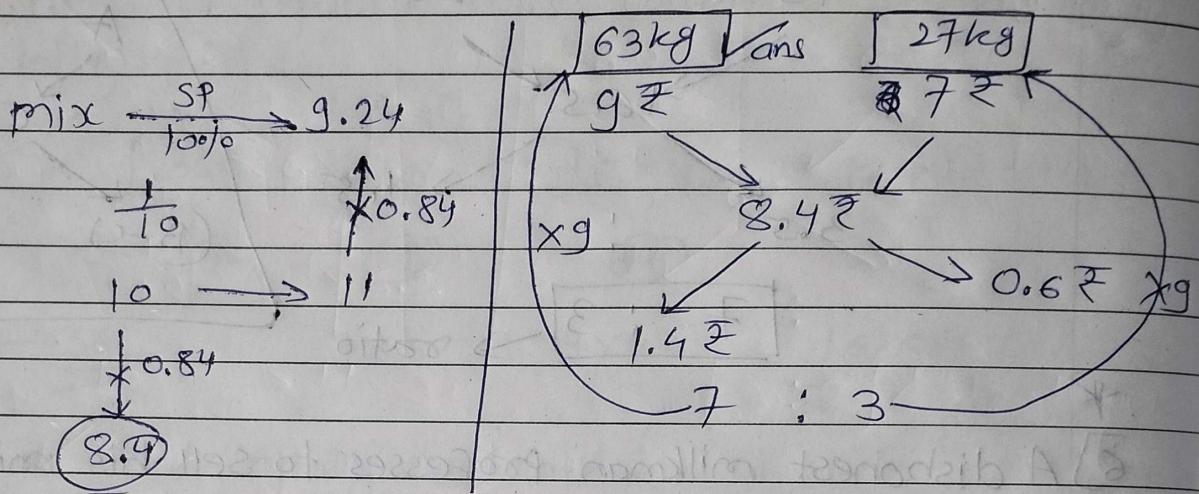
$$\boxed{m:w}$$

$$4:1$$

$$\frac{1}{5} = 20\%$$

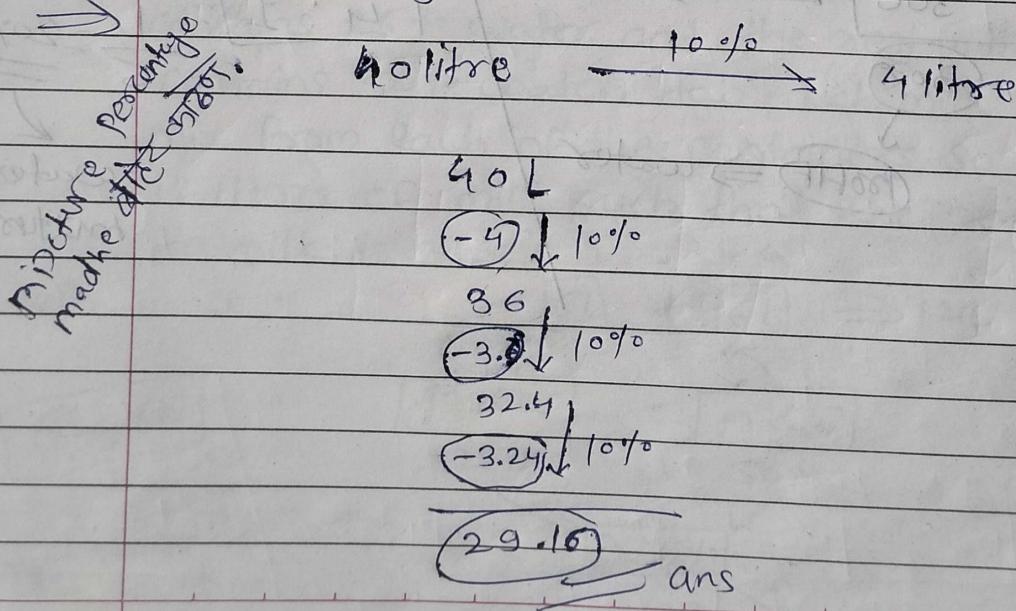
water mixture

7) How many kilogram of sugar costing Rs. 9 per kg must be mixed with 27 kg of sugar costing Rs. 7 per kg so that there may be a gain of 10% by selling the mixture at Rs. 9.24 per kg?



8)

A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?



9) A jar full of whisky contains 40% alcohol. A part of this whisky is replaced by another containing 19% alcohol and now the percentage of alcohol was found to be 26%. The quantity of whisky replaced is:



(O)

40%

(Rep)

19%

$$\begin{array}{ccc} & \xrightarrow{\quad\quad} & \\ 26\% & & \\ \swarrow & & \searrow \\ 7 & : & 14 \end{array}$$

$\boxed{1 : 2}$

$\boxed{1 : 2}$

$\frac{2}{3}$

$\frac{2}{3}$

Ans

↓
whisky
replaced
quantity.

10) In what ratio must water be mixed with milk to gain 16% on selling the mixture at cost price?



$$P 16\% = \frac{16}{100} = \frac{4}{25} \text{ --- } w$$

$\boxed{w : m}$
 $\boxed{4 : 25}$

ans

11) Find the ratio in which rice at Rs. 7.20 a kg be mixed with rice at Rs. 5.70 a kg to produce a mixture worth Rs. 6.30 kg.



decimal
परिवर्तन

7.2

$$\begin{array}{ccc} & \xrightarrow{\quad\quad} & \\ 6.3 & & \\ \swarrow & & \searrow \\ 6 & & 9 \end{array}$$

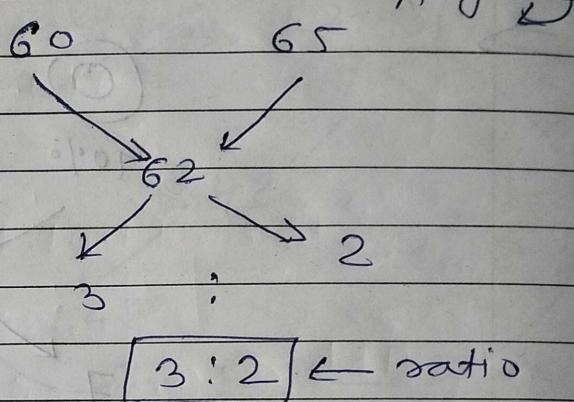
5.7

$\boxed{2 : 3}$ - ration

1) In what ratio must a grocer mix two varieties of tea worth Rs. 60 a kg and Rs. 65 kg so that by selling the mixture at Rs. 68.20 kg he may gain 10%?



$$\begin{array}{c} \text{mix} \xrightarrow[\text{10%}]{\text{SP}} 68.2 \\ \frac{1}{10} \quad \times 6.2 \end{array}$$



2) The cost of Type 1 rice is Rs. 15 per kg and Type 2 rice is Rs. 20 per kg. If both Type 1 and Type 2 are mixed in the ratio of 2:3, then the price per kg of the mixed variety of rice is:

$$\begin{array}{ccc} \Rightarrow & \begin{array}{c} T_1 \\ 2 \text{ kg} \\ \downarrow 15 \\ 30 \end{array} & \begin{array}{c} T_2 \\ 3 \text{ kg} \\ \downarrow 20 \\ 60 \end{array} & \begin{array}{c} \text{mix} \\ 5 \text{ kg} \\ \downarrow 18 \\ \text{ans} \end{array} \\ & \hline & & \end{array}$$

- * 13) 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of water is $16 : 65$. How much wine did the cask hold originally?



concept Ex:-

Mix $\rightarrow \frac{1}{3}$ replace \rightarrow 3 times

Orig	Rest
$\times 3$	$\times 2$
$\underline{\times 3}$	$\underline{\times 2}$
$\underline{\times 3}$	$\underline{\times 2}$
$\underline{\underline{8+19}}$	$\underline{\underline{27}}$
	$8 : 19$

Soln:-

Orig	Rest
$\times 8$	$\rightarrow 8L$
$\underline{\underline{24L}}$	\leftarrow
$\underline{\underline{3}}$	$\rightarrow 2$
$\underline{\underline{3}}$	$\underline{\underline{2}}$
$\underline{\underline{3}}$	$\underline{\underline{2}}$
$\underline{\underline{81}}$	$16 : 65$

- 14) A merchant has 100 kg of sugar, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity sold at 18% profit is:

